

trainee



report

CETAC 2003



Page 26-27

Mikael Niklasson  
TSI Power Corporation  
"Power on in Antigo"



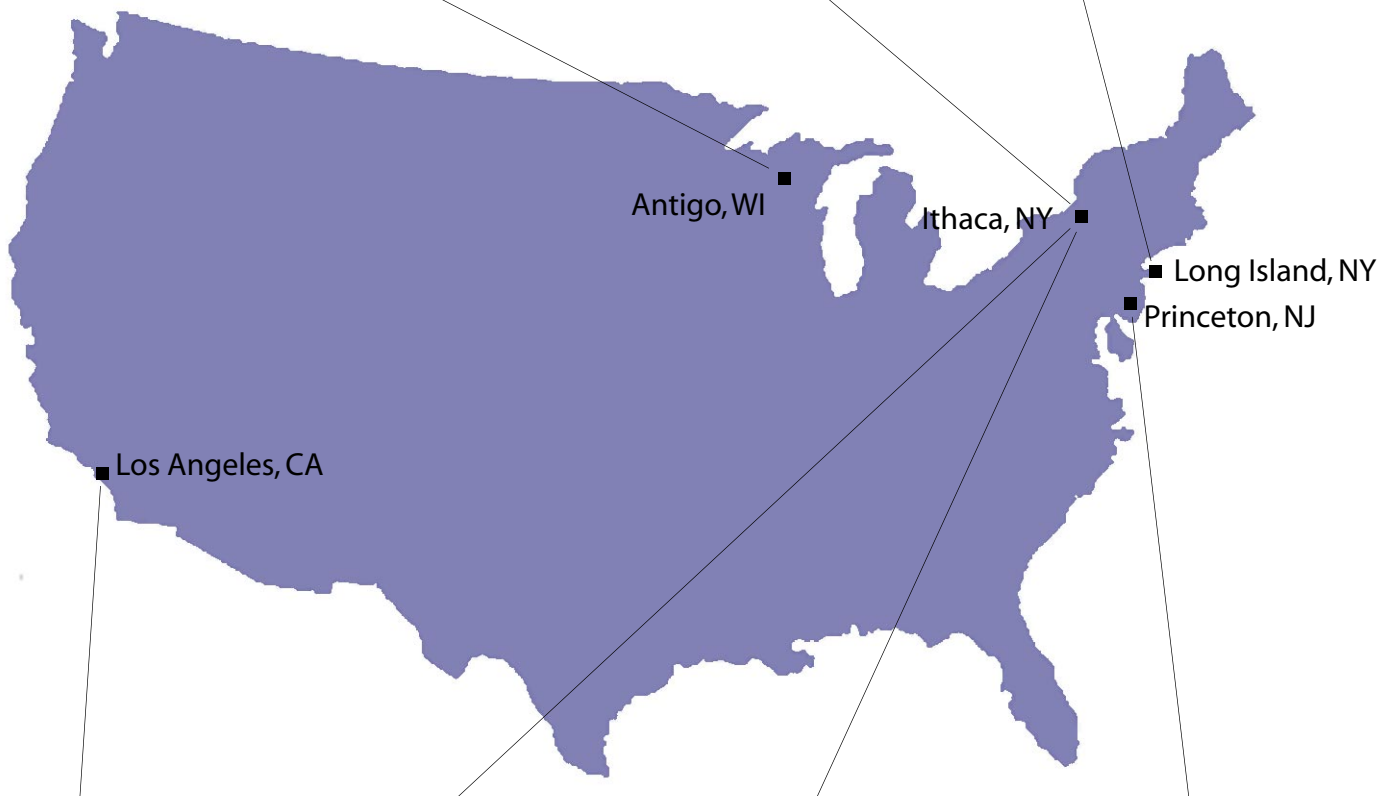
Page 52-54

Elisabeth Lee  
Cornell University  
"Higher learning in Ithaca"



Page 14-17

Peter Eriksson  
Rodale Electronics Inc.  
"Working on Long Island"



Therese Johansson  
MESA  
"Summer in Los Angeles"



Page 48-49

Fredrik Larsson  
Cornell University  
"Roadtrip California"



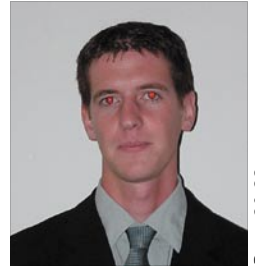
Page 36-39

Patrik Ljungvall  
Cornell University  
"A wonderful summer in Ithaca"



Page 44-45

David Hedqvist  
Siemens  
"Meeting Europeans in the U.S."



Page 20-23

# CETAC

Chalmers Engineering Trainee Appointment Committee

CETAC is a committee devoted to making practical training in the United States possible for students studying Computer Science and Engineering, Electrical Engineering and Engineering Physics at Chalmers University of Technology. During a school year preceding the summer of training the committee's members contribute in different ways to finance and plan the trip, secure training positions, obtain visas etc.

Finally, in the beginning of June, the planes take off. After a couple of days in New York City the students are spreading all over the U.S. Then, during 8 - 24 weeks, the trainees gain practical experience in their fields of study, make new friends and are exposed to another way of life as well as completing an important part of their educational program towards a Master of Science degree. Before going back home to Gothenburg for completing their studies many travel to see other parts of the enormous and diverse landmass that is America.

The CETAC Trainee Report that you are now holding in your hand is the official report from the students who participated in 2003.

## The board of CETAC 2003

Chairman	Therese Johansson
Secretary	Johanna Glembo
Treasurer	Peter Eriksson
Editor	Elisabeth Lee
Appointment Manager	Kristoffer Carlsson
Appointment Manager	Johan Hedström

In the picture from upper left corner:  
Kristoffer Carlsson, Johan Hedström, Peter Eriksson  
From lower left coner:  
Therese Johansson, Elisabeth Lee, Johanna Glembo



The committee of CETAC 2003

CETAC  
Elektroteknologsektionen  
Chalmers Teknologiska högskola  
S-412 96 Göteborg

Phone. +46 31 18 33 60  
Fax: +46 31 20 30 73  
Email: [cetac@etek.chalmers.se](mailto:cetac@etek.chalmers.se)  
Web: [www.etek.chalmers.se/etsekt/CETAC](http://www.etek.chalmers.se/etsekt/CETAC)





# trainee report 2003

# content



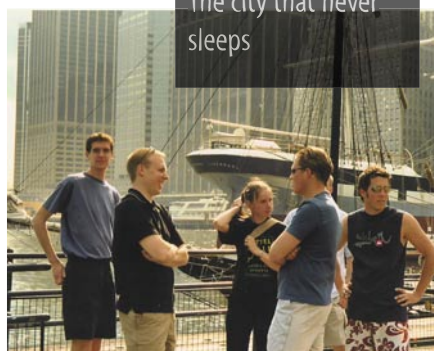
Page 5  
The American Scandinavian  
Foundation



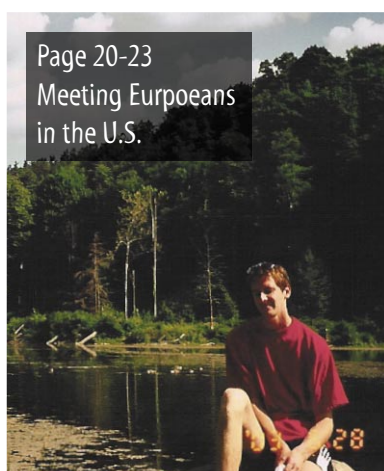
Page 14-17  
Working on  
Long Island



Page 8-9  
The city that never  
sleeps



Page 36-39  
Roadtrip California



Page 20-23  
Meeting Europeans  
in the U.S.

- 3 Editor's Letter
- 5 The American Scandinavian Foundation
- 8 The city that never sleeps
- 14 Working on Long Island
- 20 Meeting Europeans in the U.S.
- 26 Power on in Antigo
- 31 Chalmers University of Technology
- 35 Elajo
- 36 Roadtrip California
- 41 Vera & the girls in California
- 44 A wonderful summer in Ithaca
- 48 Summer in Los Angeles
- 52 Higher learning in Ithaca
- 57 Making bonds in Stockholm
- 60 The Chairman speaking
- 61 Thank you



# S

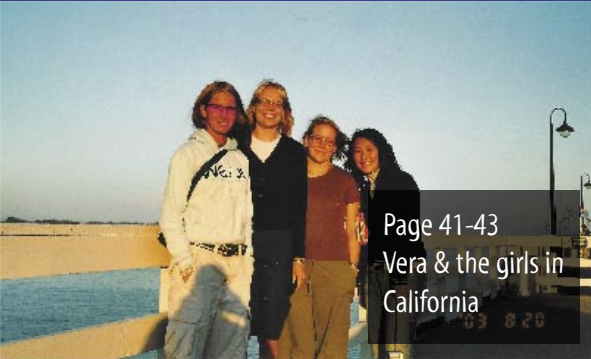
# Editor's Letter

Welcome to this year's trainee report! We hope you enjoy it - we certainly enjoyed putting it together.

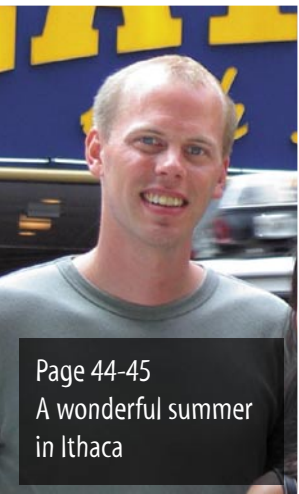
This year's trainee report is the fruit of the work done by not only the editor of CETAC 2003, me, Elisabeth Lee, but also the editor of CETAC 2004, Simon Benjaminsson, as a result of the change of structure within the board of CETAC. The mentioned change has facilitated the work and the cooperation between our two boards, which we hope to pass on to future boards of CETAC.

It was in spring 2002 when I was selected to take place in the board of CETAC 2003 that the big adventure began. I knew, then and there, that I would have a lot of work in front of me before my responsibilities as an editor would be fulfilled. After enjoying an amazing summer in the U.S. and spending endless hours working with what you are now holding in your hand, it is my utmost pleasure to present to you the CETAC trainee report 2003!

*Elisabeth Lee*  
*Editor of CETAC 2003*



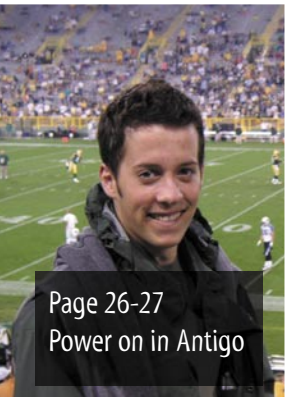
Page 41-43  
Vera & the girls in California



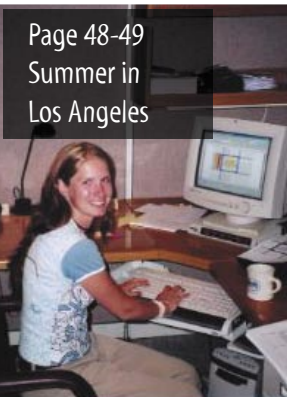
Page 44-45  
A wonderful summer in Ithaca



Page 52-54  
Higher learning in Ithaca



Page 26-27  
Power on in Antigo



Page 48-49  
Summer in Los Angeles



Page 60  
The Chairman speaking

## **Editor-in-Chief**

Elisabeth Lee

## **Editor**

Simon Benjaminsson

## **Publisher**

Therese Johansson

## **Printed by**

Elanders Graphic Systems

## Moder Natur mår bäst utan bly och kadmium



Nu följer vi upp succén med Hicap Eco genom att lansera ett nytt och unikt sortiment D-säkringar – helt fria från bly och kadmium – Diazed Eco. För att markera att säkringarna är annorlunda än standard, har vi också passat på att ge förpackningarna en mer tilltalande design. Begär därför Diazed Eco nästa gång du beställer säkringar. Då vet du att du gör ett optimalt miljöval. Diazed Eco har unika E-nummer och finns hos ledande elgrossister



# The American-Scandinavian Foundation

**The American-Scandinavian Foundation (ASF) is a publicly supported, nonprofit organization that promotes international understanding through educational and cultural exchange between the United States and the Nordic countries. Since its beginning in 1925, ASF's training program has enabled 5000 Swedish students and young professionals to gain international experience in their professional fields. The Foundation welcomed its first CETAC group in 1980.**

We are frequently asked: What is the Foundation's role? Any student coming to the U.S. to train must have a visa to enter the country. ASF has been designated by the

U.S. Government as an Exchange Visitor (J visa) program sponsor for on-the-job training. As the visa sponsor, ASF can issue U.S. Government documents that make it possible for the CETAC student to obtain their visas and come to the U.S. to train and receive income. ASF must make sure, before accepting a student into the program, that the training experience will be a valuable educational experience, appropriate to the background of the student. To demonstrate this, each host trainer submits a plan of training, outlining the educational content of the assignment and describing the new skills that will be acquired.

The program provides meaningful practical experience for the students while providing host trainers with high-caliber trainees eager to make a contribution to the firm. There is also the personal dimension. When we ask trainees at the end of the experience, what they liked best about their stay in the U.S., the response is frequently the new friends that they made. That is the natural and anticipated consequence of the program, and we hope these friendships will continue and strengthen for many years to come.

When asked what was most meaningful about her experience, Elisabeth Lee, the CETAC Travel Report editor, responded: "Getting to know all the wonderful, nice and fun people and getting the opportunity to experience and see with my own eyes the American life and typical American things. Also, working with research work of this kind has triggered my interest and makes me want to deepen even more my knowledge in the field."

The Foundation is proud to sponsor these Chalmers students who have demonstrated great motivation and professionalism.

The Foundation would like to express its appreciation to the American companies which have hosted the trainees; to H.E. Stig Elvemar, Swedish Ambassador to the United Nations, who was guest speaker at the orientation held in New York when the CETAC group first arrived, and to Mr. Karl Andréén, Chairman and CEO of New York Cruise Lines, Inc., who generously donated tickets for a Circle Line cruise around Manhattan.

The training program is reciprocal; ASF, with the help of AF-utland in Borås, also sends Americans to Sweden for similar international training. ASF would also like to send its appreciation to the Swedish firms that have hosted American trainees in 2003.

We at the Foundation wish the students of CETAC continued success in their studies and careers.

**Jean Prah**  
**Director of Training**  
**The American-Scandinavian Foundation**







The use of CAN is rapidly increasing and now when we have CAN and Bluetooth™ working together, there are even more opportunities on the market. We are a complete supplier of CAN tools and services, both for Personal Computers and embedded products.

Find out more at [www.kvaser.com](http://www.kvaser.com)

**KVASER**  
Aminogatan 25  
SE-431 53 Mölndal  
Sweden

Phone: +46 (0)31 88 63 44  
E-mail: [sales@kvaser.com](mailto:sales@kvaser.com)



# Dometic AB

## i Motala



Dometic AB i Motala är världens största utvecklare och tillverkare av absorptionskylskåp för den internationella husbils- och husvagnsmarknaden, främst USA och Kanada. Varje år tillverkas ca 250 000 kylskåp vid fabriken i Motala.

Dometic i Motala tillverkar också wine cellars - specialskåp för vinförvaring som exporteras bl a till Japan, Frankrike och Tyskland.

Verksamheten i Motala har ca 800 medarbetare.



Dometic AB • 591 82 MOTALA • Tel. 0141-23 80 00 • Fax 0141-23 84 57

## Möt nya utmaningar



ElektroMekan i Ärjämg är ett av Sveriges största och mest kompletta elektronikföretag.

Här finns kvalificerade arbeten för dig som är civilingenjör eller tekniskt utbildad.

Varför Ärjämg? Här är det nära till frihet, jakt och orörd vildmark. Storstadsstress, trängsel och höga bostadspriser går inte att hitta. Du möts av ärlighet, lugn och välkomnande!



Vill du veta mera kan du höra av dig till:

Roger Anneljörk, affärsområdeschef,  
tel 0573-143 55  
e-mail: [roger.anneljork@elektromekan.se](mailto:roger.anneljork@elektromekan.se)

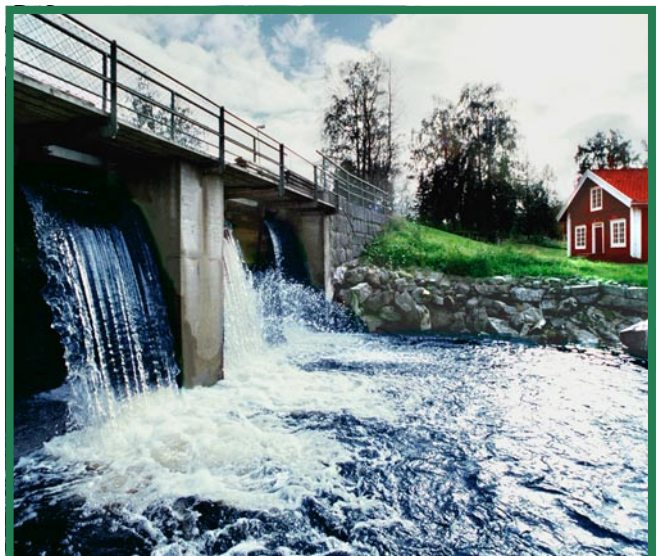
Tommy Wenger, affärsområdeschef,  
tel 0573-143 24  
e-mail: [tommy.wenger@elektromekan.se](mailto:tommy.wenger@elektromekan.se)

Eva Lejrin, personalansvarig,  
tel 0573-143 54  
e-mail: [eva.lejrin@elektromekan.se](mailto:eva.lejrin@elektromekan.se)

Lotta Bernhardsen, personaladm.  
tel 0573-143 71  
e-mail: [lotta.bernhardsson@elektromekan.se](mailto:lotta.bernhardsson@elektromekan.se)



Box 904 • 672 29 Ärjämg  
tel. 0573-143 50 • fax 0573-121 50  
[www.elektromekan.se](http://www.elektromekan.se) • epost: [info@elektromekan.se](mailto:info@elektromekan.se)



## Omtanke om människa och miljö

- Grange, ett av de ledande energiföretagen i Sverige och Finland, har en tydlig miljöprofil med tonvikt på uthålliga energilösningar.
- Granges elproduktion baseras på förnyelsebara energikällor; vatten, vind och biomassa.
- Grange erbjuder kunder i Norden effektiva energilösningar grundade på tydlig miljöprofil, högklassig service och nära kundrelationer.
- Omtanke om människa och miljön är Granges kärnvärde.
- Grange har vuxit de senaste åren. I företagets strategi ligger en fortsatt expansion, vilket skapar utrymme för nyanställningar och goda karriärmöjligheter på olika nivåer inom koncernen.
- Läs mer på hemsidan [www.grange.se](http://www.grange.se)



**GRANINGE**

## Nyhet! Brother DCP-4020C

Kompakt och väldesignad.  
För utskrifter, kopior, skanning och  
dessutom fotoutskrifter direkt från  
en digitalkameras minneskort.



At your side  
**brother**

## DAHRENTRÅD

### ETT HÖGTEKNOLOGISKT FÖRETAG

Dahrentråd är ett av Europas ledande företag för tillverkning av lindningstråd till elektriska motorer och transformatorer. Mer än 30 000 ton produceras per år.



### FÖR BÄSTA FUNKTION UTAN ATT SYNAS



Dahrentråds lindningstråd används bland annat i vindkraftverk, tvättmaskiner, handverktyg, spisar, datorer, hushållsmaskiner, bilar, tåg. Produkter där det ställs stora krav på kvalitet och egenskaper.

### KVALITET GENOMSYRAR VERKSAMHETEN

Dahrentråd ligger i frontlinjen när det gäller kvalitet och är branschledande inom miljö. Hos alla medarbetare pågår ständig utveckling och utbildning i kvalitetshöjning av både varor och tjänster.



AB Dahrentråd, Jonslund, SE-465 80 Nossebro  
Tel: 0512 - 300 300, Fax: 0512 - 300 400,  
info@dahrentrad.se  
www.dahrentrad.se



# Mentor Graphics®

## Kompletta EDA-system för Elektronik- industrin

Mentor Graphics  
Kista Science Tower  
164 51 Kista

Tfn: 08-632 95 00

[www.mentor.com/nordic](http://www.mentor.com/nordic)

## Vill du tjäna extra pengar?

Lernia Bemanning AB hyr i år ut 2000 kvalificerade yrkesarbetare till industrin runt om i Sverige.

Nu söker vi dig som vill jobba extra hos oss! Vi behöver dig som har ett praktiskt handlag och vill prova på ett industriellt arbete. Uppdragen kan variera i längd och du bestämmer själv hur mycket du vill jobba!

Ring oss på 031-743 07 76, så berättar vi mer! Eller besök oss på Östra Hamngatan 46 (bredvid NK).

Välkommen!



Lernia Bemanning AB är Sveriges största bemanningsföretag inom industri, teknik och logistik. Vi finns på ett trettiotal orter i södra och mellersta Sverige. Vi är kvalitets- och miljöcertifierade.

[www.lernia.se/bemanning](http://www.lernia.se/bemanning)





# The city that never sleeps

By Elisabeth Lee

**The city of New York, also known as “The city that never sleeps”, is an endless source of fascination that has spellbound people throughout the time. Made to an undying symbol of “The land of the free”, by the 19<sup>th</sup> century’s many emigrants coming from near and far all with dreams of a better life, the city is today internationally known as a big metropolis as well as a melting pot. Broadway, the Empire State building and the Statue of Liberty are just a few amongst the things that have made New York the uncrown queen of the east coast.**

Somebody once told me that you either love or loathe the city of New York. For me, it was love at first sight! New York City was everything that I expected it to be and so much more. Every single thing was an adventure of its own...from the first American breakfast at an ‘all American’ diner to street crossing rush hour. The city is all about the beat. No matter where you turn your eye in Manhattan, you will undoubtedly see people rushing by with a cup of coffee in their hand, skyscrapers, and endless lines of traffic with yellow spots

here and there all accompanied by the familiar sounds of the city. The city of New York is overwhelming, breathtaking and magical!

It’s always been a dream of mine to go to New York City, having heard so many things about the place and being a huge fan of HBO’s “Sex and the city”. I was therefore thrilled beyond limits as I took my first steps out in the street from the JFK airport. Looking out across the street was a sea of yellow cabs as far as the eye could see. Inspired by the sight, my fellow CETAC board members Peter, Therese and I decided to start off our stay in New York City in a New York fashionable way, namely grabbing a cab. As we entered Manhattan half an hour later, our heads were pressed up against the windows trying to catch as many glimpses of the city as possible. What a sight! It was hard to believe that we were finally there (the thought of pinching myself to see if it was true crossed my mind more than once), but we weren’t dreaming. Shortly thereafter the cab driver pulled up outside a building with strange sculptures hanging out of the facade. I was convinced that he must have mistaken until I read the sign that said “Gershwin hotel”. I couldn’t believe

my eyes and I have to admit that I was somewhat suspicious about the place. The fact that it lay right next to the museum of sex didn’t help. However, Gershwin hotel turned out to be a pleasant surprise. The location was excellent and the room was great.

Having traveled for over ten hours, we settled on the thought of first finding some place to eat, and then check out Times Square. Unfortunately, the weather wasn’t on our side. It started raining like cats and dogs. In fact, it rained so hard that I even managed to ruin my pair of shoes. Going anywhere except for back to the hotel was out of the question. The only up side, between that horrible sin fall and the cockroaches at the fast food joint where we ate, was the sight of young sailors dressed in their cute white uniforms. It was there and then, when scenes of ‘Sex and the city’ flashed by inside my mind, that I truly realized I was in the city of New York. While wishing I was Carrie Bradshaw, but not feeling as glamorous in my soaked clothes and my two private swimming pools for shoes, we struggled our way back to the hotel for the night.

The following day started off with our first American breakfast at a





nearby diner. It was like a scene picked out of a movie. We sat in a booth of our own at a diner filled with breakfast-eating New Yorkers and dressed-up waitresses running around. Looking out the window we saw passing traffic and steam coming out from the ground. Eager as we were to experience New York City and to see it all, we planned our day as we sat there in our booth. However, since we were still missing the last three of our group, the big tourist attractions had to wait till the next day. Instead the day was spent running around seeing the areas surrounding Madison Square Garden, the UN building and Chrysler Tower.

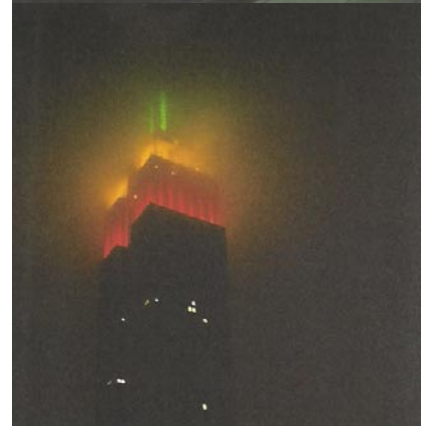
Like every year, CETAC and our sister committee, The USA committee, had appointed a meeting with our sponsor, The American Scandinavian Foundation, at their office in New York City. This year it happened to be on Friday the 6<sup>th</sup> of June, the Swedish national day. After several presentations and a pleasant lunch, we were left to explore New York City on our own with Circle line boat tickets generously donated by Mr Karl Andrén at New York Cruise Lines Inc. We decided to take up on the offer that very afternoon. Having missed the boat cruise which we'd originally intended to take, we ended up using our tickets on a boat ride called "The Beast". The boat ride with "Mad dog" and "Wild thing" as captains, took us out to Ellis Island and to the Statue of Liberty. It goes without saying that it turned out to be a wild, crazy and wet boat ride! Revived by that refreshing boat ride we took the opportunity to explore the parts of downtown Manhattan on foot. Our own improvised tour took us to Wall Street, Ground Zero, City hall, China town and Little Italy.

Determined to explore the shopping aspect of New York City, the following day was entirely dedicated to shopping. Soon realizing though that it would be hard for Therese and I to keep up with the guys, we split up in different groups leaving us two girls to do shopping in our own

pace. But leaving two girls all alone to do as much shopping as they want, or should I say as much as their credit cards would allow, can be really devastating when checking the account balances... In any case, it was great! Running from store to store with my hands full of shopping bags, while trying to find cover for the pouring rain, gave me a taste of what being a New Yorker would be like, and I loved it!

The finishing touch of our New York City stay was the experience of going to a Broadway show. Since it was our last evening together as a complete group of seven we wanted to see it off with a bang. Luckily, the famous Broadway musical Rent didn't let us down. As we excitedly walked back to our hotel later that night, we passed by a lit up Empire State building completely covered by fog. The plans of going up to the top were then chattered by the announcement of zero vision. It was disappointing to hear, but for those of us with internships on the east coast there was fortunately still time for a quick visit before leaving New York City.

Our last day in New York City was filled with lots of good byes. Our time in the city was up and the moment had come for each and one of us to continue our separate journeys. As we all nervously went different ways heading for an unforgettable and wonderful summer, I knew that my love for the city of New York would be everlasting and that sooner or later I would be back!





Memories of summer 2003 Memories of summer 2003 Memories of summer 2003

An unforgettable summer



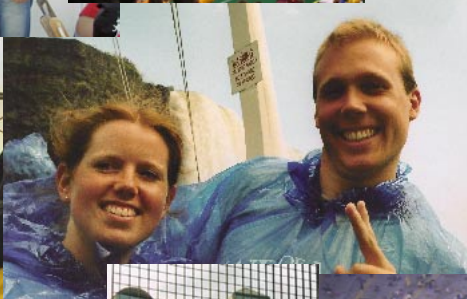
An unforgettable summer

An unforgettable summer



An unforgettable summer

An unforgettable summer



An unforgettable summer

An unforgettable summer



An unforgettable summer



Memories of summer 2003 Memories of summer 2003 Memories of summer 2003





## **Ge näring åt din nyfikenhet - börja forskarstudera på Elektrotekniksektionen**

### **Skapa dig en unik bas för Din yrkeskarriär i akademi och näringsliv**

Att forskarstudera ger dig stort utrymme för kreativitet och frihet men också tryggheten att jobba i team. Du lär Dig att på ett systematiskt sätt formulera och besvara frågor, får en fördjupad träning i pedagogik och utvecklar din förmåga att kommunicera i tal och skrift. Forskarstudier ger dig också möjlighet till internationell arbetslivserfarenhet och är en unik bas för Din yrkeskarriär i akademi och näringsliv!

### **Forskarstudiernas omfattning**

Doktorsexamen motsvarar fyra års heltidsstudier. Licentiatexamen är ett etappmål efter två års forskarstudier men kan också utgöra slutexamen. Doktorandtjänster varar normalt i fem år varvid 20 % av tiden ägnas åt olika institutionsgöremål, oftast undervisning.

### **Forskningskompetenser vid E-sektionen**

Du kan välja bland ett brett spektrum av forskningsområden. Forskningen relaterar i stor utsträckning till elektromagnetiska fält och dess växelverkan med materia samt sändar/mottagarproblem i samband med antenner eller tillämpningar inom elkraftteknik och energitransport. På systemnivå innefattar verksamheten elektroniska kretsar, signalbehandling, bildbehandling, informationsteori, reglerteknik, tillämpningar inom medicinen, elektronik för astronomiska observationer (Onsala Rymdobservatorium) och för globala miljöstudier, bland annat från satellit. Vi bedriver även forskning kring morgondagens komponenter för mikroelektronik, högfrekvensteknik och fotonik.

### **Hur får jag veta mer?**

Besök E-sektionens webbsida på [www.ee.chalmers](http://www.ee.chalmers) och välj forskarutbildning eller skicka ett e-mail till [vice dean-graduate@ee.chalmers.se](mailto:vice dean-graduate@ee.chalmers.se)



# **ELEKTRA-programmet stödjer elkraftteknisk forskning**

ABB, Elforsk (elföretagens gemensamma forskningsbolag) och Energimyndigheten driver gemensamt ett elkrafttekniskt forskningsprogram benämnt ELEKTRA. Programmet omfattar såväl traditionella krafttekniska frågeställningar såsom elkrafttekniska material och elmotordrifter som tillämpning av ny kunskap från andra områden, till exempel informationsteknologi, bioteknologi, rymdvetenskaper, komplexa system mm.

Programmet finansierar för närvarande ca 45 forskarstuderande på ett antal institutioner på CTH, KTH, LTH, MdH och Uppsala Universitet. Avsikten är att långsiktigt stärka konkurrenskraften hos elföretag och tillverkande industri, och samverkan mellan industri och forskarstuderande stimuleras.

Programmet beviljar också stipendier för elkraftteknologer för att täcka de merkostnader som uppstår vid examensarbete utomlands, speciellt inom det elkrafttekniska området.



**Energimyndigheten**

**ELFORSK**

**ABB**

# Hur smart får ett hem bli egentligen?



## Hur smart som helst!

Börja med LexCom Home - ett riktigt hemnätverk som klarar TV, tele och data i samma nät. Till det finns smarta tillbehör som exempelvis konverterar MP3 från datorn så man kan lyssna från alla uttag. Det går också att styra satellitmottagarens kanalval från varje inkopplad TV med IR-linkens fjärrkontroll. Fortsätt sedan med Lexel IHC eller Lexel EIB så kan hela den elektriska installationen i hemmet göras smart - hur smart som helst! Uppdatera dig på [lexel.se](http://lexel.se)

**LEXEL**  
**ELECTRIC**

Lexel Electric AB, Box 1009, 611 29 Nyköping. Telefon 0155 - 26 54 00. Fax 0155 - 21 42 86. [www.lexel.se](http://www.lexel.se), [mail@lexel.se](mailto:mail@lexel.se)

## MÄLARENERGI

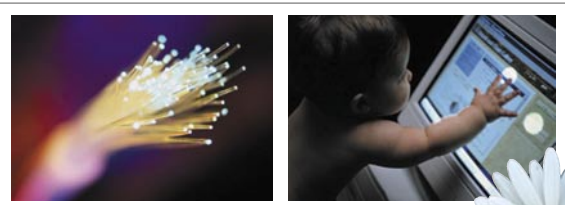
### VI GER DIG LIVETS SJÄLVKLARHETER!


El i uttaget, vatten i kranen och värme i huset.

Vi producerar, distribuerar och säljer energi.

Och Mälarenergi Stadsnät ger tillgång  
till ett öppet stadsnät.

Välkommen till oss på [www.malarenergi.se](http://www.malarenergi.se)



  
**Mälarenergi**

Box 14, 721 03 Västerås e-post: [post@malarenergi.se](mailto:post@malarenergi.se)

**Skiftnyckeln,  
Coca Cola-  
flaskan,  
kullagret,  
Hasselblad-  
kameran,  
Losec...**

Göteborgsregionen behöver fler kreativa  
uppfindingar. Nu hoppas vi på dig.



**BUSINESS REGION  
GÖTEBORG**

Business Region Göteborg AB representerar  
13 medlemskommuner och verkar för att stärka  
och utveckla näringslivet i Göteborgsregionen.

[www.businessregion.se](http://www.businessregion.se)

# Working on Long Island



By Peter Eriksson

After four hectic days in New York City I was on my way to Bellport on Long Island, about one hour east of New York City. I didn't know much about this place that would be my home for the next three months, only that it looked OK on photo and that I was staying with two other guys, one Vietnamese and one Israeli. The train passed through Bronx and Brooklyn on its way out so I felt I had to keep a close eye on my luggage. Later on this turned out to be totally unnecessary.

From the train station I had to take a cab the remaining miles. After about 20 minutes, in the old cab, we entered the gates to the community where the apartment was located. The driver and I were both stunned, the place was huge, houses everywhere, ponds, perfect lawns and it all looked brand new. He dropped me off outside the house and I rang the door bell. The person who opened the door was Wei-Jun Kong, one of my flat-mates. He welcomed me, helped me with the luggage and gave me a tour of the apartment. It was a bit messy



The community

## Rodale Electronics Inc.

**Location**  
Long Island

**Employees**  
~20

**Hosting trainees**  
2003

**Business area**  
Development and manufacturing of military electronics equipment

→ [www.rodaleelectronics.com](http://www.rodaleelectronics.com)

but what could I really expect, when three bachelors in their twenties had been living there. Of course, almost all the floors in the apartment were covered with a thick wall-to-wall carpet. There was cable-TV and a play-station in the living room and high-speed internet in all of the bedrooms. I felt that this apartment would be no problem to settle in to.

My alarm woke me up early on Monday morning, it was time for my first day at work. Since there was no real public transportation, and I didn't yet have my rental car, I had to take a cab again. We pulled up outside the office after about 30 minutes. The office was much smaller than I had expected. I realized that I had never really asked how big the company was. The person who welcomed me at the door was Vincent Maida, the chief engineer. He showed me around the office and introduced me to the whole staff. The company consisted of about 20 people of which only five were engineers. The rest were accountants, purchasers, assembly staff etc. After





At Rodale

the tour Vincent showed me to my desk, it was an old dark brown desk with some pens and papers on it, but no computer. I thought for myself, "Where is my computer, they don't expect me to work without a computer, do they? They'll probably give it to me later." The idea was that I was to borrow a computer from the others whenever I needed one. After a week or two they realized I needed a computer of my own and they got me a laptop.

The engineer who I was going to work with was a man called Donald Ellison. He gave me an introduction of the project that they were working on and after about 30 minutes I got my first task.

### The work

The project that the company was working on was an airborne radar-jammer. It was developed for NATO as a training tool for the NATO-forces. The whole device was packed into a large tube, it looked kind of like a missile, and it was to be mounted under the wing of a fighter-jet, on a helicopter etc. Basically it consisted of a power unit, a radio receiver, a radio transmitter and a controlling part. The radar-jammer detects the radar signal with the receiver, passes it through the controller, and then sends out its own manipulated response with the transmitter. The radar then believes that this is the actual echo from the aircraft and shows a false image.

The part that I was mainly working on was a switch for the receiver that turned it on and off. The reason for this switch was to prevent the receiver from receiving our own transmitted signal. The device was supposed to have four inputs, a 2-bit mode input, a 10-bit delay input, another 5-bit delay input and a 1-bit input telling when to turn off the receiver. It was then

supposed to be turned off for a period of time according to the selected mode and the delay inputs. The output was only 1-bit, simply controlling the on and off switch. Since the device had to be really fast, a maximum delay of approximately 10ns, we found it suitable to use a CPLD (Complex Programmable Logic Device). I programmed this in a language called VHDL, which I didn't know at all when I started.

To learn VHDL I looked at some tutorials and examples and after about four weeks in total, and some redesigning, I could present a fully working device.

Another part that I was working on was the power supply for the radar-jammer. We were supposed to convert the aircrafts three-phase 128VAC to +28VDC, ±15VDC and +5VDC. I made a schematic consisting of

an EMI-filter, a bridge rectifier, a transformer and some DC/DC-converters. Here I also had to find what components to use, components that suited our military specifications. The last task was on the transmitter involving the amplification. Since the radar-jammer was airborne the operating temperature could vary from about -50°C to +50°C. This affected the amplifier, low amplification at low temperature and high amplification at high temperature. This had to be compensated for and I came up with a design that basically used a temperature sensor, a microcontroller and an amplifier. The microcontroller read the temperature from the sensor and then, according to a conversion table, controlled the amplifier.

All together I worked at Rodale Electronics for eight weeks. The time there has been my best working experience yet and I owe them, especially the people I was working with, a great thank you.

### Spare time

In the beginning I spent a lot of time getting acquainted with the area where I lived and the surroundings. Long Island turned out to be less crowded than I had expected. Of course, I lived in the middle and the further towards New York City I came the more crowded it got. I went to a lot of beaches and to South Hampton, the town where the rich and famous have their summer houses. I also explored many of the malls. The best one I found was called Tanger. It was a huge outlet center with all the big brands, such as Calvin Klein, Ralph Lauren, Tommy Hilfiger etc. Later on when my girlfriend had arrived we ended up spending over nine hours there. During some of the weekends me and my fellow CETAC friends met up and made trips to New York City, Washington D.C. and Ithaca. During



Peter Eriksson

Age 25

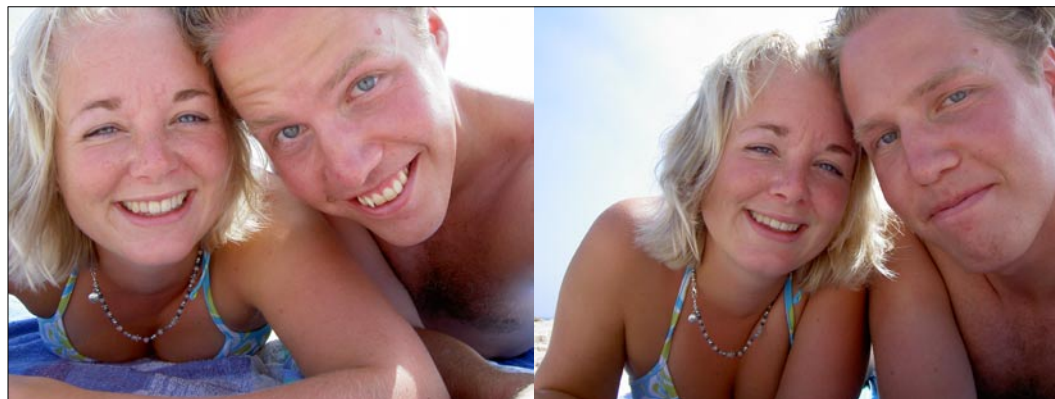
**Majoring in**  
Electrical Engineering

**Hobbies**  
Skiing, nature and adventures

**Best U.S. experience**  
The roadtrip I did with my girlfriend



**“Without any doubt this summer has been the best summer in my life”**



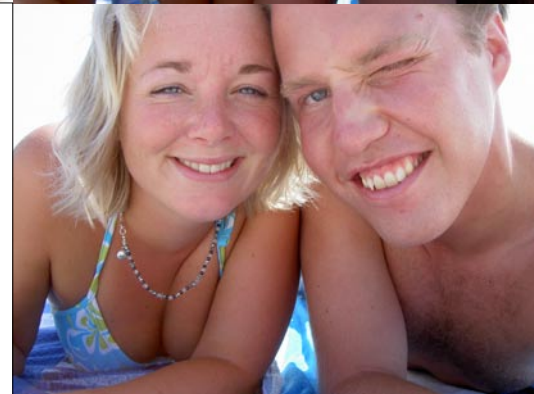
the weekend in New York City we managed to get tickets to the Late Night Show with David Letterman, which was absolutely super and very American. We also went to a baseball game where the New York Yankees met Cleveland.

My girlfriend finally arrived the day after I had finished my work. We had about three and a half weeks to enjoy ourselves and to travel. The first couple of days were spent on Long Island just sightseeing and relaxing. After that we spent three days in New York City. We went on Circle Line’s guided boat trip around lower Manhattan, we saw the Statue of Liberty, Wall Street, Ground Zero, China Town, Little Italy, Soho, Empire State Building, Ellis Island and much more. We also went to a baseball game, New York Yankees

versus Texas, and to the musical “Phantom of the Opera”.

We began our roadtrip by heading up north towards Canada. The places we visited were Newport, Cape Cod, Boston, Québec, St Anne De Beaupre (a mountain outside Québec), Montreal and Mont Tremblanc (a mountain outside Montreal). We got to do a lot of sightseeing, went to nice restaurants, did some mountain hiking and kayaking. The trip took almost two weeks and it was my best trip ever. We didn’t have any plans, we just went wherever we felt like.

The remaining days on Long Island were spent by the pool in front of a book, while we were working on the tan and getting ready for the real life back in Sweden.



Without any doubt this summer has been the best summer in my life. I will always carry with me all the memories and all the knowledge from these wonderful months. I encourage everyone who has the chance, to take it and experience the US the way I did.

**Roadtrip**







# Gott värdskap, aktiv förvaltning

Vårt goda värdskap bygger på modern fastighetsförvaltning med fokus på kundens behov.

Våra lokaler finns i attraktiva industri- och handelsområden i västsverige, nära de stora kommunikationslederna.

*Aktiv förvaltning ger nöjda kunder. Kontakta oss på Harry Sjögren AB om du söker lokaler för kontor, butik eller industri. Ring 031-706 65 00 eller faxa på 031-706 65 29. Välkommen!*

*Harry Sjögren AB*

[www.harrysjogren.se](http://www.harrysjogren.se)

HÖGSBO/SISJÖN • MÖLNDAL • KUNGSBACKA • PARTILLE • ALINGSÅS • BORÅS

## DixiCAD

*För bästa elektronikkonstruktion  
Prisad av Emil och Emilia*

- \* Schemaritning
- \* Simulering
- \* PCB Layout
- \* Termisk analys  
och mycket mera

Digsim Data AB, Teknikringen 1, 583 30 Linköping  
Tel. 013 - 21 20 20 Fax 013 - 21 20 39

## PATENTBYRÅN CEGUMARK<sup>®</sup>

Vi arbetar med patent, mönster, varumärken och företagsnamn i Sverige och i utlandet. Därtill åtar vi oss juridiska uppdrag inom dessa områden.

*Auktoriserade Europapatentombud*

**031-600 700**

Cegumark AB Box 53047 400 14 Göteborg  
Kungssportsavenyn 10 Fax 031-600 725

# FÖRSVARSFORSKNING för vår säkerhets skull

Det nya försvaret förutsätter en effektiv försvarsforskning.

Totalförsvarets forskningsinstitut, FOI, har ca 850 forskare och tekniker på akademisk nivå. Verksamheten spänner över hela det naturvetenskapliga och tekniska fältet - allt från mikrobiologi och kemi, över elektronik och IR-teknik till hydroakustik och aerodynamik. FOI har flera internationellt konkurrenskraftiga vindtunnlar. Dessutom studeras t ex säkerhetspolitik, terroriströrelers utveckling och flygmedicin.

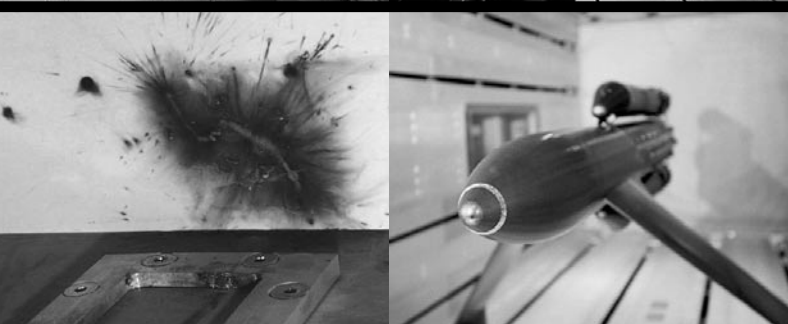
Det här gör FOI till en spännande och dynamisk organisation, och därmed till en attraktiv arbetsplats för avancerade forskare och tekniker. Även försvarsforskningen är internationell, och FOI samarbetar med motsvarande organisationer i många länder, liksom med svenska universitet och högskolor.

En dynamisk forskningsorganisation behöver alltid nya kvalificerade forskare och tekniker.  
Besök vår webbplats [www.foi.se](http://www.foi.se)



**FOI**  
TOTALFÖRSVARETS  
FORSKNINGSINSTITUT

172 90 Stockholm  
Tel: 08-55 50 3000  
Fax: 08-55 50 3100  
[www.foi.se](http://www.foi.se)





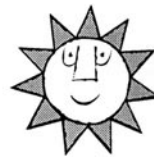
# CACTUS

## Cactus Automation AB

Kroksläotts Fabriker 30, 431 37 Mölndal.  
Telefon 031-86 97 00. Telefax 031-86 97 24.  
info@cactus.se. www.cactus.se.

[www.energi.karlstad.se](http://www.energi.karlstad.se)

[Kontakta oss om elleveranser,  
Ring 054-29 73 51]



# ENERGI

Karlstads Energi AB

 **SENNHEISER**

"ÅRETS BÄSTA INNOVATION"  
Sennheiser PXC 250

För mer info kontakta:  
Sennheiser AB Tel 08-566 16 400. [www.sennheiser.se](http://www.sennheiser.se)



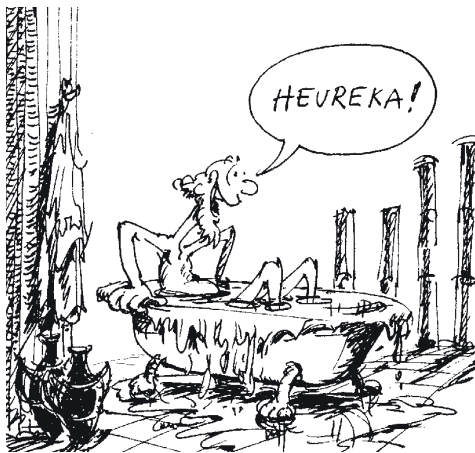
# LANCom

LOCAL AREA NETWORK & COMMUNICATION



## AKADEMISKA HUS

AKADEMISKA HUS I GÖTEBORG AB



Låt fantasin flöda.  
I en god miljö får Du flyt i studierna.

Akademiska Hus äger och förvaltar de flesta av landets  
universitets- och högskolebyggnader.  
Vi gör allt vi kan för att studiemiljön skall vara bra.

Vill ni veta mer om oss, besök oss då på  
[www.akademiskahus.se](http://www.akademiskahus.se)

Göteborg – Mölndal – Borås – Skövde – Skara – Tjärnö – Karlstad

*Vår affärsidé är:  
Akademiska Hus ska leda utvecklingen  
av högskolemiljöer i Sverige och erbjuda universitet  
och högskolor attraktiva studie- och forskningsmiljöer.*



## Meeting Europeans in the U.S.

By David Hedqvist

**T**hree months ago I stepped through the door at Siemens Corporate Research here in Princeton, New Jersey. I walked up to the front desk and told the guard "I am starting today as an intern". Shortly after this my supervisor, Stuart, was showing me around the building, introducing me to people and telling me about the company. After this little tour I don't think I remembered the name of a single one of the persons I had been introduced to. My brain was already too full of different thoughts about America, about finding a place to live, about finding friends and about being away from family and friends for 6 months, to store any new information at that time. Later that day I was introduced to many of the other Siemens interns and soon I realized that finding friends wouldn't be a

problem here. One German intern, Christian, who was about to leave told me that both of the 2 rooms in his house soon would be available. I now live in one of those rooms. Another leaving German intern, Bernard, took me to the Car Rental's to help me get my car, an almost brand new Oldsmobile Alero. It was a bit weird driving a car with automatic transmission at first, my left foot wasn't really happy about it, but I got used to it pretty soon. I can't believe that this is already three months ago!

**Over the next couple of days** I got to know many of the other interns better. There are 30-40 interns at Siemens, most of them from Germany but also many from France, and a few from other European countries such as Poland, Romania and Turkey. I also got my own cubicle and a computer so that, after a couple of days of reading,

I could start working for real. When I first came to Siemens I didn't really know what I was going to work on. I had spoken to my supervisor on the phone once and we discussed some possibilities but nothing was decided. My first task was to get familiar with and fix a few bugs in an application written by a previous intern. The program simulated the transmission of voice data over a network and presented the expected loss of voice quality under certain network conditions. This was just a small task to get me started though and after a week or two my supervisor and me started discussing the main project that I was going to work on during my time here. This project, which I have been working on for a couple of months now, is also about voice over IP, an area that I didn't know that much about when I came here but now find more and more interesting the more I learn about it. I am part of the Multimedia / Video Technology department and although some people in the department work on related topics, the particular project that I work on just involves my supervisor and me. We have also worked together with two guys from John Hopkins University in Baltimore who developed a software library that we now use.

**Working as an intern** at Siemens has been a great experience for many different reasons. First of all it was very easy to get to know the other interns, probably 'cause most of us are in the same situation. Whenever you have question, whether it is about the bank, the rental car or finding the local bar, you can be sure that one of the other interns will help you out. Another nice thing about working here







## Siemens Corporate Research

### Location

Princeton, New Jersey

### Employees

70,000 (Siemens U.S.)

### Hosting trainees

2003

### Business area

SCR conducts applied and exploratory research in selected areas to offer innovations that strengthen and maintain the competitive advantage of Siemens companies.

The company has global responsibility for research in four core areas: software engineering, imaging and visualization, multimedia/video technology, and multimedia documentation.

→ [www.scr.siemens.com](http://www.scr.siemens.com)

“I was confident that I wouldn’t get too much of a sunburn. Stupid, stupid me!”



that the best alternative would be to take a taxi-bus that would take me all the way to the hotel. I sat down in the bus with seven other people, all going to different destinations in Manhattan. After a while the guy next to me picks up his cell phone and starts speaking - in Swedish! It turns out that this guy has been living in NYC for the last 6 years and just came back after his first visit in Sweden over these years. And so I got an unexpected introduction to New York in Swedish on my way from the airport to the hotel. At the hotel I found a note from the others and after calling Peter’s cell phone I managed to find them outside of Chrysler building. It was very nice to see some familiar faces again. The following days we tried to see as much as possible of NYC since some of us wouldn’t have the chance to come back there during the summer. For me though, it was just the first of many New York visits to come.

**Two days later** I took the train from Penn Station, NYC to the Princeton Junction train station where I then got a cab to the hotel that I was going to stay at for the next two weeks.

All Siemens interns get two weeks of hotel stay paid while looking for a room or an apartment. I had also been told that it was a lot easier to find a room once I got here so I didn’t really worry about this before leaving Sweden. And as I mentioned earlier I found a room on my very first day at Siemens, so I’m glad I didn’t put too much effort in finding a room before I left. Over the next few weeks I did lots of stuff together with the other interns. I went to the shore for the first time. The water was cold and the air was hot but since it was rather cloudy I was confident that I wouldn’t get too much of a sunburn. Stupid, stupid me! Of course I got terrible sunburn and just putting on a t-shirt really hurt for the next few days. I was also introduced to a couple of the

is that I can come in whenever I want in the morning and leave whenever I want in the evening. So if one day I feel like getting up at 11 and work late at night, or maybe leave at 2 pm to make it to that concert in New York in time, it is usually no problem. And then of course there are the free soda machines, just imagine if we had those at Chalmers! But enough about work, most of the fun of course happens after work and in the weekends!

**So let’s step back** a little bit in time and now focus on the non-work related part of my time here. It all started a few days before walking through the door at Siemens. I was the only CETAC member on my flight to New York and I felt totally lost when I first arrived at Newark airport in New Jersey. I had the address of our hotel in Manhattan, but not really a plan on how to get there. So after asking around I found





"People walked around with flashlights and there were policemen in every crossing"

pubs/bars that Princeton has to offer. Unfortunately there aren't too many of them and there isn't that much going on in Princeton at all in summer time since most of the students have left. But there are other possibilities too, such as Trenton, which is a 25-minute drive and of course Philadelphia and New York, both of them about 1 hour from here by car.

**At the end of June** Peter and I decided to take a trip to Ithaca, NY to visit Elle, Patrik and Fredrik who were working at Cornell University. Peter went there by bus on Friday afternoon/evening and I drove there in my car on Saturday morning. Thanks to the great directions that I printed out from the Internet I found Patrik and Fredrik's place right away. Maybe I was even there a bit too early, but after several knockings on the door I managed to wake Patrik up. We then met Peter and Elle for breakfast and decided to go for a walk to see some of Ithaca's beautiful nature. And it really was beautiful. We walked and walked and walked, stopped for a swim a few times, took lots of pictures and returned home several hours later with numb legs but in a good mood. We just had to lie down for a few minutes, have a shower and something to drink but then we were all ready to party. We met Tom, Elle's supervisor, had a few beers, visited the local pub across the street, went back to Fredrik and Patrik's place and later went to bed totally exhausted after a great day. On Sunday, after seeing a little bit more of Ithaca, Peter and I headed back towards New York and New Jersey

in my car.

**Just a week after** the Ithaca visit the New York / New Jersey part of CETAC met again, this time in Washington, DC to celebrate 4<sup>th</sup> of July. In Washington we watched memorials of pretty much every important event and person in all of American history. This was very nice but quite exhausting since this probably was the hottest weekend during my stay in the U.S. In the evening of 4<sup>th</sup> of July we sat down at the Lincoln memorial (among lots of other people) and watched the amazing fireworks in the dark sky above the Washington monument, a moment to remember.

**At the end of July** I decided to have closer a look at Princeton University. I had seen most of the town by then and to be honest, the town itself isn't that exciting. With a population of around 16000 people and one main street where all the shops are, it reminds me a little bit of my home town in Sweden, Kristinehamn. Anyway, I went on a campus tour at the university and after having seen Princeton University as well as Cornell University in Ithaca I must say that compared to Chalmers they both look like paradise. There are lots of trees, green grass, park areas and beautiful buildings all over campus.

**August 14<sup>th</sup>,** something interesting happened. A huge power outage blacked out big parts of eastern U.S.A. but even though New York City was total chaos, life building in Princeton went on as usual. The following night, 15<sup>th</sup> of August, I had planned to go to a music club in East Village to hear some live music together with some other interns. During that day power came back in most parts of Manhattan but there were still parts of lower Manhattan that were totally black. We didn't know whether the club we wanted to go to had power or not but decided to give it a shot and go there anyway. Since



David Hedqvist

Age 22

**Majori g i**

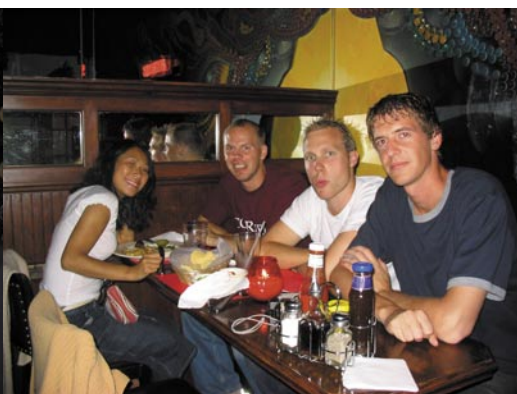
Computer Science and E ngi neeri g

**Hobbi s**

To spend time with fri ends, li ste. to musi , do some sports and play with my computer.

**Best U.S. experi nce**

The weekend i n New York with Base- ball, Archery and Letterman





we are not allowed to drive in NYC with the rental car that we get from Siemens (because of the insurance) we always have to park the car on the New Jersey side and then take the path train (subway) to Manhattan. When we got to Manhattan we grabbed a cab, told the driver the address and were then told that big parts of that area still didn't have the power back. We decided to go there anyway, just to see New York in total darkness. It was really fascinating; people walked around with flashlights and there were policemen in every crossing since none of the traffic lights worked. The only lights you could see were either from the cars or from candlelights in some of the windows. Suddenly, some of traffic lights started blinking. Power was coming back! People in the streets started cheering. The policeman in the street seemed a bit confused, looked up at the traffic lights again, and walked back to his car. We didn't get to here any music that night, actually we didn't really do anything, but still I will remember it for a long time.

**I could probably continue** writing about my experiences here for a couple of more pages if I had the time, but I don't. I just have to mention a few more things though. In July I had an amazing weekend in NYC with some of the CETAC members. It included a baseball game at Yankee Stadium, watching the World Championships in Archery (with Sweden in the finals) in Central Park and attending the Late Show with David Letterman. I have also had a weekend trip to Montreal and Quebec in Canada. To summarize: this summer has been amazing, and even though the other CETAC members have left now I am very happy to stay here for another 3 months. There are still a lot of things I want to do here before leaving.

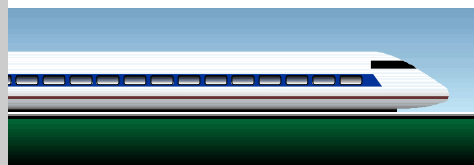


Dags att flytta?

# Falköping

väntar på dig!

1 timmes resväg  
från Göteborg ...



[www.falkoping.se/framtid](http://www.falkoping.se/framtid)

# DALOC

Nordens centrum för  
ståldörstillverkning ligger  
varken i Stockholm eller  
Köpenhamn.

Det ligger i Töreboda.

[www.daloc.se](http://www.daloc.se)

## Strömförsörjning & Apparatlådor

Försäljning, konstruktion och utveckling av:

- Standardprodukter
- Modifierad standard
- Kundenpassade lösningar



# MikroData AB

**Teknik på rätt sätt  
med MyLoc - våra svensk-  
tillverkade industridatorer**

Postadress                      Tel.                      Fax.  
Bilprovarevägen 1        0520-37800        0520-37888  
461 37 Trollhättan



# WÄRTSILÄ

KONSULTER INOM NÄTVERK  
OCH KOMMUNIKATION

# NetConnection

[www.netconnection.se](http://www.netconnection.se)

031 - 15 77 97

Vi erbjuder våra kunder heltäckande tjänster  
avseende rådgivning och implementering,  
programmering, drifttjänster, utbildning samt  
support när det gäller deras nätverksmiljö  
och/eller datorpark.



## WTC Teknik AB

Vi hjälper våra kunder att producera produkter med högre kvalite.  
Det är viktigt att ha en väl fungerade anläggning för att uppnå ett  
bra resultat och vi är det verktyget du behöver för att skapa en ny  
anläggning eller underhålla den befintliga.

Vi hjälper dig att hitta problemet med din anläggning för att sedan  
åtgärda det.

Kontakta oss på [info@wtcteknik.se](mailto:info@wtcteknik.se) för mer information.

Ett företag inom The Paper Province

WTC Teknik AB  
Gräsdalsgatan 2, 653 43 Karlstad

Tel: 054 - 56 81 50  
Web: [www.wtcteknik.se](http://www.wtcteknik.se)



*Ingeniörsfirma*  
**G. KARLBOM AB**

Box 1093, S-181 22 LIDINGÖ, Sweden  
Telefon 08-765 25 10, Fax 08-765 49 13

[www.karlbom.com](http://www.karlbom.com)

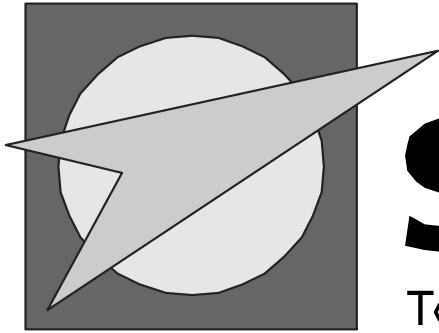
# Trilogik

Ett konsultföretag inom  
driftsäkerhetsanalys och  
systemutveckling

**Trilogik Konsult AB**

Karlavägen 60  
114 49 STOCKHOLM  
Tel. 08-545 83 530  
[www.trilogik.se](http://www.trilogik.se)





# SCANREC

Tomorrow's recycling technology today

Scanrec-aninternationalgroupinenvironmentaltechnologycanhelpbringaboutacleaner worldandabetterenvironment.Weareproudtopresenttheenvironmentalcompaniesthat formtheScanrecGroup.Ourambitionistoprovidefullservicetoallcustomers-andtooffer "tomorrow'srecyclingtechnologytoday..."

Scanrec AB, POBox808, SE-30118HALMSTAD, Sweden  
Tel+4635104320, Fax+4635135918, scanrec@scanrec.se, www.scanrec.se

**BEWICO**

info@bewico.se



www.eldan-sr.com

**ELEIKO**  
**SANERA**

www.eleiko.se

**MULTI-TEKNIK**  
mönsterkort ab

**\* PROTOTYPKORT**

från 8 tim

**\* SNABBSERIER**

från 8 tim

**\* STORA SERIER**

från 14 dgr

**\* CAM-System**

Riktigt CAM-system med DFM  
GENESIS 2000



Artillerigatan 23  
SE-415 03 GÖTEBORG  
Sweden  
Email info@multek.se

Tel +46 31 250180  
Fax +46 31 257014  
ISO9002 & UL 94V-0  
URL www.multek.se

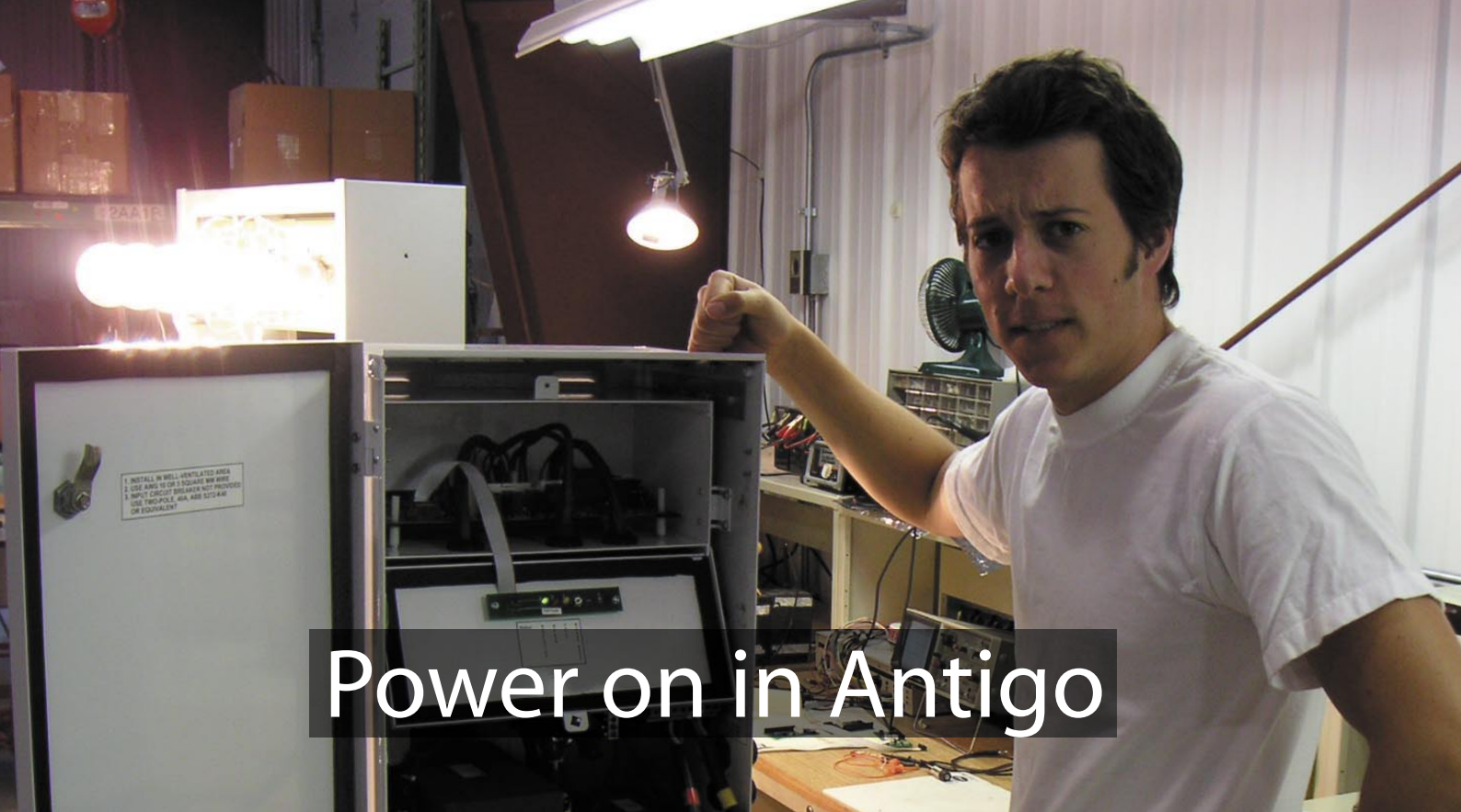
## ➤ Göteborg på tre kvart! ➤

### Marks kommun erbjuder:

- ▶ Attraktiva boendemiljöer. Du får mycket hus för pengarna.
- ▶ Livskvalitet - Du får småstadens möjligheter till aktiv fritid och samtidigt närhet till storstadens breda utbud av kultur och evenemang.
- ▶ Goda möjligheter till företagsetablering och starta eget.
- ▶ Ett kreativt och stimulerade samarbete mellan kommunen och närings- & föreningslivet.

Kontakta:  
Urban Karlsson  
Kommunledningskontoret  
Marks kommun  
511 80 Kinna  
e-post: urban.karlsson@mark.se  
www.mark.se

**Marks**  
Kommun



# Power on in Antigo

## By Mikael Niklasson

The company I work for is called TSi Power Corporation. Founded in 1986, TSi makes a full range of power protection products in the power range of 90 VA to 5000 VA.

Peter Nystrom, my boss and the head owner of the company, bought TSi in 1998. Back then, TSi was placed in Atlanta, but in 1999 Peter moved it up north to a small city in Wisconsin named Antigo.

TSi's customers include the U.S. Federal Government, Centers for Disease Control, Blue Cross Blue Shield, Siemens Medical, Ericsson, Longs Drug Stores and a number of OEM manufacturers.

### My work

My job was very diverse and ever changing. I had a lot of different projects, for example designing, building and testing a three phase line conditioner with Over Voltage Protection (OVP). This particular unit was going to condition the power for a crane in a naval shipyard.

Another project was to be in charge of starting the production of a new circuitboard. This entailed finding vendors, ordering the components, and together with Jason, another engineer at the company, conceptualizing and designing a new fastening plate for mounting the transistors to the heatsink.

## TSi Power Corporation

**Location**  
Antigo

**Employees**  
11

**Hosting trainees**  
2003

**Business area**  
Designs and manufactures power protection products

→ [www.tsipower.com](http://www.tsipower.com)

I am currently working on designing and constructing a three phase resistive/capacitive load used for testing of power line conditioners. This includes collecting information from production and engineering departments to find out essential electrical and physical features of the loadbank, writing a product specification, calculating the heat losses, and finding vendors for the needed parts, with the ultimate goal of assembly and testing.

TSi's future is looking bright. They have a couple of new products, including the exclusive technology within the U.S. to produce a specific Voltage Regulating Precision line conditioner. They are also developing a second generation DC to AC inverter that will be finished sometime in the

near future.

In addition to my duties at the company, I also helped teach a course on basic electronics to a group of locals. It was an interesting experience and a lot of fun for me to be able to help the students.

### Antigo

Antigo is a small town in northern Wisconsin in the midwest of the U.S.. With a population less than 10,000 people, it is actually one of the larger towns in the northwestern quadrant of the state. It is primarily a farming community growing mostly potatoes, and, being in Wisconsin, has many dairy farms. It is a typical American city, with a grid pattern street layout and typical houses. A large portion of the county's income comes from tourism associated with hunting. Deer hunting in the fall is particularly important to the area.

### Free Time

It isn't difficult for me to find activities to fill my spare time because everyone has been so nice to me. Many of the people I have met are eager to take me to places and show me around. They are also very curious about Sweden and Lysekil, my home town. Some activities I engage in on a regular basis are fishing, golfing, playing basketball with friends, and going to the movies. There have also been families that have frequently invited me to their



homes for dinner and visits.

One of the families I have become friends with owns a farm close to town. I have spent a great deal of time there helping with chores. We also ride all-terrain vehicles (ATVs), go horse back riding, and we have begun bating the deer stand for the upcoming hunting season. To prepare for the hunting, I am taking a Hunter's Safety course.

One of my friends happens to be a local deputy for the county. He has taken me along several times while he is patrolling so I have seen the darker side of Antigo and the jail.

Outside of Antigo, I have visited Greenbay, Madison, and Minneapolis, three larger cities in the midwest. Greenbay is home to the state's football team, the Packers, the most popular football team in America. It was very difficult, but my friend managed to get tickets to a pre-season game, so I was able to go to the new Lambeau Field and see the Packers lose. Madison is Wisconsin's capitol and is home to a college with almost 40,000 students. I visited the Capitol building, which is modelled after the Capitol in Washington D.C. We also saw a concert after being lost and going all the way to Illinois before we made it. In Minneapolis I visited a classmate from Sweden who is a foreign exchange student at the University of Minnesota. Minneapolis is a really nice town and we went to a typical American kegger. A kegger is a large college party with tons of beer. We also went to a football game to see the college team. And we went to the Mall of America, which was huge.

One very popular activity in Antigo is camping. Some of my friends took me to Minoqua, a town north of Antigo that draws many tourists. There we went go-carting, miniature golfing, and made a bon fire. This coming weekend we are going camping in the upper peninsula of Michigan, which is supposed to be really beautiful and look very similar to Sweden. While there, we will bike on trails by Lake Michigan.

### Conclusion

The time I have spent here has been a very valuable experience to me. My English language skills have greatly improved, which was one of main reasons for coming. Before I came here, I was thinking that there would be some lonely nights, sitting in my apartment with nothing to do, but one thing I have learned about Americans is that they are really hospitable and friendly from the way they have taken really good care of me and kept me busy. I have learned a great deal about engineering, specifically in the power electronics area. Since TSi is a rather small company, I have had the benefit of great involvement and I have felt like a big part of the company. This gave me good insight into how to run a small company and how the different parts of the company function together. I also learned a lot from my boss Peter Nystrom. He and I have discussions on an almost daily basis about how to run a business and economics. But I also learned a lot from him about the American culture, law and society as well as cultures and laws in other societies. Mr. Nystrom is originally from Sweden, but moved to the U.S. over 20 years ago, giving him an interesting perspective on these



**Mikael Niklasson**

**Age** 21

**Majoring in**  
Electrical Engineering

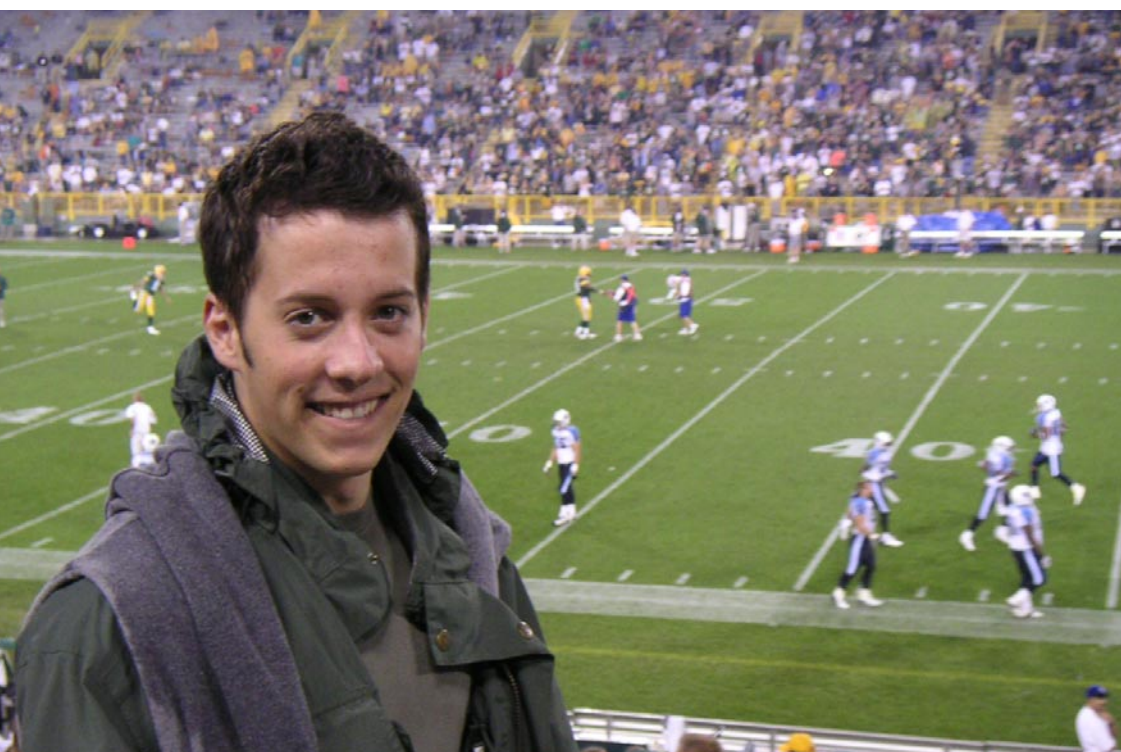
**Hobbies**  
Golf, fishing, ATViing, hunting, cooking, working out

**Best U.S. experience**  
My friends

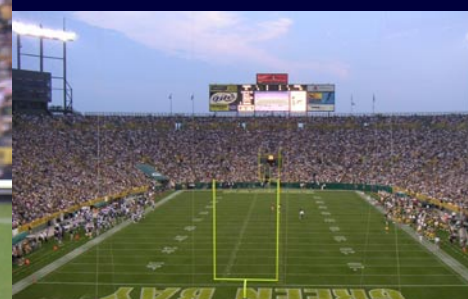
topics.

### Acknowledgements

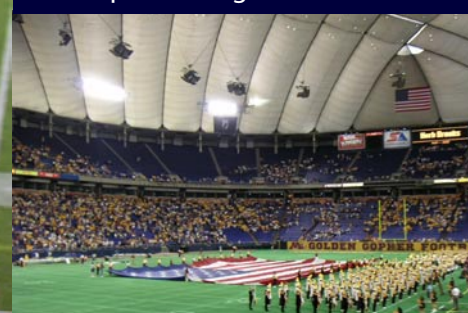
I have met many new people that I believe are friends for life and I hope I can go back to Antigo some day and visit them. I would like to thank them for making my time over here as pleasant as it could be. I want to thank the entire staff of TSi, specifically Nam Paik, Hans Ziegler, Peter and Viveka Nystrom. Without them this great experience would never have taken place. I also want to thank all our sponsors as well as the American-Scandinavian Foundation (ASF) who were also a big part of making this trip come true.



**The Packers**



**Minneapolis college team**



## SHELL RAFFINADERI AB

Box 8889

402 72 GÖTEBORG

Tel: 031-744 60 00



Ett helägt dotterbolag till AB Svenska Shell.

Ett medelstort raffinaderi inom Shellgruppen, som helt eller delvis äger över 50 raffinaderier och har 110.000 anställda världen över.

I Göteborg är vi ca 200 anställda.

Raffinaderiet har en kapacitet på 4 miljoner ton råolja/år.

Vi ligger långt fram i utvecklingen med bl a spillvärmeåtervinning och världens första CityDiesel-anläggning.

1997 blev Shell Raffinaderi AB det andra raffinaderiet i världen, som registrerades enligt EMAS samt certifierades enligt SS-EN ISO 14001:1996.

## LB - ELKONSULT AB



*Alltid i ledningen  
på Chalmers...*

**031-27 53 80**

[www.lb-elkonsult.se](http://www.lb-elkonsult.se)


[info@lb-elkonsult.se](mailto:info@lb-elkonsult.se)

## VI TYCKER OM FÖRETAG!



Därför försöker vi göra det lite lättare att vara företagare genom att lyhört hålla en hög service. Dessutom kan vi skryta med att Lerumsborna har en av Västra Sveriges högsta utbildningsnivåer.

Hör av dig till Näringslivsansvarig så får du veta mer.  
0302 - 52 16 16  
[hans.parck@lerum.se](mailto:hans.parck@lerum.se)

 LERUMS KOMMUN

**PROGRESSIVE**   
**MARKETING** 

**PR & Communication**

Your image is our business !

Phone: +46 31 84 64 00 E-mail: [info@promarketing.se](mailto:info@promarketing.se)

 **POWER-ONE**<sup>®</sup>

nyskapande och ledande  
inom kraftelektronik

Power-One Power Solutions AB

Stubbsundsvägen 17

131 41 Nacka

Tel: (+46)(0)8 556 970 30

Fax: (+46)(0)8 556 970 49



**www.holec.se** För mer information om...

**TABULA**  
690V ställverk

**SVS & Xiria**  
12-24kV ställverk

**Magnefix**  
12kV RMU ställverk

...kontakta oss:  
Holec AB, Box 50105, 202 11 MALMÖ  
Tel: 040-43 88 40 Fax: 040-43 88 59 E-mail: info@holec.se

**industri repro**  
GÖTEBORG AB

- Instrumentpaneler, lådor och skyltar
- Maskin- och tunnplåtsarbeten
- CNC-styrd stansning och fräsning
- MIG- och TIG-svetsning
- Trycklayout och screentryck
- Eloxering, normal, färg och hård
- Datorstödd konstruktion och design

031-44 91 50  
Telefax 031-44 99 60  
Eckensväg 32, 433 33 Partille

**Electrolux**

Electrolux Professional AB är ett bolag inom Electroluxkoncernen som marknadsför storköksutrustning på den svenska marknaden samt på den globala marknaden avseende marina lösningar. Kunderna är bl.a hotell, restauranger, storkök och kryssningsfartyg.

Electrolux Professional AB  
Metallgatan 2 – 4  
44182 Alingsås

Telefon 0322-74000  
Telefax 0322-639830

Sök oss gärna på vår hemsida för ytterligare information  
[www.foodservice.electrolux.se](http://www.foodservice.electrolux.se)

**GUNNEBO**  
*For a safer world*

[www.gunnebo.se](http://www.gunnebo.se)



**N** ger dig ledning in i framtiden

För teleoperatörer, energibolag och fastighetsägare är Nexans en viktig partner. Med 19.000 anställda i 20 länder hör vi till världens största leverantörer av kablar och komponenter för el och telekommunikation.

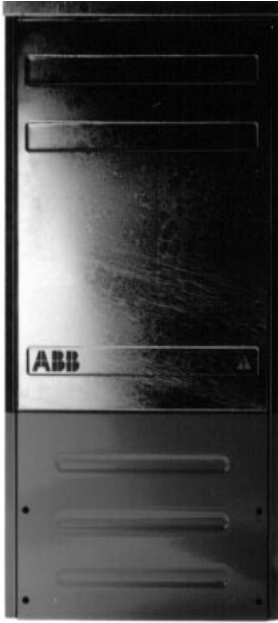
Vår anläggning i Grimsås i Tranemo kommun har ansvar för produktion, konstruktion, logistik och marknadsföring, i Sverige och ett flertal andra marknader. Har du högskoleutbildning inom dessa ämnesområden eller inom ekonomi, vill vi gärna träffa dig! Vi kan ge dig ledning in i framtiden.

[www.nexans.se](http://www.nexans.se)

**Nexans**

Framtiden genom Nexans.

Nexans i Sverige är: Nexans IKO Sweden AB • Nexans Heating Cables (Matema AB) • Axjo Kabel AB



## Hur kul är ett kabelskåp?

Vi frågade våra kunder vad de ville ha. Sedan tog vi fram det\*.

Nu byter Sverige kabelskåp.

\* CDC97 är resultatet av ett spännande samarbete mellan tekniker, kundrepresentanter och en av våra större industridesigners. Detta samarbete har resulterat i en rad tekniska och produktionstekniska innovationer. Det är kul.

**ABB Kabeldon**

ABB Kabeldon AB, Box 531, 441 15 Alingsås, Tel 0322-770 00



**VILL DU VARA PÅ RÄTT PLATS**

**I RÄTTAN TID ANVÄND**

**ELEKTRISKA SERVOSYSTEM**

**SKIVROTORMOTORER**

**SYNKRONMOTORER**

**LIKSTRÖMSMOTORER**

**SERVOMOTORER EX**

**SPINDELMOTORER**

*Beställ vår "Hjälpreda" för beräkning av servon*

**CRM**  
system ab

Pentavägen 5C

187 30 TÄBY

TEL 08-7922790

FAX 08-7583977

# SecureCom

Secure Communications

**VI KAN DATASÄKERHET**

\* Säkerhetsanalys \* Åtgärdsförslag  
\* Genomförande \* Underhåll

Din datainformation är värdefullare än du tror!  
Vi hjälper dig att skydda den.

**Telefon 0322 - 144 51**

## Vill du vara med och bidra till bättre ljud på framtida konserter?

Kontakta [klas@labgruppen.se](mailto:klas@labgruppen.se) om du är intresserad av att göra exjobb. Det kan involverar elektro akustik och DSP alternativt kompensation av högtalarelement

# LAB.GRUPPEN

Ett företag inom TC Group, se [www.tcgroup.se](http://www.tcgroup.se)

## Söker ni komponenter från likström till ljus?

**Kontakta oss, vi är er leverantör**

 **Richardson Electronics**  
Engineered Solutions

**SANGUS**

08-564 705 90 [www.rell.com](http://www.rell.com) [www.sangus.se](http://www.sangus.se)

## Tranemo är landet när det är som bäst!



**TRANEMO**  
**KOMMUN**

En del av Sjuhäradsbygden

Näringslivet i Tranemo präglas av läget i Sjuhäradsbygden och av att vi gränsar mot Småland. Här finns många framgångsrika företag som använder ny teknik i sin produktion och som har en avancerad utveckling av sina produkter.

Många av dessa företag behöver din kompetens för att möta morgondagens utmaningar!

*Vill Du veta mer? Ring oss gärna!*

**Tranemo kommun** tel 0325-790 00, fax 0325-771 32





**Chalmers University of Technology in Göteborg on the west coast of Sweden, was founded in 1829 and it is one of Sweden's foremost technology and engineering sciences universities. About 40 per cent of the country's graduate engineers and architects were educated here. The university's annual turnover is SEK 2.1 billion (USD 260 million) (2002), two thirds of which is used for doctoral programmes and research.**

## 8000 students

Chalmers offers undergraduate and post-graduate learning. The university has 6000 students in its MscEng and MArch programmes (4,5 years of study) and another 2000 in BScEng, BSc and merchant marines programmes (3 years of study). There is also an extensive programme for continual professional development learning.

There is 2400 faculty, technical and administrative staff, and 1000 doctoral students.

Important research projects are carried out in the main engineering sciences as well as in technology-related mathematical and natural sciences. Chalmers has a good international reputation and 14 international MSc programmes are run in English, attracting students from around the world.

## Research in world class

Research at Chalmers ranges from mathematics and natural sciences through to engineering, industrial sciences and community development.

Some of the main areas are environmental sciences, micro- and nanotechnology, information technology and bioscience. In some of these areas research is very strong and definitely world class.

## Ties to industry

Since the start the university has close ties with the business community in west Sweden and beyond. Some twenty scientific centres are run together with industry as well as six national centres of excellence.

Chalmers also specialises in managing and developing know-how. Working alongside different organisations in its network it can help companies and individuals nurture ideas from conception to realisation. Together with its partners, the university offers development potential for products, technology and people. The university's assignment training and higher education courses are designed to increase the knowledge of professionals, and tailor-made solutions are possible. One example is a global Automotive Safety Engineering Course developed and delivered for General Motors' engineers.

Chalmers has its own science park, Chalmers Science Park, where knowledge and the innovative drive from business fuses with academic expertise. The science park offers space to science-intensive companies for applied research and innovative product development in co-operation with Chalmers 60 university research departments.

The university also has a role as incubator - creating a tailored environment where young companies with new ideas from Chalmers research can grow into strong enterprises. The Chalmers Innovation Centre is charged with promoting this particular area of operations and several hundred spin-off companies have emanated from Chalmers.

Chalmers is divided into eleven schools, corresponding to the principal branches of engineering science and architecture

- Architecture
- Chemical and biological Engineering
- Computer Science and Engineering
- Civil Engineering
- Electrical Engineering
- Environmental Science
- Mathematical Sciences
- Mechanical Engineering
- Microtechnology and Nanoscience
- Physics and Engineering Physics
- Technology Management and Economics





**EUROTHERM  
DRIVES**

**Din partner inom elektrisk  
drivutrustning**



**Frekvensomriktare  
Strömriktare  
Servodrifter  
Link drivsystem**

**[www.eurotherm.se](http://www.eurotherm.se)**

Eurotherm Drivteknik AB  
Halmstad 035-17 73 00 (huvudkontor)



**HELUKABEL®**

*Grattis CETAC-gänget!  
Snart kan ni använda er av Helukabels  
breda kabel- och tillbehörssortiment*

Helukabel AB  
Kaptensvägen 6  
177 38 Järfälla

Tel: 08-761 78 05  
Fax: 08-621 00 59  
E-post: [info@helukabel.se](mailto:info@helukabel.se)

**[www.helukabel.se](http://www.helukabel.se)**

**Testa oss!**

Klimat & Vibration

EMC & HF

Givare & Komponenter

Högspänning & Elsäkerhet

**PROXITRON AB**

Box 324, 591 24 MOTALA • Tel 0141-580 00 • Fax 0141-584 95  
[www.proxitron.se](http://www.proxitron.se)

**ALPS**

Vi är världsledande inom elektronik  
och elektromekanik  
till bl.a. data-, telecom-,  
TV/satellit och vitvaruindustrin

Vi utvecklar och tillverkar  
kundanpassade lösningar  
utifrån kundens behov

**ALPS NORDIC AB**

HK: BOX 4025 171 04 SOLNA  
TEL 08-404 32 00

Gbg kontor: GRUVGATAN 37 421 30 VÄSTRA FRÖLUNDA  
TEL 031-758 33 00



**TRUST** IS  
THE KEY TO **JOY**  
AND **SUCCESS.**



FÖR MER INFORMATION KONTAKTA UDDEHOLM TOOLING SVENSKA AB.



**Upptäck  
möjligheterna!**

**www.sp.se**

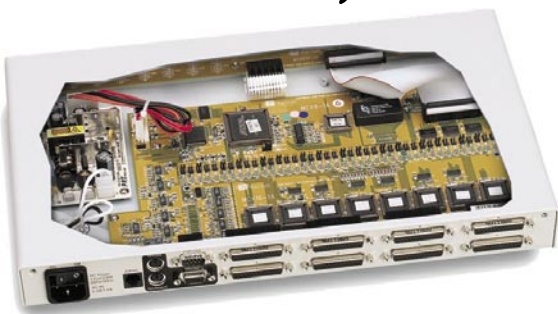
**Från forskning  
till tillämpning**



SP Sveriges Provnings- och Forskningsinstitut  
Box 857, 501 15 BORÅS  
Tel: 033-16 50 00, Telefax 033-13 55 02  
Internet: www.sp.se, E-post: info@sp.se

**www.sisaco.se**

*Kvalité  
rakt igenom!*



**Raritan**  
SERVERVÄXLAR

**AV-utrustning**  
från världens ledande leverantörer!

**Extron** **ALTIMEX™** **KRAMER**  
**INLINE**

**sisaco ab** Box 11038 - 161 11 BROMMA - Tel: 08 - 25 61 00

**SEK Svenska Elektriska  
Kommissionen**

**SEK svarar för svensk medverkan i europeisk  
och internationell standardisering på elområdet**

Experter från tillverkare, användare, myndigheter och  
provningsinstitutioner medverkar i utarbetandet av  
tekniska regler som rationaliserar verksamhet under alla  
stadier - från projektering till drift och underhåll - samt  
underlättar handeln över gränserna.

I allt väsentligt bedrivs standardiseringen på elområdet för  
elektriska system och produkter i internationellt eller  
europeiskt samarbete i IEC respektive CENELEC, i vilka  
organ SEK är svensk medlem.

**CENELEC** European  
Committee for  
Electrotechnical  
Standardization

**IEC** International  
Electrotechnical  
Commission

SEK, Svenska Elektriska Kommissionen  
Box 1284, 164 29 Kista  
tel 08-444 14 00, fax 08-444 14 30  
e-post sek@sekom.se Internet: www.sekom.se



# Med Elajo in i framtiden

*Elajokoncernen finns idag representerad på ett 50-tal orter, framförallt i södra Sverige. Våra drygt 1000 medarbetare inom de rörelsedrivande divisionerna: Elinstallationer, Mekanik/Energi, Norge och Kvalitetsteknik omsätter tillsammans ca 900 MSEK.*

## **Elinstallationer/Telekom**

Division elinstallationer är i dag ett av Sveriges största elföretag och kan erbjuda sina kunder allt från totalentreprenader till enklare servicejobb. Verksamheten omfattar installationer, reparationer och service inom områden som kraft, belysning, svagström, styr- och reglerteknik, kyla och värme. Vår Telekomavdelning bygger sig allt starkare och kan erbjuda dig allt inom data, larm, säkerhet och kommunikation.

## **Mekanik/Energi**

Division Mekanik/Energi arbetar med tillverkning, montage och service av produkter och anläggningar inom energi och miljöområdet där höga kvalitets- och myndighetskrav ställs. Exempel på sådana områden är kärnkraftsindustrin, naturgasanläggningar och kemisk industri. Divisionen kan med hjälp av specialistkunskaper inom konstruktion, styr- och regelteknik, strålskydd och radonmätningar ge sina kunder totalkonultation från idéstadie till färdig produkt.

### **Elajo Invest AB**

Box 904, Förrådsgatan 6  
572 29 Oskarshamn  
Tfn 0491-76 76 76, fax 0491-148 00  
E-post [invest@elajo.com](mailto:invest@elajo.com)



**elajo**

[www.elajo.se](http://www.elajo.se)



# Turnkey process facility for the storage of natural gas in rock caverns



First facility for storage of natural gas in rock caverns in Sweden

The methods that are used abroad to build rock caverns for the storage of natural gas are not suitable for the types of rock found in Sweden. By using the new LCR (Lined Rock Cavern) technique, which involves rock caverns being clad with steel plate and pressure-absorbing concrete through lining, Elajo Mekanik AB has built Sweden's first process facility for the storage of natural gas in a rock cavern at Skallen near Halmstad. The facility is connected to the natural gas grid between Malmö and Gothenburgh.

Elajo's skill and experience are built into the project

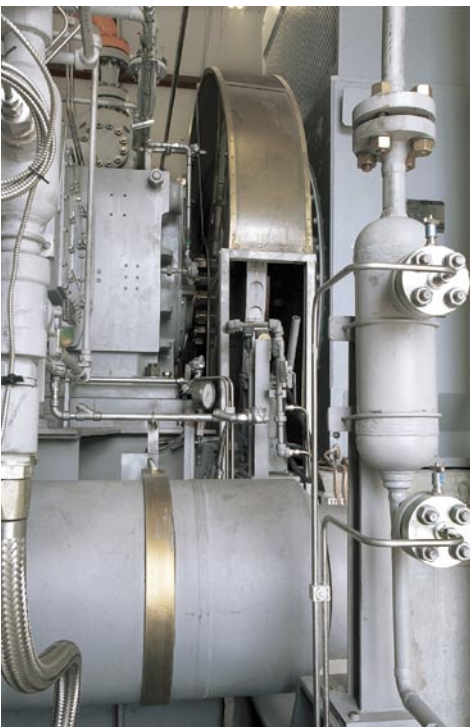
In the Skallen project, Elajo Mekanik AB purchased, supplied, installed and commissioned the complete facility, including compressors, coolers and other auxiliary systems. Starting stopping and security functions are all integrated in the overall control systems supplied by Elajo. Software for PCL equipment for control functions, SCADA systems, etc., is created by Elajo. The process facility has been built for unmanned operation. The monitoring of operating phases can be managed from the central control room in Malmö.

Implemented with stringent demands for quality, security and the environment

Elajo Mekanik AB sets stringent quality objectives. At the start of the project, a project manual was drawn up including timetables, quality procedures, job descriptions and various administrative functions. Prior to commissioning with gas, test procedures were drawn up and implemented covering all the individual components, both separately and then in the systems they belong to, and finally in relation to other interfaces.

An MTR (Mechanical Test Run) was carried out with the compressor system to check for any vibrations, to measure storage temperatures and to register starting currents. During commissioning with gas, all operating phases, functions and various capacity requirements were tested.

The facility was handed over to the customer in April 2001 and is now used in commercial operating in the natural gas grid.



Elajo Mekanik AB  
Förrådsgatan 8  
572 29 Oskarshamn  
tfn 0491- 76 76 00  
fax 0491- 820 29  
e-post mekanik@elajo.com

**elajo**  
www.elajo.se

# ROADTRIP CALIFORNIA

By  
Fredrik Larsson

The journey of Fredrik and Patrik started in Los Angeles, where we lived at a friend of Fredrik's who is studying to become a dentist. We were going to travel around in California for two weeks in a rented car.

The first day we visited Hollywood. We saw the famous sign of Hollywood from a close distance. The Hollywood bowl is an old amfi-theater in a natural valley. Beatles played here once. After that we saw the walk of fame at Hollywood Boulevard, where famous singers and actors have their names engraved in the street.

In Beverly Hills there were a lot of luxurious homes. Almost all of them had signs that said "Security guards" or "Armed Response", along with heavy gates and hedges. It was therefore not possible to see anything. Also, unfortunately enough, we never did see a single celebrity, but we certainly did our best by acting like paparazzis with our cameras in this wealthy district.

The next day we spent our time on the beach. Starting at Santa Monica Beach we saw the well known scenes from "Baywatch". This tv-series was recorded right on this beach. It was really cool to be here. To see the pier, the lifeguards and those yellow lifeguard trucks at the beach. A couple of days later Fredrik accidentally ran into Alexandra Paul (Steph), one of the girls from Baywatch, sitting on a bench in Westwood.

Close to Santa Monica is Venice

Beach. Along it's beachwalk there are a lot of salesmen. And some of the stuff is quite cheap. Like sunglasses. Further down at Venice Beach there is a place called Muscle Beach. That is an outdoor-workout. We were hoping to see some really muscular guys, but we only saw some thin creatures.

If you want to do some inexpensive shopping downtown L.A. is a great place to be. Here you can buy all kinds of clothes. Most of the people working here is latino afroamerican people.

After a couple of days in L.A. we started to move to the south. The first stop was at Laguna Beach, approximately one hour by car from L.A.. Laguna Beach is a fantastic beach. It's like a dream. The water is beautiful with big waves. There are many surfers there, because of the big waves, several meters high, close to the shore. After this truly great stop at Laguna Beach we continued our road trip further south, down to San

Diego. San Diego is the sixth biggest city in the US and the city that has the most tourists. A major part of the city is controlled by the US military. The city has a big naval base, with submarines and aircraft carriers.

San Diego and it's immediate surroundings have a lot of beaches. Pacific Beach, Mission Beach, Ocean Beach, Coronado Beach, Imperial Beach to mention some of them. At Coronado Beach we learned how to surf on the waves using our own bodies. It sounds much harder than it is. It is easy and funny. The only tricky thing with it is to be in the right position in the wave front. When you succeeded with that you could ride 30-40 meter on the wave.

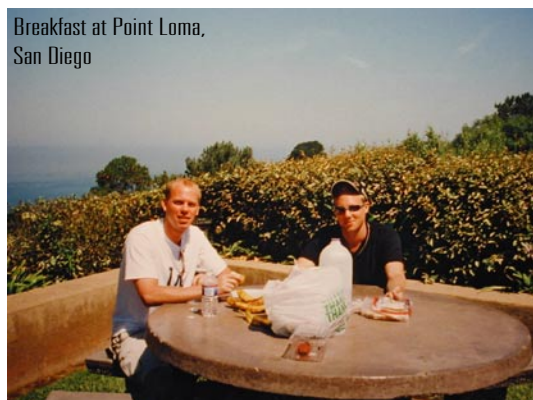
San Diego is very famous for it's Gaslamp District, located in downtown San Diego. The Gaslamp District consists of 16 quarters. It has red-coloured sidewalks and the streetlamps was originally run by gas.

Nowadays they are powered by electricity.

Saturday morning we had breakfast at Point Loma. We had a view of the Pacific Ocean all the way to the horizon, where the sky and the water seemed to merge. A magnificent feeling. Point Loma is a peninsula with an elevation over 120 m. When you saw the Pacific you could at the same time see San Diego Bay.

Tijuana, Mexico

Now our pulses started to rise. We had been warned about going to Tijuana, Mexico. Our pulses rose even higher when



"...unfortunately enough, we never did see a single celebrity, but we certainly did our best by acting like paparazzis"





Venice Beach - The Baywatch Beach

we, driving 70 mph, on our righthand side saw the sign "Last exit USA" four lanes away, knowing that we weren't allowed to drive our car in Mexico. Luckily it was possible to do a U-turn before the border.

When we had parked our car (at the American side) we walked into Tijuana. Entering Tijuana we felt a decrease of the standard of living. People are poor in Mexico. Partly the city seemed to consist of sheds, where people actually lived their lives. Tijuana is of course a "border-city" with lots of influences from the US and tourists from California. So we never got a feeling of the true Mexico. We didn't have time to see more of Mexico, cause we had to prioritize. Tijuana was a very cool experience. There were street vendors everywhere trying to sell you trinkets and knick-knacks. It didn't take long until we understood that this is a town where you can bargain a lot. The city also offered cheap quality products. Fredrik bought a beautiful chess, made of solid marble for less than 200 swedish kronor.

When we had been in Tijuana for a

couple of hours it felt great to come back to USA. Back to safety! Being in Tijuana is a great memory. Something really nice to bring with us in our lives.

### The deserts

California has a great variety of different natures, plants, animals and remarkable cities. California seems to have it all. Snow, great beaches, big deserts and some of our worlds biggest natural phenomenas, thinking of places like Grand Canyon and Death Valley. As well as both the worlds largest and highest trees.

We had now seen Los Angeles, San Diego and Tijuana. Now we wanted to go to Palm Springs, Joshua Tree National Park and then going into State Nevada and Las Vegas. The road between San Diego and Palm Springs goes in the middle of nowhere. Right in the desert. The temperature is very high, in the day over 40 °C. But we travelled this road at nigh. It was great. In the spotlight from our car we could see very many cacti along the way. We didn't see many cars driving by during

"Suddenly we drove past a huge casino. This was lying alone in the desert"

Zabriskie Point, Death Valley



those hours. We could hear prairie wolves and other "desert sounds" scaring us.

Suddenly we drove past a huge casino. This was lying alone in the desert. Strange! And funny! We slept at Motell 6 in Rancho Mirage, which is a sort of suburb to Palm Springs. Palm Springs is a desert oasis. Many Hollywood stars come here on weekends for relaxing. Some of the quarters resembles those we saw in Beverly Hills. The area has approximately 100 golf courses. The city is surrounded by mountains. At one of the mountains (the highest one) you can take a tramway up to the top of it (elevation 2700 m). Here we had a wonderful view. Just like the view from an airplane.

Joshua Tree National Park was created to protect the special Joshua Tree. These trees look like a crossbreed between a cactus and a tree. The names comes from travelling Mormons who thought the trees looked just like Joshua from the Bible raising his hands to God. Joshua Tree National Park is a big park with very few visitors. That made the lonely feeling



Tijuana, Mexico

"Partly the city seemed to consist of sheds, where people actually lived"



"We believe that California is a place everyone should visit at least once in their lives"

Hidden Valley is a valley with stone blocks surrounding it, making it a natural enclosure, used by cattle thieves in the old Western days. Today there is a looped walking path of 1 mile (1.6 km) here. When we were there the temperature was very delightful. The air was dry, with a special taste and smell. It reminded me of the air from a sauna. Even though this was different. The landscape was like taken from a Western movie. It was beautiful and maybe the best experience in California.

There were signs warning us of rattle snakes, but we didn't see any. However, we did see a lot of lizards, both quick and small, 5-7 cm long.

## Las Vegas

Las Vegas is a strange city. It has 1 million citizens, and 60% of them is working direct or indirect with the gambling industry. Every hotel has its own casino. Hotel and casino seems to have been melt together. Most of the hotels are located at Las Vegas Boulevard, called "The Strip". We lived at Tropicana hotel. The hotel prices in Las Vegas are very cheap, because they want you to stay for long

and lose money in the casinos. We stayed here for two nights. Our hotel had a pool where we relaxed during the days. It was even possible to play Black Jack directly from the pool (without leaving the water).

Not far from Las Vegas is Grand Canyon. We decided to take a tour. Starting with airplane from Vegas over the Hoover dam, flying across Grand Canyon, and finally landing in the canyon. The tour then continued by bus to two really nice outlook points offering a magnificent view.

After Grand Canyon we hadn't had enough, so we drove to Death Valley, the hottest place on earth during the summer months. Here we saw the sunrise and how the valley changed colour during it. In Death Valley there is a place named Badwater. This is actually the lowest point on the northern hemisphere (85,5 m below sea level).

From Death Valley we drove all the way down to the coast to take the State Highway 1 up to San Francisco. Highway 1 is not a speedy way. But it is certainly a great road. It is a winding road just along the Pacific Ocean. We stopped the car lots of times, just to

see the view and take pictures.

## San Francisco

After one and a half day on Highway 1 we reached San Francisco. This very famous city that was the center of the flower power movement in the sixties. The city has maybe the worlds most famous bridge, the Golden Gate Bridge. This has been the worlds longest suspension bridge, counting nearly 1300 m between its bridge-pillars. We walked across it. That was really nice.

Close to the Golden Gate Bridge is the prison island Alcatraz. The prison is no longer in use, but Al Capone was once an inmate here. The Alcatraz had maximum security. The water surrounding it is below 10 °C all year long. The current is very strong and there are many sharks here. So the 2 km distance to swim to the nearest shore was a hard time for prisoners who wanted to escape. Officially no one succeeded to escape from Alcatraz. We did the audiotour in the prison. Old inmates and prisoners talked in earphones about the prison, the everyday life and the cells, while you walked around inside the cells.

We didn't have much time left in San Francisco or even in USA. But before we left we did the cable cars. Just like on TV and in the movies.

Our time in California was truly great. California has a lot to offer, with many different environments. We believe that California is a place everyone should visit at least once in their lives.







## Vakuum, människor och miljö

Inom industrin används vakuumteknik bl a för att lyfta, hålla och förflytta. Att använda vakuum istället för människor innebär att onödiga, farliga, monotona och fördyrande arbetsmoment kan undvikas.

PIAB är en global ledare inom vakuumteknik med huvudkontor i Sverige. Vår teknik och kompetens möjliggör lösningar som alltid skonar människor och miljö samtidigt som våra vakuumprodukter kännetecknas av högsta kvalitet, minimal energiåtgång och maximal prestanda.

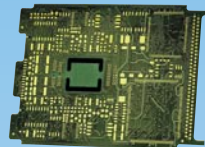


PIAB AB, Box 4501, SE-163 04 TÄBY, Tel 08-630 25 00, Fax 08-630 26 90

[www.piab.com](http://www.piab.com)



## Det mänskliga korthuset



Mönsterkort fordrar mer än teknik. För att vara en stabil leverantör krävs även personliga insatser. Därför består Agetos vardag till stor del av att lösa problem och ge råd om t ex design, CAD/CAM, laminatval, produktionsmetoder, lagerhållning och annan logistik. Vår målsättning är att tillsammans med kundens konstruktörer och inköpare räta ut alla frågetecken.

Alla på Ageto har lång erfarenhet av att arbeta med mönsterkort. Tack vare det kan vi inrikta oss på bl a extra långa kort, extra tunna och precisionsetsade mönster, "blind and buried vias", hög packningstäthet, rigid-flex och vår specialnisch: mönsterkort för högfrekvens-tillämpningar.

"Det mänskliga korthuset" heter Ageto.

# AGETO

MED UTMANINGAR SOM AFFÄRSIDÉ

Ageto AB, Box 2085, 174 02 Sundbyberg  
Tel 08-446 77 30, fax 08-446 77 45, [www.ageto.se](http://www.ageto.se)



**Fredrik Larsson**

**Age** 23

**Majoring in**  
Engineering Physics

**Hobbies**

Sports, working out, doing wood-work, working on my vegetarian website

**Best U.S. experience**

The visit to Joshua Tree National Park, California

# Intelligens Precision Kraft



## MOVIDRIVE®

Flexibel frekvensomformare från SEW-Eurodrive.  
Multiomformaren löser nästan alla drivproblem upp till 90 kW.  
Mer information på: [www.sew-eurodrive.se](http://www.sew-eurodrive.se)

### SEW Eurodrive:s regionkontor:

Jönköping .....036-34 42 00  
Stockholm .....08-449 86 80  
Göteborg .....031-709 68 80  
Malmö .....040-680 64 80  
Skellefteå .....0910-71 53 80

**SEW**  
**EURODRIVE**

Framgångsrika lösningar  
har sitt ursprung i äkta  
kundnytta



Välkommen att kontakta oss på **031-335 36 00** eller läs mer  
om våra kundlösningar på [www.tietoenerator.com](http://www.tietoenerator.com).

**TietoEnator** <sup>TE</sup>

Building the Information Society

## Sjöland & Thyselius

REALTIME SOFTWARE CONSULTANTS

Sjöland&Thyselius Datakonsulter i Göteborg AB erbjuder konsulttjänster inom mjukvaruutveckling för inbyggda realtidssystem.

Vi har funnits sedan 1995 och vi är idag ca 30 medarbetare.

Vi erbjuder våra tjänster i form av:

- Helhetsåtaganden, där vi utvecklar hela system.
- Kompetensutveckling, där vi tillför kunden ny kompetens.
- Resurskonsulting, där vi avlastar kunden vid arbetstoppar.

Vi bedriver vår verksamhet inom två affärsområden:

- Sensor & Control Systems, där vi utvecklar system baserade på sensorer.
- Communication Systems, där vi utvecklar system baserade på datakommunikation.

**Sjöland&Thyselius**  
**Datakonsulter i Göteborg AB**

Flöjelbergsgatan 12  
SE-431 37 Mölndal  
<http://www.st.se>

Tel: +46-31-706 37 20  
Fax: +46-31-706 37 21



Husqvarna tillverkar ett av världens mest kompletta sortiment av kvalitetsprodukter för effektiv skötsel av skogar, parker och trädgårdar.

Vi utgår alltid från våra mest krävande kunders behov och fäster särskild vikt vid pålitlighet, lätthanterlighet och miljöanpassning.

Vårt mål är att hjälpa dig åstadkomma maximalt resultat med minimal ansträngning.

 **Husqvarna**

[www.husqvarna.com](http://www.husqvarna.com)





*Vera & the girls*  
*in*  
California

By Elisabeth Lee

---

**When I told my boss about me and my girlfriends' upcoming road trip to the west coast, all he said was, "Man, you're going to get into trouble!" Throughout our trip, we received warnings from all around telling us to be careful and to stick together as a group. Luckily enough, we never got into any trouble...at least not any trouble that we girls couldn't handle.....**

I had been looking forward to my trip to the west coast from day one, when I found out that I was actually going to the U.S. However, after spending two months on the east coast, saying good bye to it all was harder than I thought it would be. A week after my last day at work, I traded in the east coast for the west coast. Two plane rides later, I'd gone all the way from New York City to Los Angeles, where I would stay at my fellow CETAC board member and friend's, Therese, place. She lived at Redondo Beach, just north of L.A., with the beach right across the road. Killing time while Therese was at work was, in other words, not a problem. Together with my two other friends, who were to join me and Therese on our road trip, I explored L.A. and its surrounding areas. It was amazing to see with your own eyes what they so frequently show on TV and in the movies.

The plan was to take off on our road trip as soon as Therese had had her last day at work. So on Saturday the 16<sup>th</sup>, everything was set and we were all ready to leave.....or at least so we thought. As we went to pick up our rental car, a situation arose where we couldn't sign the car out. Standing there on our intended day of departure suddenly without a car scared us all half to death! Fortunately, three hours and a whole bunch of phone calls later, a new rental car was found. It was with zero expectations and a lot of gratitude that we went to pick up what was going to be our car, our sweetheart, for the next 14 days. She turned out to be a Nissan Sentra of this year's model in a Champagne color and we named her Vera.

Armed with nicknames (another must-have on a girly road trip) and guidebooks, we left L.A. the next day blasting away with Alanis Morissette and the Red Hot Chili Peppers' "Californication" coming out from the loud speakers. As Vera took us up along the coastline on Highway



"It's still a mystery to us, but somehow we came to the conclusion that it'd only take us a three hours drive tops to reach Grand Canyon from Las Vegas"



One, we were overwhelmed by the scenic route. The sceneries were truly amazing and mind blowing. As it turned out, the landscape along Highway One would astonish us all the way up to San Francisco. I would have never imagined California had such a diverse landscape. The sandy beaches gradually turning into cliffs hanging out over the rippling sea, and as the road turned inland, there were huge green fields with mountains in the background. Needless to say, many stops were made along the road at beautiful sceneries and places recommended to us like Big Sur, Carmel and Santa Cruz. There was also this god forsaken little town called Monterey, where we spent a night at the hostel from hell. It wasn't till we'd paid that we discovered the huge pile of regulations and rules like the 11pm curfew and the 6 minutes-limitations of showering. To top it all, we ended up at a local hangout for pool and Swing dance when looking for a decent bar. Why we even considered spending a night there instead of driving to Santa Cruz was, and still is, confusing to us all!

You would think that we'd get better luck in finding accommodation in San Francisco, right? Well, what seemed like a nice and cozy hostel, located fairly close to what we took for the city center, turned out be located right in the middle of the San Francisco's holdout for working girls and other likes. In other words, not exactly the safest area, something we were told

on our first night in town. But apart from that, our stay in San Francisco was absolutely wonderful. We saw Alcatraz, the Golden Gate, Chinatown and much more. San Francisco is truly a beautiful city!



Having come so far up north along the coast, northern California was rounded off with a quick stop in the wine districts before Lake Tahoe. The surrounding nature was beautiful so it was easy to see why the Lake Tahoe area attracted so many tourists every year. Yosemite Park was then next in line on our way to the waiting wild and crazy Las Vegas. Now, before you even say it, yes we had been a bit too optimistic in our plans...we ended up driving 19 hours straight from Lake Tahoe to Las Vegas. The world has seldom seen four girls more tired than we were. After satisfying our sleeping needs, the casinos and Las Vegas were hit hard by four sassy girls out looking for fun.

It's still a mystery to us, but somehow

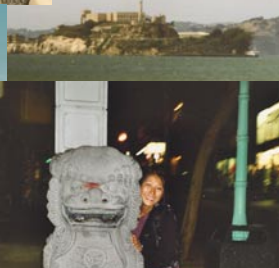
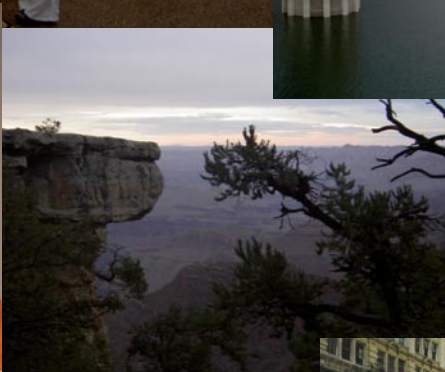
we came to the conclusion that it'd only take us a three hours drive tops to reach Grand Canyon from Las Vegas. Boy, were we wrong or what! The small trip took us the short six hours one way...but it was well worth it! The scenery was amazing! And I went completely wild with my camera taking pictures in every direction.

Our road trip was, sadly enough, slowly coming to an end. After Las Vegas we returned back to California to San Diego, where a day in the sun was waiting. On our last day, Mexico called and a fieldtrip was made to Tijuana for the day before the course was steered up north again. Mexico, or should I say Tijuana, vastly differed from the U.S. The streets were filled with people trying to sell you different kinds of items all to a special price just for you. It was somewhat similar to my picture of what Mexico would be like, even though I know that Tijuana is supposedly completely different from the rest of Mexico. My only disappointment was that I never got a Mexican passport stamp, but now I can at least say that I've been there!

After spending 14 days on the road, time had come for us to say good bye to Vera, California and the U.S. It was a sad and nostalgic farewell, but as they say, all good things must come to an end. We've had a fantastic time and we've seen and experienced America in many unexpected and different ways before that very day when our plane lifted towards New York. Given the chance, I would do it all over again!











# A wonderful summer in Ithaca

By Patrik Ljungvall

The summer of 2003 Fredrik, Elisabeth and I worked at Cornell University, Ithaca. After a great weekend in New York City the three of us took the five hours bus ride to Ithaca, which is located upstate New York. Ithaca is a charming small town (about 30,000 inhabitants) with a beautiful unspoiled nature. Mountains surround the town and it lies next to Cayuga Lake, which is one of the Finger Lakes. During the semester the population almost doubles, due to all the students at Cornell University and Ithaca College.

## The work at Cornell

Elisabeth worked for professor Richard Shealy, while Fredrik and I worked for professor Lester F. Eastman. Professor Eastman wanted us to examine the device characteristics of SiC (Silicon Carbide) power MESFET transistors. The focus was on the comparison before and after passivation, which in this case means that a  $\text{Si}_3\text{N}_4$  layer was deposited at  $300^\circ\text{C}$ . A PhD-student from South Korea named Ho Young showed us how to use the equipment necessary for the assignment and supported us with help whenever needed. Examine the device characteristics are all about measurements, so we did DC-, small

signal- and large signal-measurements on the transistors and wrote down and plotted the results. When all the transistors were measured, a  $\text{Si}_3\text{N}_4$  layer was deposited at the surface and the same measurements were repeated for the comparison. After passivation,

the transistors showed noticeable improvements and we therefore concluded that the  $\text{Si}_3\text{N}_4$  surface passivation is a promising technique to improve the device characteristics of SiC MESFETs.



## Cornell University

**Location**  
Ithaca, NY

**Employees**  
20 000

**Hosting Trainees**  
Every year since 1995

**Business Area**  
Education and research.

→ [www.cornell.edu](http://www.cornell.edu)

## Life in Ithaca

Fredrik and I subletted an apartment with a great location, situated in the part of Ithaca called Collegetown. Restaurants and stores were just around the corner and it took us about five minutes to walk to Cornell. Unfortunately, the guys who lived there before us didn't bother to clean the apartment before we got there. At first, we started to clean it by ourselves but after inspecting the bathroom we decided to get professional help. I hope I never have to see that shower curtain again.

In my spare time, I spent most of my time with Fredrik, Elisabeth and Tom, a PhD-student at professor Shealy's lab. The four of us went bowling, played tennis, hiked or visited restaurants, pubs and cafés. Even though Ithaca is a small town there are a lot of things to do, especially when the weather is good. The first week Fredrik and I walked, hiked and explored the town and the nearby



nature. I was particularly captivated by all the creeks and gorges. We found several good places to swim, some of them with waterfalls.

Celebrating midsummer on the other side of the Atlantic Ocean was a first time experience for most of us. Not for everyone, though. Calle and Anna-Lena, former CETAC-members, paid us a visit and as they did last summer, they stopped at IKEA for herring, chive and sour cream. Since we also borrowed a guitar and Elisabeth printed out Swedish party songs, the midsummer tradition was secured.

We had some truly wonderful days in Ithaca and one of my favorite days was when our fellow CETAC-members David and Peter visited us and we decided to hike along the beautiful Six-mile Creek this hot and sunny Saturday. After hours of walking we were all longing for a swim. However, when we finally reached a nice place to swim there were a lot of people just sitting there seeming to stare up at the same point. It turned out that they were looking at a park ranger that kept people out of the water, since swimming is prohibited at all places without lifeguards. Disappointed, we sat down close to the water but eventually we sneaked into the water when the park ranger was busy or looking in another direction. Another great day was when Elisabeth, Tom, Fredrik, Fredrik's girlfriend Åsa (she visited us for two weeks), and I walked to the Taughanock Falls, which is the highest waterfall in Ithaca. We were wading through a wonderful landscape to finally reach the waterfall where we swam as close as we could get to the fall.

### Three weekends of traveling

On the Fourth of July Fredrik, Elisabeth and I drove to Washington D.C., where we met up with David and Peter. We left Ithaca in our rental car in the middle of the night, since we wanted to see the parade at noon and we made it just in time. There were a lot of people watching the parade and just as many flags, but what really impressed me on



Independence Day were the fireworks later on the evening. We walked a lot this very hot weekend in Washington and of course we saw the White House, the Capitol, Washington Monument, Pentagon and all the famous buildings and monuments.

One week later we drove to Niagara Falls. We first spent about five hours on the American side (but it felt like one hour) watching the falls from every possible angle. The attraction called "Cave of the Wind" took us 50 meters down by an elevator in the mountain and from there we got a close look at the falls. The boat ride "Maid of the Mist" gave us the best view and I am really happy that we took that boat since we never got to see the falls from the Canadian side. Both Fredrik and I forgot to bring our J-1 documents that we needed if we wanted to be sure to get back to USA after being in Canada. We didn't feel like gambling this time, why we chose not to enter Canada.

The weekend after Niagara Falls we took the bus to New York City for a second date with the Big Apple. The first visit in New York City we did the most obvious tourist-stuff like going up the Empire State Building, watching the Statue of Liberty, Ground Zero etc. This time we tried instead to become a part of the American culture by watching a baseball game at the Yankee Stadium. It was really fun and we all helped each other to figure out the rules. I still remember the Yankee-fan we met at the subway who, after he found out that we were not really interested in baseball, said "How do you live?"

We also visited Central Park and walked by accident into the World Championships in archery, when the final was to be between South Korea and Sweden! We stayed to watch the final, but unfortunately Sweden lost despite our cheering. This weekend we also got free tickets to David Letterman's Late Show, which was an extraordinary experience.

### Life after Ithaca

The nine weeks in Ithaca went really fast but since I had another weekend in New York City and two weeks of traveling in California coming up, there were no reasons for me to cry out loud when I was about to leave the town. I hope that I will come back to the USA someday and I would really like to visit Ithaca again. This has been a wonderful summer.



**Patrik Ljungvall**

**Age** 30

**Majoring in**  
Electrical Engineering

**Hobbies**  
Sports and music

**Best U.S. experience**  
Watching the game between the Yankees and Cleveland at the Yankee Stadium



### Thanks

I would like to thank professor Eastman for letting me work at Cornell, Elke for being so helpful, Ho Young for teaching and helping us at work, Tom for the good company and for driving us everywhere, professor Shealy for taking us out in his boat and Alex at the Hillside Hotel for the hospitality.







Memories of summer 2003 Memories of summer 2003 Memories of summer 2003

An unforgettable summer



An unforgettable summer

An unforgettable summer



An unforgettable summer

An unforgettable summer



An unforgettable summer

An unforgettable summer



An unforgettable summer

Memories of summer 2003 Memories of summer 2003 Memories of summer 2003





# Summer in Los Angeles

By **Therese Johansson**

I could not really believe it when I received my job until everything was all set. I was going to spend my summer in Los Angeles, California.

I started the summer with four days in New York together with the other members in CETAC 2003, where we did all the tourist things that you "have" to do when you are there. We visited the UN-building, went on a crazy boat tour to see the Statue of Liberty, went to see Wall street, Ground Zero, a musical on Broadway and much more. And of course we did a lot of shopping. Well, at least Elisabeth and I did. It felt good to start off my stay in the U.S. as part of a group, having someone to share all my first impressions with. We also went to the Scandinavian house in New York for a day to get information on our visas. Thank you ASF.

When I landed in Los Angeles on Sunday the 8th of June I was fairly tired after the hectic days in New York. I got picked up at the airport and we drove for about half an hour to Palos Verdes where Bill, the president of the company, lived and also had the office. I do not know what I had expected really, but I just sat in the car and observed what was going to be my home for the next ten weeks. What surprised me the most was the

" I could not really believe it when I received my job until everything was all set. I was going to spend my summer in Los Angeles, California "

weather, I had thought that the sun was always shining in California. I heard that the bad weather was called "June gloom", something I heard a lot about during my first couple of weeks there. I was supposed to stay at Bill's home at first, while I was looking for somewhere to stay. The first week consisted of getting organized, finding an apartment, getting a car and getting installed at work.

The company MESA Research Group Inc. (MESA) is located in Palos Verdes in Los Angeles, California. It is a small consulting company founded in 1996, with only four employees currently. MESA is working with program and project management, offering the companies a wide range of different services. Usually they start by analyzing the company they are going to work with, to get to know what they want to change in their organization. Then they formulate a strategy for how they are going to accomplish the goals they have set up. Finally they execute the changes. They call this the "Ready, Aim, Fire" strategy. To read more about MESA, look at their homepage on [www.mesaresearchgroup.com](http://www.mesaresearchgroup.com).

## MESA Research Group Inc.

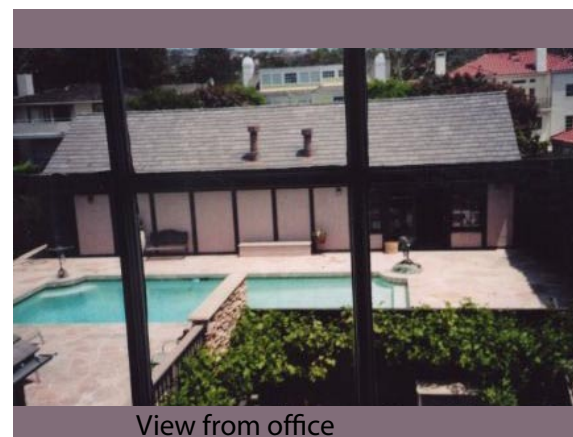
**Location**  
Los Angeles, CA

**Employees**  
4

**Hosting trainees**  
2003

**Business area**  
Program and project management

→ [www.mesaresearchgroup.com](http://www.mesaresearchgroup.com)



View from office



## Inlineskating at Hermosa Beach



View over LA from Palos Verdes



"I have had a great summer, gaining many new experiences and meeting many new friends"

### The project

When I arrived at MESA they were just about to start the last phase in the project they were currently working on. They had already been working for six months with this project, so I had a lot to read to catch up. I also started to look at the different programs that I was going to use during the summer. Mostly I was going to use power point, visio and excel. I ended up spending most of my time at MESA building different charts needed for the project. In the then ongoing project MESA helped a company that was divided in five different sections to become more like one company, and also to build a strategy for future growth and development.

Working at MESA gave me many valuable experiences. It was a great opportunity to get to work at MESA and to learn how they worked.

### Los Angeles

After living at Bill's home in Palos Verdes for two weeks, I moved to an apartment two blocks from the beach in Redondo beach. I had two flatmates, Jacques and Julie, who had both been living in L.A. for a couple of years.

Los Angeles is really spread out and it would have been impossible to live there without a car. The car I got to

borrow sometimes had a mind of it's own, so I learned a lot about taking care of cars during the summer. It also got me in contact with the police at least three times, for instance when the alternator broke, and the car just stopped in the middle of the street.

I spent most weekends together with Sofia, another student from Chalmers working north from Los Angeles. During the summer we ended up spending many hours in the car driving around in L.A., trying to see as much as possible of the city. Among other things we went to see the stars on Hollywood Blvd, the beaches of Santa Monica and Venice and of course we rented inline skates one time and went skating along the beach. We also went to see a couple of different concerts and we did a lot of shopping.

One weekend in the beginning of July, I went to visit my uncle and his family in Dallas. It was great meeting them again for the first time in ten years and it was also fun to see another part of U.S., that was very different from L.A.

During my last week in L.A. Elisabeth, also a member of CETAC 2003, and two friends of her came to visit. When I finished my work at MESA, we

rented a car together and drove around California for two weeks. The summer passed quickly and it was time to get back home.

I have had a great summer, gaining many new experiences and meeting many new friends. I would like to thank everyone that made this possible and made my summer fantastic.



Therese Johansson

Age 26

**Majoring in**  
Electrical Engineering

**Hobbies**  
Travel, spend time with my friends, snowboarding

**Best U.S. experience**  
The two week roadtrip in California that I did with three friends before going back home

Me and Bill in front of the office



Visiting my uncle and his family

# SAMSKIP AB, SWEDEN

## Intra-Europe

### Route 2

Brevik  
Larvik  
Oslo  
Moss  
Lyseki  
Immingham  
Rotterdam

## Intra-Europe

### Route 3

Halmstad  
Wallhamn  
Immingham  
Terneuzen

## Intra-Europe

### Route 4

Bremen  
Moss  
Oslofjord \*  
Lysekil  
\*various ports  
on demand

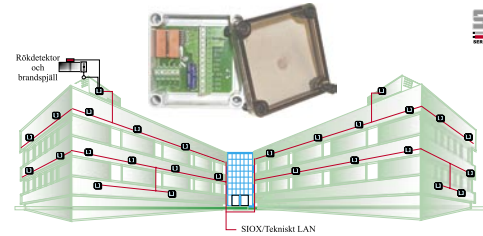
## Other Services

Liner agents • Chartering • Shipbrokers • Forwarding  
Clearance • Warehousing



Gullmarskajen • P.O. Box 9 SE 453 21 Lysekil • Sweden  
Tel. +46 523 184 90 Fax +46 523 184 99  
lysekli@samskip.se • www.samskip.com

Hamnområdet • P.O. Box 161, SE 432 24 Varberg • Sweden  
Tel. +46 340 64 66 60 Fax +46 340 64 66 79  
varberg@samskip.se • www.samskip.com



## Individuell brandspjällstyrning!

### Modul SD2

- Total kontroll via kommunikationsbuss
- Effektiv funktionskontroll
- Minimal kabeldragning
- Hög säkerhet med regelbunden motionering av brandspjäll
- Rök-, service- och fellarm

**TELEFRANG AB**

www.siox.com

Varbergsgatan 8 412 65 Göteborg Tel +46 31 40 30 60 Fax +46 31 40 20 25 E-mail: info@telefrang.se

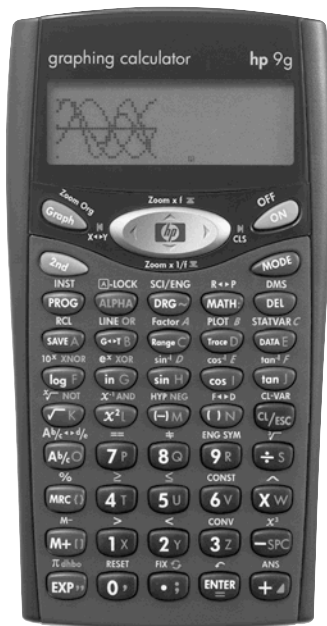


Vi bygger 1000 nya  
charmiga bostäder, passa på.

(alingsas.se)

**ALINGSÅS**

Ny kalkylator från **hp**  
Fler kommer till hösten!



### Kalkylator HP 9g

Algebraisk. 2 rader/10 tecken.  
Grafisk räknare. Programmerbar.



Omicron har fler än 60 anställda. Vi arbetar med utveckling inom informations- och industrideknik och finns i Göteborg, Kista, Uppsala och Umeå.

## Kvalificerade Konsulter

Vi hjälper svensk industri med elektronik- och programvaruutveckling i avancerade tillämpningar. Ofta ställs höga krav på prestanda och realtidsegenskaper; kvalitet och verifiering är alltid viktigt.

Nästan alla våra konsulter är civilingenjörer eller har liknande akademisk utbildning.

Det är utvecklande att jobba på Omicron. Som konsult ökar du snabbt din kompetens genom varierande uppdrag. Vi satsar också mycket på vidareutbildning – kunskap är vårt verktyg.

## Intressant?

**Omicron Ceti AB**  
Skårs Led 3  
412 63 Göteborg  
Tel: 031-703 71 17

**Omicron**  
Advanced Computing  
[www.omicron.se](http://www.omicron.se)



**Alfred Nobels  
KARLSKOGA**

[www.karlskoga.se](http://www.karlskoga.se)

*Karlskoga är en Äventyrsstad - både inomhus  
och med ödemarssupplevelser nära till hands.  
Teambildning och att  
ha kul tillsammans är lika viktigt i ett företag,  
vänner emellan som i familjen.  
Beställ vår nya TuristGuide!*

**KARLSKOGA  
TURISTBYRÅ**  
0586-614 74 . [turism@karlskoga.se](mailto:turism@karlskoga.se)

**KARLSKOGA  
KOMMUN**







# Higher learning in Ithaca

By Elisabeth Lee

I was all excited and hyped up when I got the news that I was going to work for Professor James R. Shealy at the Electrical Engineering Department of Cornell University. The work seemed interesting and judging by what I'd been told by my friend Anna-Lena, one of last year's students at Cornell, I was all set for a wonderful summer. Still being February though, my thoughts and plans for the summer had



to stand back for school work. In fact, I didn't think much about it until only days remained before our departure. As the plane took off for New York, I was jumping up and down in my seat out of anticipation and anxiety. Up till then, going to the U.S. had been so distant and uncertain, almost like a mere fragment of my imagination. Now it was finally going to happen and I couldn't help thinking "Oh my gosh!"

The stay in New York City was hectic and over in a blink. Still without a clue of what I'd gotten myself into, I got on the Greyhound bus that would take me and my fellow CETAC-members Patrik Ljungvall and Fredrik Larsson to our final destination, Ithaca, NY. As I nervously stepped out at the Ithaca bus station, I was met by Professor Shealy in person, who gave me and my luggage a much appreciated ride to what would be my home for the next eight weeks at Jameson Hall on North campus.

## At work (OMVPE lab)

Professor Shealy's lab, the OMVPE facility, where I worked this summer, was located near the Tompkins County

Airport. The lack of a driver's license as well as the motivation for biking all the way out there, resulted in bus rides to work all summer long. Before the summer was over, I would have learnt to love and hate TCAT's Route 31.

Professor Shealy and his group of graduate students are currently involved in the research of Gallium Nitride (GaN) based high power microwave transistors and circuits as well as optoelectronics. The most common compound semiconductor in use today is Gallium Arsenide (GaAs) due to its good optical properties, high mobility and high electron saturation velocity. However, there is significant interest in wide band gap compound

## Cornell University

**Location**  
Ithaca, NY

**Employees**  
20 000

**Hosting Trainees**  
Every year since 1995

**Business Area**  
Education and research.

→ [www.cornell.edu](http://www.cornell.edu)





semiconductors such as GaN, which unlike GaAs is applicable in the blue and ultraviolet wavelength regions as well as for high power/temperature electronics. My work specifically dealt with some novel pyramidal GaN microcavity Light Emitting Diodes (LED's). Tom, my appointed mentor and supervisor, was in charge of growing these GaN structures in the OMVPE cleanroom. My assignment was to study the behavior of these GaN pyramids when exposed to optical pumping. More specifically, I was to expose a sample of GaN pyramids with a high power laser and to observe whether or not any independent lasing action was present in these pyramids. The idea was that if laser action was present in these pyramids due to optical pumping, it would also hopefully be possible using only electrical pumping thus making a novel and potentially useful new type of laser structure.

I managed to conduct several different experiments during my time in Ithaca. By lining up a laser with optical instruments, a spectrometer, detector and other necessary equipment, the light emission from the GaN pyramids could be examined for different wavelengths. The laser action could

then be determined by plotting the light emission versus the wavelength. Basically, what I did was to gradually increase the power at the sample, which was done by increasing the laser power, finding the best focus and minimizing the size of the laser beam. This allowed me to verify that stimulated emission was taking place, and to look for the onset of lasing.

Although I enjoyed the work, no working environment would be complete without interaction and socializing with other coworkers. Since Tom and I were alone out at the lab most of the time, we ended up spending a lot of time together. Joking around with Tom, talking, drawing flattering caricatures of him, and hearing about his attempts of getting his name mentioned in the Trainee Reports by smuggling in sentences such as "My greatest experience was meeting Tom Prunty" became a part of my everyday life at the lab.

### Life at Jameson

My home during my eight weeks in Ithaca was a double dorm room, in which I lived alone, at Jameson Hall. I lived on the fifth floor, in suite 2, sharing a bathroom and WC with three American girls who were Cornell students. I couldn't have found better accommodation. Thanks to my three wonderful suitemates: Sharmila, Sharene and RaRa, I never had to feel alone or be bored all by myself. We would go grocery shopping together, cook together, spend endless hours watching movies and talking in the hallway. Especially grocery shopping could be an adventure of its own. As none of us had a car, we would catch a bus all the way to Pyramid Mall and back in order to do our groceries. I still remember us laughing while strolling with the cart up and down between the lanes trying to find the best buys at Tops and Target. To be added to our small group of Jameson people were the guys down the hallway in suite 1: Andrew, Alan, Aaron and "Han Solo".

Chilling with all these people gave me glimpses of what dorm life was all about. Also, thanks to our many conversations about life and society in general, I was able to experience American culture, attitude and way of life, at the same time as my friends got a peek of the Swedish everyday life.

I really loved living in a dorm, being surrounded by Americans and being forced to make good use of my English, but now and then I also got homesick and longed for speaking some Swedish or Cantonese. Luckily, thanks to Professor Lester Eastman who hired my two fellow CETAC-members Patrik and Fredrik, I was able to at least settle my longings for speaking Swedish. Somehow Tuesday nights became equal to karaoke nights out with the (Swedish) guys and Tom. Other days it would be bowling or a cup of coffee at Collegetown Bagels.

As my friend Carl told me during his and his girlfriend Anna-Lena's visit in June, "Make good use of your



"I still remember us laughing while strolling with the cart up and down between the lanes trying to find the best buys at Tops and Target"



Elisabeth Lee

Age 22

Engineering major  
Physics

Hobbies  
Hanging out with friends, listening to music, shopping and dancing

Best U.S. experience  
All my friends from Cornell and the Fourth of July fireworks outside Lincoln Memorial in Washington D.C.

time here, because before you know it you'll be back home in Sweden." It was advice that I took to heart and something that we all tried to do. With Fredrik, Patrik and me in Ithaca, Peter in Long Island and David in Princeton, we soon became a tight gang of five on the east coast. When Peter and David came to visit us in Ithaca one weekend, we took the opportunity at hand and showed them the wonderful and beautiful scenery around Ithaca. We went hiking and swimming in Six Mile Creek, while admiring the surroundings.

Peter and David's visit was followed by a joint trip to Washington D.C. during the weekend of the Fourth of July. Seeing D.C. during the Fourth of July was truly an amazing experience. Surrounded by the patriotic spirit, we went running around seeing all the must-see-attractions of D.C. It was during the visit that we made the shocking discovery of the miniscule size of the White House! We were all convinced that we had to be mistaken until we saw the signs. All I can say is that it seemed so much bigger on TV!

Another must-see attraction while in New York was of course Niagara Falls. So we grabbed the chance, rented a car and drove all the way to the Falls one weekend. We did the Cave of the Winds, the Maid of the Mist and the whole nine yards. We even made an attempt to see the Falls from the Canadian side, which we'd heard offered a much better view, but unfortunately due to some visa paper mishaps the only thing we saw of Canada was basically the immigration office.

Living in Ithaca, so close to New York City, meant of course that we had to grab the opportunity of seeing a game in one of the all American sports: baseball. We met in New York City for the weekend and went to Yankee

Stadium to see the Yankees play. It was great! Sitting with the crowd in the bleachers, tormented by the heat, getting caught up in the Yankees' spirit and cheering the Yankees to a win. The game was the first in row of amazing things to happen that weekend. The following day, we stumbled over the World Championship of Archery at Central Park. We were just in time for the male team final and the finalists were, believe it or not, Sweden and Korea. We cheered, we yelled, we did everything in our power for Sweden to win, but unfortunately it wasn't enough. Korea won, but the up side is that we actually got caught by the camera and saw ourselves on the big screen for a second when we were cheering the most! However, the most amazing thing was still to come. While walking at Times square, we suddenly saw the Ed Sullivan Theater where The David Letterman show is shot. As we were walking up to the theater, chatting about the Letterman show and taking pictures, we were approached by a woman asking us if we wanted free tickets to the show the following day. Unbelievable, but we ended up with five free tickets to the Letterman show! What a weekend!

### Thank you

They say that time flies when you're having fun. They were right! Before I knew it, my time in Ithaca was up.

I will never forget all those people that helped me and made my summer unforgettable and incredible. I can still hear Ashanti's voice singing "Awww baby..." in my head. The memory of hearing the same radio channel all



"I will never forget all those people that helped me and made my summer unforgettable and incredible"



over our suite in Jameson, our own home made 'AC' in the hallway... all that will always be fresh in my mind. I will always remember Sharene and her undying admiration for the magic stick song, RaRa learning sign language 'Don't worry', Sharmila's sweet temper and the girls teaching me ghetto talk. The sound of a phone ringing will forever bring back the memory of someone yelling "Someone's phone's ringing!" followed by people running in the hallway. And of course, Tom's persisting attempts of making me like Garth Brooks, while introducing me to the world of frozen snickers bars. My thanks go out to all the people mentioned above, and to Professor Shealy who made the good deed of hiring me and last but certainly not least the American Scandinavian Foundation for all their help! Without the help (and company) of you all, my summer wouldn't have been as wonderful and great as it was. Thank you!





# Forskning vid Data- och informationsteknik - något för dig?

Sektionen för Data- och informationsteknik, D&IT, bildades i januari 2002 när Datavetenskap och Dator teknik gick samman. Genom sammanslagningen har samarbetet utökats ytterligare och forskarkompetensen på området har fått ett gemensamt tak.

På Data- och informationsteknik arbetar över 50 disputerade lärare och forskare och drygt 70 doktorander. Sektionen verkar inom både Chalmers och Göteborgs universitet och erbjuder högkvalitativ grundutbildning och forskarutbildning inom de datavetenskapliga och dator tekniska disciplinerna.

Forskningen är omfattande och inom flera områden världsledande. Bredden är stor, från grundforskning till direkta tillämpningar, ofta i samarbete med industrin.

## ■ Forskarstudera vid Data- och informationsteknik!

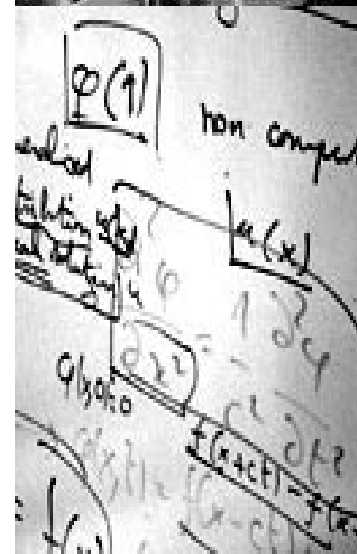
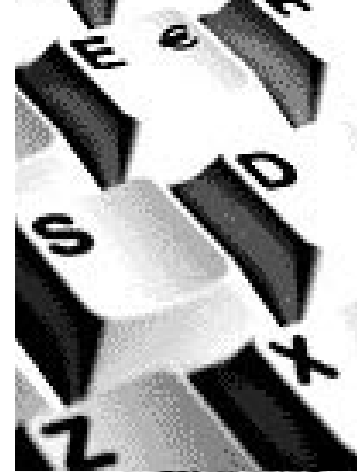
En doktorsexamen motsvarar 4-5 års heltidsstudier. En licentiatexamen tar ca 2,5 år och kan vara ett etappmål, men också en slutexamen. Ca 20% av arbetstiden brukar ägnas åt att undervisa inom grundutbildningen.

Ämnesområdena inom D&IT ger stora valmöjligheter från formella metoder, bioinformatik och språkteknologi till datasäkerhet, datorarkitektur och digital konstruktion. Plus en hel rad andra ämnesinriktningar och kombinationer...

Är Du intresserad av att få veta mer?

Gå in på [www.cse.chalmers.se](http://www.cse.chalmers.se)  
eller kontakta Per Stenström,  
epost: [pers@ce.chalmers.se](mailto:pers@ce.chalmers.se)

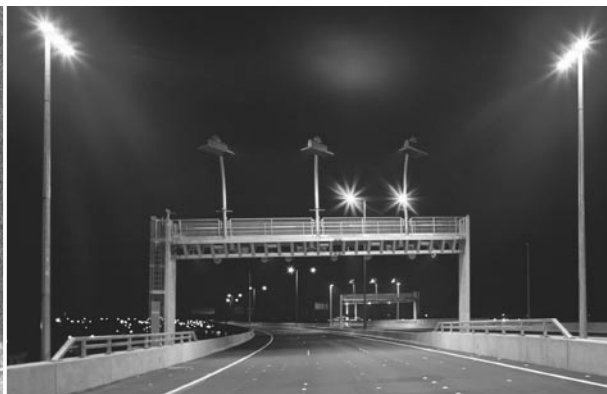
[www.cse.chalmers.se](http://www.cse.chalmers.se)



# Road tolls are nothing new. The technical solution is.

## TOLLMATIC® Integrated ETC Systems for Multi Lane Free Flow

- Melbourne City Link
- Costanera Norte, Santiago de Chile



## The versatile partner

Whether you are an operator, concessionaire, construction company or systems integrator; Combitech Traffic Systems will always have the product or system that will meet your needs.

## TOLLMATIC® Integrated ETC Systems for Single Lane

- SPRINT, Malaysia
- KESAS, Malaysia

Over 2 500 000 motorists with PREMID® transponders are paying their road tolls electronically in more than 2 000 ETC lanes equipped with PREMID® road side systems with installations spread over 17 countries all over the world.

**Combitech**  
Traffic Systems

[www.trafficsystems.com](http://www.trafficsystems.com)





The 2003 Tour

## Making bonds in Stockholm

The year with CETAC begins with a trip to Stockholm. Here the new members get in contact with companies interested in the activities of the committee. They also get to know each other as well as to learn what it means to be a part of the CETAC team. This year 23 forward students from Chalmers took the opportunity to spend 4 interesting days in the capital of Sweden.

By  
**Simon Benjaminsson**

**Day 1 began early.** We had to arrive at ABB in Västerås by lunch time - that meant getting up earlier than ever before. But once the caravan of most excellent cars from Hertz hit the road, the excitement of heading somewhere got me clear and wide awake, or perhaps it was the snorings from the others in the car.

**Arriving** at ABB, Reijo Palola, ABB's student contact, met up and took us to a well needed lunch with trainees from ABB's Trainee Programme. As there are several former CETAC members among the trainees, one must agree to the fact that the connection between ABB and CETAC has certainly been successful through the years.

After some more information about the ABB Group in general and about the Trainee Programme in particular, a visit to the robotics production factory followed. The visit was then concluded with a cup of coffee by the lake Mälaren before the cars headed for Stockholm.

**Stockholm**, the capital of Sweden, has 755,000 inhabitants, 324,808 cars, 2,432 restaurants, 231 hotels, 173 shoe shops and 1 Bredäng youth hostel, where we checked in on the evening of day 1 and stayed during the 4 days.

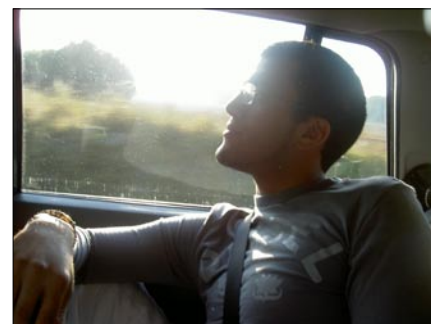
**Another early morning.** The members were divided into groups that would cover different geographical



The members outside ABB in Västerås

parts of Stockholm. Meetings with interested companies had been arranged and properly dressed members left the hostel for the morning traffic. Meanwhile a communication center had been set up to assist members in need of information from the internet or databases filled with documentation of past years' advice and experiences.

**The working methods** during the Stockholm trip have many different functions. It is a good opportunity to make connections with not only new companies but also companies that have supported CETAC before. The members gain experience in establish-



Looking forward

# “ As much as CETAC needs companies, companies need CETAC ”

ing business connections. But it is also a social activity aiming at bringing the group closer together - working as a team towards a common goal makes this easy to accomplish.

**Evening.** A hard day of work had ended. The fruits of the labor were summarized. Plans for the next day were made and experiences and advices were exchanged.

**Yet another early morning.** Once again properly dressed members left the hostel for the morning traffic. This time more self-confident and with more experience. After just one day of meeting companies one could have thought this was what they did for a living - they had realized that they had something good and unique to offer.

**As much as CETAC needs companies, companies need CETAC.** The bridge between industry and the academic world is hard for a single company to build. CETAC works as such a bridge, offering direct connections with students at Chalmers. Some companies are really enthusiastic about this fact. Or as appointment manager Hans Grufman put it after a meeting: “It was a party! We were exactly what they were looking for.” Of course most companies don’t know about CETACs existence, hence CETAC has to find the suitable companies. CETAC has been around since 1968 and the number of industrial relations has increased through the years. This has resulted in a situation where most of the leading companies in Sweden have dealt with CETAC before, which strongly simplifies the work for the committee.



**Deal closed**



**After a hard day of work**

At the same time many former CETAC members are out in the industry and are always helpful.

For this we are immensely thankful.

**When the last group** of people came back to Bredäng after the final day of work we headed downtown. Reservations had been made at a restaurant with an atmosphere quite like a german Oktoberfest. But the food was good, the beer was cheap and those are probably the only things you can ask for in a place with an elk at the entrance.

**Led by the** Stockholmers in the group, we explored the nightlife of Stockholm. Being tourists in our own country, a visit to a skybar was followed by a visit to an icebar - where everything was made of ice. After finishing your drink here, you could finish your glass as well. Even the sculptures tasted

good, according to sources.

**The Stockholm tour 2003** marked the beginning of the CETAC year. Not only was it important for establishing contacts with companies and to get useful experiences, but also socially in building a team that will work together as well as individually at the same time through the rest of the year.

The trip was a success in all areas. ■



**Icebar**



if(Counter[0] && (P\_YBRKO II RunMotor

**Vill du utveckla industriell elektronik till världsledande produkter?**

Var med och pressa hastighetsgränserna för textilmaskiner och fullända precisionen i robotar. Hos oss får du delta i produktutvecklingsarbetet - från idé till färdig produkt.

Vi arbetar med programvaruutveckling och elektronikkonstruktion inom sensorer, motorstyrningar och kommunikationsprodukter. På vårt kontor i Mölndal har vi samlat såväl utveckling som produktion under ett tak. Tempot är högt och du jobbar i tät kontakt med såväl kunder som andra arbetsgrupper.

Aros Electronics utvecklar och producerar kundanpassad industriell elektronik. I dag är vi 75 anställda och omsätter ca 95 miljoner kronor. Aros ingår i IRO-koncernen som är världens ledande tillverkare av garnmatare till textilmaskiner. Vår kundkrets består av ett antal större svenska och internationella industriföretag.



**Aros electronics AB**

Östergårdsgatan 12, 431 53 Mölndal  
Tel: 031-776 82 00, e-mail: tr@aros.se, mw@aros.se  
www.aros.se

The Electrolux Group.  
The world's No.1 choice.



# Gör en ren karriär

*"För någon som är nyutexaminerad och vill framåt är möjligheterna närmast gränslösa, eftersom man kan utveckla sin karriär både över geografiska gränser och kompetenser."*

Ruth Frost, Electrolux i Dublin

**Electrolux Laundry Systems, världsledande på industriell tvättutrustning**

Vårt personalarbete bygger på personlig utveckling, förtroende, öppenhet, ansvar och samarbete.

Vi vill ha modiga, öppna, kunniga och omtänksamma medarbetare. Vi utvecklar våra nuvarande och framtida ledare, bland annat inom Electrolux University.

Tag kontakt med oss idag om du vill göra en ren karriär i ett världsledande företag!

**Electrolux**

**Wascator**

*Because every laundry is different™*

Electrolux Laundry Systems Sweden AB, 341 80 Ljungby, Telefon 0372-661 00.  
www.laundrysystems.electrolux.com E-mail info@wascator.electrolux.se



# The Chairman speaking

A year and a half has past since we all met for the first time. Coming from different backgrounds at Chalmers, we had one thing in common: we all wanted to do our technical training in North America and to take part in all that comes with such a great experience. However, before reaching that goal of ours, a year of hard work laid in front of us. It is no exaggeration to say that it's been a year of trial for us all, but what we've gained goes far beyond any comparison and has been well worth the ordure.

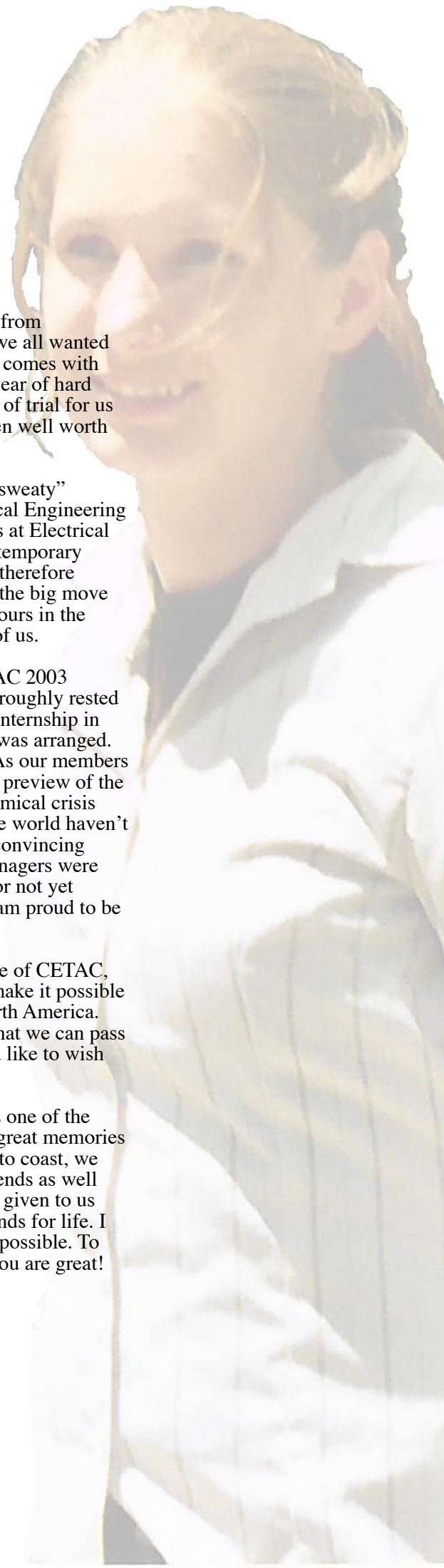
My year as the Chairman of CETAC 2003 started off with a least said "sweaty" challenge. Due to the upcoming renovation of some parts of the Electrical Engineering building, we, the board of CETAC 2003, as well as all other committees at Electrical Engineering were faced to the task of moving all our belongings into a temporary barrack. The remains and traces of several generations of CETAC were therefore packed into moving boxes and with joint strength of all the committees the big move was carried out one weekend in early summer 2002. This new office of ours in the barrack would turn out to become almost like a second home for some of us.

Even though being formally established in the spring, the work of CETAC 2003 didn't begin for real until the start of fall semester with the return of thoroughly rested students. To start off our long journey towards the reward of a summer internship in the U.S. a traditional kick off trip to Stockholm, the capital of Sweden, was arranged. It was a trip filled with new acquaintances as well as new experiences. As our members got a taste of what selling advertisements would be like, the board got a preview of the upcoming hard work of finding financial funding. The worldwide economical crisis along with the political instability and threats of war in some parts of the world haven't made our jobs any easier than they were. As our members struggled in convincing Swedish companies to invest in future generations, our appointment managers were facing the equally hard challenge of finding highly qualified positions for not yet graduated and non Americans in the U.S. It certainly wasn't easy, but I am proud to be able to say that we did it!

The year of 2003 has brought some crucial changes to the inner structure of CETAC, and we hope that by continuing making changes for the better, we can make it possible for many more students to reach their goal of doing their training in North America. We have all learnt a great deal through our time in CETAC and I hope that we can pass on our experiences to future committees to facilitate their work. I would like to wish CETAC 2004 good luck; you have a great time ahead of you!

I hope that you are all going to enjoy reading about what we consider as one of the best experiences of our lives. This magazine is filled with stories about great memories that we have achieved, and even though we were spread out from coast to coast, we share the experience of going to a different country and making new friends as well as obtaining new qualities at our internships. Thanks to this opportunity given to us we have not only gained a lifetime's experience but also, hopefully, friends for life. I would like to thank everyone that has supported us and made all of this possible. To my fellow members in CETAC 2003, thank you for a wonderful time, you are great!

**Therese Johansson,  
Chairman of CETAC 2003**





*Thank you!*

## *The ones who made it happen!*

*We, CETAC 2003, would like to express our deepest gratitude to the following companies and persons, who all contributed in helping us to make our American dream come true. Thank you for all your invaluable help, support and interest in CETAC 2003!*

### *Our trainers*

Cornell University, NY  
Tsi Power Corp., WI  
Siemens Corporate Research, NJ  
Rodale Electronics Inc., NY

### *Financial contributors*

Asko Cylinda  
Studentlitteratur  
Kapro

### *Others*

Jan-Erik Sundgren, President of Chalmers  
Holger Broman, Dean at Electrical Engineering  
Lars Walldén, Dean at Engineering Physics  
Jan Smith, Dean at Computer Science and Engineering  
Jean Prahll and Tatiana Pashman, The American Scandinavian Foundation  
Folke Hjamers, Office of international relations at Chalmers  
Bengt Svensson, American Embassy  
Karl Andrén, New York Cruise Lines Inc.  
Reijo Palola, ABB  
Agneta Mattson, D.C Chalmers  
Håkan Thorell, WM-Data  
Chalmers Career Service



# Frigör kraften i dina tankar

En idé växer fram. Eller värker fram. Medvetet och planerat? Eller till synes omedvetet och oplanerat? Plötsligt blänker en ny tanke till – och sprider nytt ljus över vad du tidigare har tänkt. Tanken kan dyka upp när som helst. Under ett arbetsmöte, när du läser en bok, smälter intrycken efter en resa eller tar ut hunden på en promenad.

Många banbrytande idéer utvecklas av skickliga forskarteam. Andra uppstår ur erfarenheter mitt i vardagen. Du ser helt enkelt en ny möjlighet – och vill omsätta den i praktiken.

Vägen från idé till handling är kanske inte rakare och bredare inom ABB. Men den är kortare. ABB är det kreativa kontrasternas företag – ett ungt, gammalt, lokalt, globalt, forskningsintensivt och tillverkande företag. Industriföretag? IT-företag? Bådadera. Och ännu mer.

Våra kunder finns inom de mest skiftande branscher. Vi skapar värde för dem genom att utveckla många olika slags kompetenskombinationer.

Är du branscherfaren eller nyutexaminerad? Tekniker, naturvetare, ekonom eller humanist? Specialist eller generalist? Utåtriktad eller eftertänksam? Vem du än är – din kompetens ger dig nya och annorlunda möjligheter inom ABB. Var du än bor, finns vi och våra kunder i närheten.

ABB erbjuder öppna gränser för din utveckling. Välkommen att frigöra kraften i dina tankar.

**Möt oss genom att hänga med på en studieresa till ABB. Anmäl dig hos Arme, ARG/Z, eller DAG. Besök även [www.abb.se/jobb](http://www.abb.se/jobb), klicka på "student" och "ABB on tour".**

*ABB är världsledande inom kraft- och automations-teknik. Våra lösningar förbättrar prestanda och minimerar miljöpåverkan för energiföretag och industrier. ABB har 160 000 medarbetare i mer än 100 länder. I Sverige är vi cirka 18 000 medarbetare på över 100 orter.*

The ABB logo, consisting of the letters 'ABB' in a bold, red, sans-serif font.