

newsletter

Electrical Engineering Students' European assoCiation

The EESTEC Newsletter is published monthly. It hopes to reach all EESTEC members and keep them informed of EESTEC activities. It can be downloaded from <ftp.eestec.org>

**March 2000
Volume 14, No. 3**

Founded in 1986, EESTEC is an organisation that promotes the exchange of ideas, and the development of international contacts, between engineering students and companies throughout Europe. EESTEC now has 28 branches in 18 different countries.



3

**OPPORTUNITIES
NOKIA**



8

**LC OF THE
MONTH
ZURICH**



13

**IN RETROSPECT
WORKSHOP IN
OULU**

HIGHLIGHTS

SECTIONS	PAGE NO.
EDITORIAL	2
OPPORTUNITIES <i>Nokia</i>	3
THE LEADING EDGE <i>Fading Process Model</i>	4
LC OF THE MONTH <i>Zurich</i>	8
BERNIE'S VIEWPOINT <i>Future of EESTEC Alumni</i>	11
IN PROFILE <i>Bernie Höneisen</i>	12
IN RETROSPECT <i>Workshop in Oulu - The City of Winter and Technology</i> <i>EXCHANGE Ljubljana-Zurich-Bologna-ReggioEmilia-Cosenza-Rijeka</i>	13 13 16
POLITICAL BRIEFS <i>Bored Talk</i>	18
A FUTURE LOOK <i>EESTEC Posts 2000 -2001</i>	19

EDITORIAL

Dear EESTEC members,

In this issue, a special feature on Philips, the headsponsor of the Congress 2000, is presented. In addition, Nokia will tell you about themselves in *OPPORTUNITIES*. In *THE LEADING EDGE*, there is an article discussing the Fading Process Model. Next, LC Zurich, the *LC OF THE MONTH*, describes their exchange with Tampere and Budapest. Furthermore, they offer some information and advice on their next event: the Hiking Week in the Alps. In the section *IN RETROSPECT*, we have accounts of 2 past events lined up for you, namely, the Oulu Exchange and the Ljubljana exchange. Finally, Bernie discusses his views about the future of the alumni in *INSIGHT*. To show my appreciation to Bernie's tireless contribution as a columnist for the newsletter, I have invited him to present his profile in *IN PROFILE*.



This issue will be the last issue of my term as the International Newsletter Editor for EESTEC. Despite all the difficulties that I have encountered along the way, I must say that this job has given me utmost satisfaction. I wish to thank the board who has given me this great opportunity to contribute to EESTEC. They have been most supportive and understanding. Special thanks to Bernie and all other people who have contributed one way or another to the newsletter. Finally, I wish to thank all EESTECers for their encouragement and confidence in me. I hope you have enjoyed reading the newsletter as much as I have enjoyed preparing it for you.

Yours sincerely,



Denise
(Hwee Peng, Ang)
EESTEC Newsletter Editor

NOKIA

Mobile Information Society

Users linked to all forms of information, seamlessly and transparently, from any location. Access enabled by the development of several networking technologies in response to the needs of today's users. This is our vision of Mobile Information Society that is fast becoming a reality.

The mobile Information Society will transform everyday life, giving users a new found freedom through intuitive applications based on advanced human technologies and infrastructure.

Nokia is providing open solutions that empower the Mobile Information Society and harness the full potential of the two dominant driving forces - the Internet and Mobility.

A greater freedom of life is just over the horizon, offering access to personal services irrespective of location and device. Services that transform passive content into active functionality.

Meet Nokia

Nokia is paving the way to the mobile information society with its innovative products and solutions.

Nokia is the leading mobile phone supplier and a leading supplier of fixed and IP networks including related services. Nokia also supplies multimedia terminals and computer displays.

In 1999 net sales totaled EUR 19.7 billion and Nokia now employs more than 55,000 people.

Nokia is a truly global organisation and we have 52 Research and Development

Centres in 14 countries. In addition to this we have a further 12 Infrastructure manufacturing facilities in 5 countries and 10 mobile phone manufacturing facilities in 8 countries.

Working Culture

Working at Nokia is all about contributing to a culture that cultivates individual thought and expression. Our aim is to create a team environment that promotes co-operation and communication along with initiative and innovation.

This unique environment can be seen in its purest form in the four Nokia Values of Customer Satisfaction, Respect for the Individual, Continuous Learning and Achievement. Working for Nokia is challenging but it is also rewarding, fulfilling and enjoyable.



Connecting People

If you want to contribute to the development of advanced communications to connect people around the world, Nokia is the place for you.

In an environment of continued business success and expansion, you will experience the satisfaction, rewards and opportunities that only a leading edge, pioneering global communications company can offer. To find out more connect to us today and visit our website at www.nokia.com

www.nokia.com

FADING PROCESS MODEL

written by Voon Lung, Guan

In line with global expectations, the telecommunications sector remains a key focus area in the development of the electronics industry. The field of wireless communications is apparently the fastest growing segment in the telecommunications industry. It has witnessed a tremendous growth in the last few years, both in terms of the number of potential users and the introduction of new services. Thus, the area of wireless communications has become one of the hottest research topics in the field of communications.

In a practical communication environment, the transmitted signal suffers from various forms of impairments due to channel imperfections. Two major forms of signal distortion are additive white Gaussian noise (AWGN) and fading. While AWGN is unavoidably present, fading occurs mainly in wireless communications. The fading process arise due to the fact that in a typical urban environment, the line of sight propagation path between transmitter and receiver is usually shadowed by the obstructions such as buildings, trees and hills. Thus, the transmitted radio waves will arrive at the mobile via many different paths due to reflection or diffraction from the surrounding buildings and terrain. On account of path differences, the signals from all these paths will reach the receiver with different delays. The different signal components add at the receiver constructively or destructively to give the resultant signal. A deep fade occurs when there is destructive interference.

In order to simulate fading problem, a correct model of the fading process must be derived. In this paper, two types of fading model will be discussed. There are first order and third order butterworth spectrum.

FIRST-ORDER BUTTERWORTH FADING SPECTRUM

The first-order Butterworth spectrum is given by

$$S_x(\mathbf{w}) = \frac{1}{1 + (\mathbf{w}/\mathbf{w}_d)^2} \quad (1)$$

where \mathbf{w}_d is the 3 dB cut-off frequency.

The required fading process $x(t)$ can be generated by feeding a white Gaussian noise $n(t)$ into a first-order Butterworth filter which has the following transfer function $H(s)$:

$$H(s) = \frac{1}{1 + (s/\mathbf{w}_d)} \quad (2)$$

The fading process is thus given by the following equation in the s-domain:

$$X(s) = \frac{\mathbf{w}_d}{s + \mathbf{w}_d} N(s) \quad (3)$$

where $X(s)$ and $N(s)$ are the filter output and the white noise respectively in the Laplace transform domain.

Applying inverse Laplace transform to equation (3), the following time domain equation is obtained:

$$\frac{d}{dt}x(t) + \mathbf{w}_d x(t) = n(t) \quad (4)$$

By solving differential equation (4), the following expression is obtained:

$$x(t)e^{\mathbf{w}_d t} = \int_{-\infty}^t \mathbf{w}_d n(\mathbf{t}) dt \quad (5)$$

By defining $t = (K+1)T$ where T is the symbol period, we then have

$$\begin{aligned} & x[(k+1)T]e^{\mathbf{w}_d(k+1)T} \\ &= \int_{-\infty}^{kT} \mathbf{w}_d n(\mathbf{t})e^{\mathbf{w}_d t} dt + \int_{kT}^{(k+1)T} \mathbf{w}_d n(\mathbf{t})e^{\mathbf{w}_d t} dt \\ &= x(kT)e^{\mathbf{w}_d(kT)} + \int_{kT}^{(k+1)T} \mathbf{w}_d n(\mathbf{t})e^{\mathbf{w}_d t} dt \quad (6) \end{aligned}$$

Finally, by rearranging the terms and simplifying the notations, equation 6 can be simplified to the following form:

$$x(k+1) = x(k)e^{-\mathbf{w}_d T} + w(k) \quad (7)$$

Where $w(k)$ is a zero mean white Gaussian noise with variance

$$E\left[|w(k)|^2\right] = 2\mathbf{s}^2(1 - e^{-2w_d T}) \quad (8)$$

where $2\mathbf{s}^2$ is the variance of x . Also, the variance of x is related to the power spectrum by the following equation:

$$2\mathbf{s}^2 = \frac{1}{2\mathbf{p}} \int_{-\infty}^{\infty} \frac{G}{1 + (w/w_d)^2} dw \quad (9)$$

Evaluating the integral in equation (9), the following relationship is obtained:

$$G = \frac{4\mathbf{s}^2}{w_d} \quad (10)$$

In order to verify that the process x generated by equation (7) has the desired spectrum, spectral estimation has been performed with the Fast Fourier Transform (FFT) function available in MATLAB. The simulated spectrum obtained from MATLAB should be equivalent to the following theoretical spectrum for the first-order Butterworth:

$$S_x(\mathbf{w}) = \frac{G/T}{1 + (\mathbf{w}/w_d)^2} \quad (11)$$

Fig. 1 shows the simulated spectrum (obtained by averaging a total of 1000 ensembles of x each comprising 1024 samples) and the theoretical spectrum given by equation (11). It can be observed that the simulated result agrees closely with the theoretical result.

THIRD-ORDER BUTTERWORTH FADING SPECTRUM

The third-order Butterworth spectrum is given by

$$S_x(\mathbf{w}) = \frac{1}{1 + (\mathbf{w}/w_d)^6} \quad (12)$$

and the transfer function $H(s)$ is given by:

$$H(s) = \frac{w_d^3}{s^3 + 2w_d s^2 + 2w_d^2 s + w_d^3} \quad (13)$$

The required fading process $x(t)$ can be generated by feeding white noise $n(t)$ into a third order Butterworth filter and its frequency and time domain representation are given by the following equations:

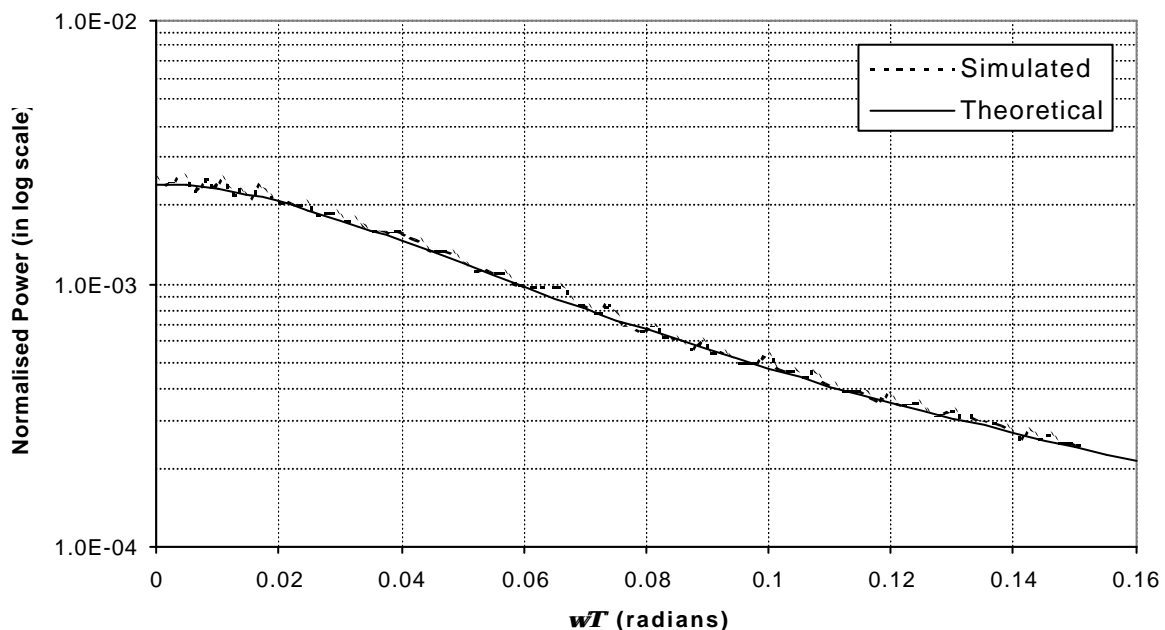


Fig. 1: Theoretical and simulated first-order Butterworth fading spectrum ($w_d T = 0.05$)

$$X(s) = \frac{w_d^3}{s^3 + 2w_d s^2 + 2w_d^2 s + w_d^3} N(s) \quad (14)$$

$$\ddot{x}(t) + 2w_d \dot{x}(t) + 2w_d^2 x(t) = w_d^3 n(t) \quad (15)$$

Defining:

$$X(t) = \begin{bmatrix} x(t) \\ \dot{x}(t)/w_d \\ \ddot{x}(t)/w_d^2 \end{bmatrix} \quad (16)$$

equation (15) can be written in the following form:

$$\begin{aligned} \dot{X}(t) &= \begin{bmatrix} \dot{x}(t) \\ \ddot{x}(t)/w_d \\ \dddot{x}(t)/w_d^2 \end{bmatrix} \\ &= \begin{bmatrix} 0 & w_d & 0 \\ 0 & 0 & w_d \\ -w_d & -2w_d & -2w_d \end{bmatrix} \begin{bmatrix} x(t) \\ \dot{x}(t)/w_d \\ \ddot{x}(t)/w_d^2 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ w_d \end{bmatrix} n(t) \end{aligned} \quad (17)$$

Using the approximation

$$\dot{X}(kT) = \frac{X[(k+1)T] - X(kT)}{T}$$

equation (17) can now be modified to a discrete-time version given by

$$\begin{bmatrix} x(k+1) \\ \dot{x}(k+1)/w_d \\ \ddot{x}(k+1)/w_d^2 \end{bmatrix} = \begin{bmatrix} 1 & w_d T & 0 \\ 0 & 1 & w_d T \\ -w_d T & -2w_d T & 1-2w_d T \end{bmatrix} \begin{bmatrix} x(k) \\ \dot{x}(k)/w_d \\ \ddot{x}(k)/w_d^2 \end{bmatrix} + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} w(k) \quad (18)$$

where $w(k) = w_d T \cdot n(k) = w_d \int_{kT}^{(k+1)T} n(t) dt$ is a zero mean white Gaussian noise with variance

$$E[w(k)]^2 = w_d^2 T N_o \quad (19)$$

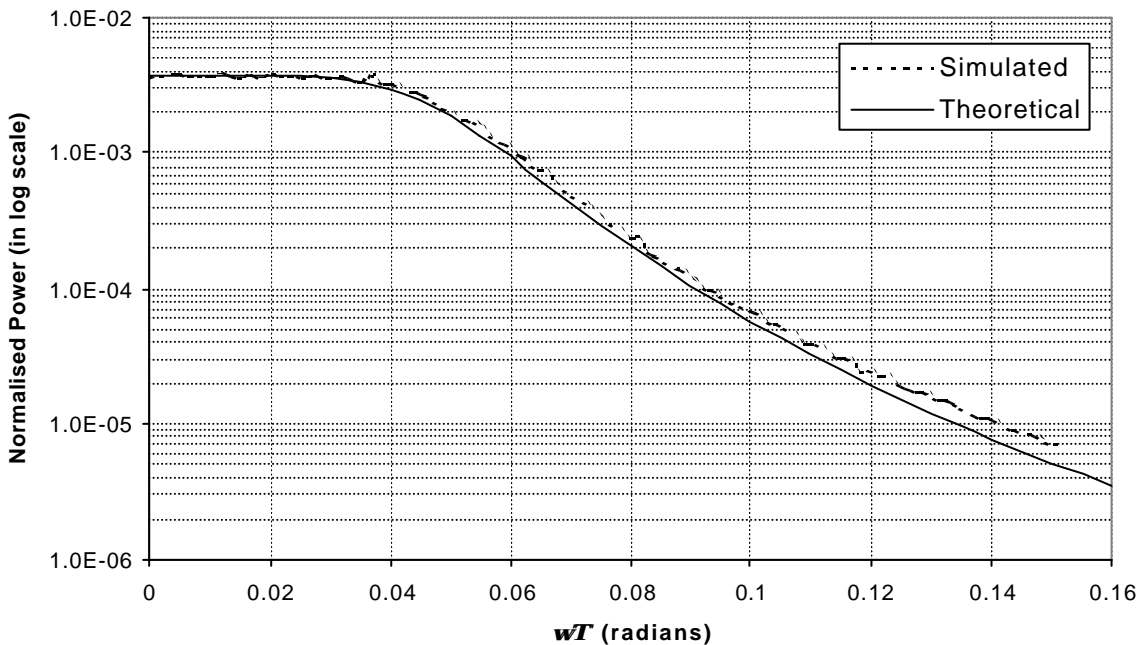


Fig. 2: Theoretical and simulated third-order Butterworth fading spectrum ($w_d T = 0.05$)

The variance $2s^2$ of the fading process x is related to the power spectral density of by the following equation:

$$\begin{aligned} 2s^2 &= N_o \int_{-\infty}^{\infty} |H(f)|^2 df \\ &= N_o \int_{-\infty}^{\infty} \frac{1}{1+(w/w_d)^6} \cdot \frac{dw}{2p} \\ &= N_o \frac{w_d}{2p} \int_{-\infty}^{\infty} \frac{1}{1+w^6} dw \\ &= \frac{N_o w_d}{2p} \cdot \frac{2p}{3} \end{aligned} \quad (20)$$

Combining equations (19) and (20), we have the variance of $w(k)$ as

$$E\{|w(k)|^2\} = 6w_d T s^2 \quad (21)$$

From the above equations, it can also be seen that the variance of x is related to the power spectrum by the following equation:

$$2s^2 = \frac{1}{2p} \int_{-\infty}^{\infty} \frac{G}{1+(w/w_d)^6} \cdot dw \quad (22)$$

Where $G = \frac{6s^2}{w_d}$ (23)

Spectral estimation is again performed with the FFT function available in MATLAB to verify that the process x generated by the computer program has the desired spectrum. The simulated spectrum obtained from MATLAB should be equivalent to the following theoretical spectrum

$$S_x(w) = \frac{G/T}{1+(w/w_d)^6} \quad (24)$$

Fig. 2 shows the simulated spectrum (obtained by averaging a total of 1000 ensembles of x each comprising 1024 samples) and the theoretical spectrum given by equation (24). It can be observed that the simulated result approximates the theoretical result very well.

In short, the above models closely agree with the theoretical result.

NEWSMAKERS

A FEW tankfuls of fish could put a stop to the devastating blooms of algae caused when sewage works discharge effluent into rivers and lakes. Most sewage works remove solids from raw sewage and get rid of organic matter with the help of sludge-dwelling bacteria. But few remove dissolved phosphorus and nitrogen from detergents and fertilisers. When too much of these nutrients get into fresh water, they can trigger explosive growths of algae. All the oxygen in the water is used up when the algae decompose, suffocating aquatic life. Some blooms also generate dangerous toxins.

So Ray Drenner, a biologist at the Texas Christian University in Fort Worth, has developed a waste-water purification system in which algae consume these polluting nutrients before the water is discharged. Fish then nibble away at the algae, incorporating the nutrients into their bodies or excreting them. The faeces sink to the bottom of the tank for regular collection and disposal.

In Drenner's system, which he developed with Laura Rectenwald of Baylor University in Waco, the outflow from a sewage treatment works passes through a series of tanks containing an algae-eating African fish called *Tilapia mossambica*. The tanks are fitted with vertical plastic screens on which periphyton algae, which thrive on nitrogen and phosphorus, grow. Drenner stresses that the system will work only after sewage has undergone conventional treatment. The fish would serve as a "polishing" step to clean up the water before its final discharge.

A new landmine detection system, which claims rapid and 100% accurate detection, has been revealed by the US Naval Research Laboratory (NRL).

In preliminary tests, the system cleared small areas 30 times faster than metal detectors, which are plagued by the false alarms caused by bullet casings and other battlefield debris.

The device uses radio waves to specifically detect the explosives. Regina Dugan, from the US Defense Advanced Research Projects Agency, which provided about \$10m for the research, said both hand-held and vehicle-borne applications would be developed.

She said: "It is quite difficult to put an eventual price on the device, but the value of a system which could clear 100% of mines would be very high."

However, she estimated that the hand-held devices would cost "thousands or tens of thousands of dollars".

LC ZURICH

LC OF MARCH

The Exchange with Tampere and Budapest in May 1999

As an example how a typical exchange in Zurich looks like, we have decided to put the last one in the newsletter. It took place from 17/5/99 till 24/5/99. Eight people from Tampere and ten people from Budapest came to Zurich. After arriving in Switzerland in the morning or in the night before, the program started with a sightseeing tour through the beautiful city of Zurich. In the evening the program started officially. In order to make EESTEC better known within the ETH we invited more guys to the party in the STUZ-cave. The party was great and some people tested the Swiss way to party, but this was not a good idea for everyone.... It seemed that the guests were very tired from the trip, and so the Swiss had to party on their own after midnight (they didn't have to get up as early as the guests...).



The following days till the weekend we had some official visits to companies on our schedule. We visited ABB, Kistler (Measuring Technologies) and the Paul Scherrer Institute PSI (nuclear research centre). Of course, we also visited a brewery, where everybody precisely followed the words of the guide who said: "Drink as much as you want." Afterwards, we decided to buy some barrels of this beer for the weekend. The same day we visited a hemp farm. That was quite funny...

The program in the evenings was the usual stuff you would expect from an exchange. We organised a BBQ, played Swiss bowling, had a pub rally, a disco night and the famous tramparty. Unfortunately, the BBQ was more a standing in a dugout because of this f***ing rain.

The tramparty was quite cool - here is a short description of the procedure: We enter a public tram and party all the way. One guy is the DJ with the portable stereo and some other guys carry some



boxes of beer and snacks, which will be offered to the other passengers. As a toilet, we use the hedge one station before terminus. Normally, a tramparty lasts three to four hours. After that tramparty we decided to go to a club with free entrance. Unfortunately, some guys were not allowed to get in!?! So they had to party in front of the club...

At the weekend we went to the mountains. On the way there it was raining all the time and the place, we wanted to go to, was cut off from the rest of the world because a landslide blocked the street. So we were forced to improvise (Looking back, these were the worst rainfalls of the century according to the news). We stopped in Berne, our capital, and we visited the parliament building. We also visited the picturesque old part of Berne. In the afternoon we heard that the street to the mountains had been reopened and we went on with the organised program, staying two nights at the cabin.

To get used to hiking, a moonlight walk was on the program, but some Swiss people were soooo tired (...) that they had to stay in





the cottage. The next day the guests went hiking in the mountains and enjoyed the beautiful view from there and the marvellous weather (first time in this week, what resulted in red Finnish faces the day after).

Some Swiss had to cook and stayed at the cottage which does not mean that they worked all the time. They were very frisky when the rest came back...

In the evening there was the farewell party. I think it's not necessary to talk a lot about this party. Just one thing: everybody enjoyed it.

It was a beautiful and exhausting week (also for us). We showed Switzerland from our viewpoint to the guests and I hope it was a pleasure to learn new things about our country and people.



written by Dominik Leuenberger

The Hiking Week in Switzerland FunEvent by LC Zurich

LC Zurich invites you to a hiking week in the Swiss alps. The date will be from 30. June to 8. July 2000

Where the mountains were invented

"Ideas for future events?" – "A week of hiking" – "Cool." These words said, everybody in our LC was delighted. We were quite surprised to find, that half of our active members are sort of hobby-hikers.

And this is the plan for the week: We will rent a nice, little cabin up in the alps near Visperterminen. That's in the south of Switzerland, a region with beautiful mountains and endless hiking possibilities. It's marvelous there, you'll love it. We plan to have about 4 hiking trips of different demands, a visit to a company, a visit to the biggest dam in Europe and to a primeval forest.



Take me higher

Of course we are not climbing the Mount Everest with bare hands, but the trips will be something like "demanding". And there is no possibility to get a cab on top of a mountain. So participants should be quite fit. The most important thing will be your shoes

(see picture). Bring good shoes with you, with which you did some longer walks before.



There is another important issue to us: You must have an insurance against accidents and for ambulance transportation in foreign countries, particularly covering Switzerland. The thing is, that if any costs arise from one of our guests not covered by an insurance covering it, all members of our LC could be held liable personally. So prepare your documents before we mail out the application form. Insurance will be mandatory and applicants mailing us their documents for proof will take priority.

We will soon be able to accept applications. If you want to be among the first ones to be informed, then show your interest by subscribing to the maillist (if not already done) with a short mailto:eestec@ee.ethz.ch?subject=hiking_subscribe.

Category: FunEvent

The “informal” mail, announcing this event, triggered an overwhelming echo of interest. We can’t provide enough places for all the people interested so far, so we would like to encourage other LCs to also organise some FunEvents, dealing with nature. And may it “only” be hiking. Or a bicycle tour. Or...

*Have fun,
Leo*

(check out <http://www.eestec.ethz.ch/activity/00/hiking>)

ETH (The Federal Institute of Technology Zurich)



The Federal Institute of Technology Zurich, or - to give the university its German acronym - the ETH, was founded by the Swiss government in 1854 as a polytechnic and opened its doors in Zurich in 1855. Until 1969 it was the only national university in Switzerland. Today it is part of the ETH domain which is made up of the two universities in Zurich and Lausanne (the EPFL) and four national research institutes.

The ETH itself comprises 83 institutes and laboratories, 330 professorships and about 840 lecturers who teach and research. A staff of more than 7’500 work in teaching, research and administration.

Current statistics of the ETH show 11’700 registered students including 2’200 foreigners. Each year about 1’250 students receive an ETH diploma and a further 530 complete a doctoral thesis. Current annual expenditure has reached 1 bio. Swiss francs. (about 615 mio. EUROS)

Research and education fall within the competence of the 17 departments, which the ETH is divided into. One of them is the Department of Electrical Engineering with nearly 1’000 students of which only 4,5% are female, unfortunately!

EESTEC LC Zurich counts almost 10 active members and another 10 passive ones.

WWW-links:

www.ethz.ch
www.ee.ethz.ch
www.eestec.ethz.ch

BERNIE'S VIEWPOINT

Future of EESTEC Alumni

As mentioned earlier, this will be my last column for the EESTEC Newsletter. Since I am no longer a student, I don't have anymore so much time for writing articles...;-) This time I will write about EESTEC Alumni and its future.

Background...

In the September 1999 issue I already wrote down some ideas and asked for feedback. Although the resonance was rather poor, I am still convinced, that EESTEC Alumni needs some basic structures and official representatives which are elected.

My plans...

At the EESTEC Congress 2000 in Delft we will officially establish an association named 'EESTEC Alumni' and elect an EESTEC Alumni Board with 2-3 members. For the seat, I see the most advantages to have it in Zurich, the same place where EESTEC is seated. The reasons are more or less the same, why in 1995 the General Assembly chose Zurich for the seat of EESTEC. In the following I list the most important advantages, of having the seat of EESTEC (Alumni) in Switzerland:

- Easy procedure get recognized, no official registration at authorities requested, no lawyers needed
- No taxes, as long as the association has no economical aims
- Bank accounts are available without any fees; to open one, it is sufficient to provide the statutes and the protocol of the elections of the board
- It is possible to limit the financial liability of the members in the statutes; this is useful to protect the members from financial duties of the association, in case of a financial problems.

The preparations...

Before the Congress there should be a draft of the statutes for EESTEC Alumni. This draft will be discussed at a workshop during the Congress. The resulting first version of the statutes will be discussed most likely in the 2nd General Meeting. After possi-

ble modifications we will officially establish EESTEC Alumni and elect its first official board. One task of this new EESTEC Alumni Board will be to make proposals about further goals and intentions of EESTEC Alumni and discuss them among the EESTEC Alumni members.

The open questions....

- Who does the preparations? Since I am rather busy with getting a new job abroad, the relocation and stuff, I won't have so much time for this. I could try to set up this draft of the statutes, so that there is a base for discussion at the Congress. If anybody is interested in helping me, I'd be happy to share the work.
- Who will participate at the mentioned workshop at the Congress? As I got informed, so far I am the only Alumni which is taking part at the Congress. It would be great if some other EESTEC Alumni could take at least one or two days off from work to participate at this workshop. Also people which are not yet EESTEC Alumni are welcome to join.
- Who will be in the future EESTEC Alumni Board? There were a couple of people interested in working for EESTEC Alumni. Anybody who is interested in running for a post in the EESTEC Alumni Board (or wants to contribute to EESTEC Alumni in some other way), please email to <alumni-cp@eestec.org>. EESTEC Alumni works as much as its contributors!

If you are an EESTEC Alumni, but not able to participate at the next Congress, please read your emails from the <alumni@eestec.org>-list during the EESTEC Congress (19th -26th of March 2000) more frequently. I'll give my best to inform the members of EESTEC Alumni about the state of the work as often as possible. Of course any feedback is always appreciated.

I hope that this plan will end up in a great success and some problems we had till now will be solved in future.

Bernie@hoshis.org

BERNIE'S PROFILE

Hi EESTECer,

My name is Bernie Höneisen and I was chosen by the editor of the newsletter to be person writing this month's profile. Most likely you realized that in (almost) every newsletter there is something written by me. This is because the editor of the newsletter once persuaded me to be the columnist of the EESTEC newsletter.

Quite a job to write every month something more or less (hopefully it was more...;-)) interesting in a foreign language...

About myself:

Years ago, or let's say in October 1993, only a couple of days after starting my studies, I saw some advertisement on the blackboard of our faculty: EESTEC goes to Bologna, free accommodation, students from Bologna, good food...hmm...o.k. lets apply. So, together with six students I didn't know before, I took the train to Bologna, wondering what is going to expect me there. In Italy we spent a wonderful week enjoying the Italian way of life and industry and culture. One year after this I traveled to the exchange in Madrid and for the next couple of years I didn't miss any exchange. And we were having one or two exchanges every year.

Of course taking part in so many activities meant also organizing many events in Zurich. I was in the Congress Organizing Committee 1995, and after this I had the main responsibility about all EESTEC events going on in Zurich for the next couple of years.

In 1997 I was participant at the Congress in Tampere/Helsinki. The whole thing started - after a party the night before - with missing my flight. I still don't know whether this was the reason, why the General Assembly elected me as the next treasurer of EESTEC International...;-) So I ended up



being in the EESTEC Board which wasn't an easy task at all. The biggest problem we had to solve was bringing the almost dead association back to life. We succeeded pretty well; the results we could see at the following Congress in Reggio Emilia.

At this Congress, we also set up the ESGIS (EESTEC Support Group for International Sponsoring), which I was leading at the beginning. In that year the ESGIS created a strategy about EESTEC International sponsoring and wrote it down. Due lack of time, the practical work was postponed to the Congress 2000, when we prepared all the letters and stuff. The results we all can see in this year's bookkeeping!

In autumn 1999 my students' life went to the end :- (and I became a member of EESTEC Alumni. But I started my work for EESTEC Alumni earlier. At the Congress 1999, I offered to build up an address database for the EESTEC Alumni. This database contains now over 50 entries. Last autumn I was a member of the AMOC (Alumni Meeting Organizing Committee). Together with MY chairman and some other well known former EESTECers we invited for an Alumni meeting in the Helsinki area. Lots of prominent Alumni joined the weekend in a cottage with sauna in the middle of nowhere. It was a great success; I think these are the kind of events which make the Alumni easier bearing, that the students' life has gone, thinking back to the good old times in EESTEC...

This was just a bit about my own history in EESTEC, just a small part about what all happened to me in EESTEC. I just can say: I do not regret anything!

HAVE FUN!

bernie@hoshis.org

WORKSHOP IN OULU - THE CITY OF WINTER AND TECHNOLOGY

Written by Sanna Alatalo and Kaisu Mäkelä

EEESTEC LC Oulu arranged a workshop at the end of January. About 15 European students were familiarized with Finnish (sauna) culture, local companies of technology, University of Oulu and, of course student-life in Oulu. The program was well arranged and we get quite positive feedback from our visitors. This report in the form of diary tells what happened during the week. *Italic fonts are copied straight from our visitor's feedbacks.*

Saturday, 22nd January

The participants arrived on Friday and Saturday and the workshop started with a welcome party at Teekkaritalo. We had a presentation about the student-life in Oulu and the main organisation of engineering students in University. We are pleased to say many thanks to OTY, because of the cold beers and good food. After the official part, the traditional Finnish sauna culture was learned.

The welcome party at Teekkaritalo with 2 main things to remember: the lot of sauna and the cold of the tumbling in the snow. There I've started to understand why they call you "Crazy Finns". (Marco G.)



Sunday, 23rd January

This day we had a sightseeing tour at Oulu, an introduction to Finnish culture in Pohjois-Pohjanmaan museo, some winter sports, and a Christmas dinner. The most important places and buildings of Oulu were presented in the morning. The afternoon we were practising some winter sports, sliding and skiing, on a hill in Väkkylä. After that was time to eat. Anne had made a great job preparing the dinner all day long. It was a traditional Finnish Christmas dinner with pork, liver, carrot and so on. But we in Finland still have Christmas in 24th December like all the other Christians.

The funniest activity proved to be sliding. I will never forget the massive slide accidents. People rolling on each other and snow explosions, when the slides stopped suddenly without a gentle braking... Petra's face (full of snow, but ever smiling) was not to be missed. We actually thought that this might be a new Finnish sport: when people are still standing up and getting ready to climb the hill again, the following slide is launched, in an attempt to strike the previous slide's people down and possibly waste them all... (Matteo & Peter)

Monday, 24th January

On Monday we started with a lecture in University of Oulu. The first subject of the lecture was the educational system of Finland. After that TEK told about its duty after graduation. The introduction to the department of Electrical Engineering and the co-operation between industry and University were presented. After the lecture we visited Microelectronics and Information processing laboratory (MediaTeam). They explained us their actual projects and their organisation. On the afternoon we spent some time at the guild room. The chairman of SIK told the latest information about the student union and after that we practised famous NeverSki –skiing. In the evening we had a visit to Nokia Mobile Phones.



Their lecture was separated in two parts. The first part about the company was really interesting. After that we enjoyed the good meal and of course the sauna. (Klaus & Ingrid)

Tuesday, 25th January

This day we had a trip to Rovaniemi. Early waking up in the morning and people in the cars... After visiting a couple of gas stations and trying to find a working tyre-pressure-meter, we finally arrived to Rovaniemi. There we enjoyed a typical meal for Lapland style: reindeers and mashed potatoes.

We ate reindeers, but the rumours said, that Santa Claus has got more of them. After lunch we climbed a hill (yes,

there actually are some of them in Finland).

Wednesday, 26th January



The most exiting moment was the meeting with Santa Claus and his reindeers in Arctic Circle!

Since there was more snow lying around, more of us were enjoying Jani's patented snow-washing®

It was time to leave Santa and go to the cottage, a very typical Finnish one.

Since it was quite late at this point, we drove to Rovaniemi to satisfy our basic needs: food, beer and KORSINKOVA (Koskenkorva), a very dry Finnish wine. We tried some points, until we found the right cottage.

The cottage was in the middle of nowhere. Luckily there were electricity and running water, but the sauna was the traditional Finnish one, warmed with wood.

And this actually was really difficult for more than one reason: First of all the wood was wet. (Have you ever tried to warm up under water?) The second difficulty was, that we had to chop the woods. Not quite difficult, if you have a good axe. Unfortunately, we only had two knives. But you did a really great job.

After dinner we started to do, what we knew best: drinking and sauna. Oh yeah, and we learned another of this nice habits of this lovely country with lots of crazy Finns: When you start drinking dry Finnish wine, you have to step on the cap, just not to think about closing the bottle again. Well, what else can I say? It was a really funny day with a great evening and even greater night. The details will not be told, because the participants know any way, what happened. And always remember: The night belongs to lovers and drunkards. (Zelko & Florian)

A day of horrors...

We wake up after sleeping a couple of minutes or less, and left for Kemi. We visited StoraEnso, the famous Finnish paper factory, and a snowcastle in Kemi.

Many kilometres before our destination we entered a cloud of malignant smell... While we were driving further into the cloud the smell penetrated our entire being.

Then, suddenly, the cars stopped. Semi-conscious, everyone tumbled out of the protection of the vehicles. We entered a large building. Inside, where it was slightly possible to breath, there was a woman waiting for us. She led us into a dark room where her evil sleeping-spells soon took their effect. Unable to control our actions we followed the woman wherever she took us. She led us straight to the malignant heart of her domain. Pounding machines blinded our senses. The only thing which came beyond sound, was the smell...

Like in the fairytales the lady presented food to make us part of her dark domain. After that our memory grew weak. The next thing we remembered, we woke up in the car, breathing fresh air and on our way to fulfill our destiny...

After the unforgettable visit to StoraEnso, we arrived in the downtown Kemi.

Looking out of the window we saw all figures of legends cut out in the ice. With our mouths opened in astonishment, we arrived at snowcastle. Then the horror became real. When our bold heroes stepped out of the cars. A gloom rose in the sky. Wind blew through the snow-covered trees. When the sun disappeared, they felt a pain in their hearts. One of them was missing knew they would always brief this day...

Snowcastle: Although someone was missing. The feelings were impressed by snow. Snow, which was formed to a big-white building. Inside, there were huge, white and cold rooms. Two are supposed to be honeymoon suits. Can you imagine? Still thinking about snow, honeymoon and mobile phones the final trip home started. Snow-trees-sleep. (Aletta and Martin)

In the evening everybody had their own dinner at their host's home. Two Italian and two French guys made food for one very "lucky" Finnish girl. Somebody tasted Austrians desert with Stroh. But finally everybody meet each other in downtown and enjoyed nightlife in Oulu...

Thursday, 27th January

The morning was supposed to be dedicated to shopping but nobody actually did it, because of the last two tiring nights. Thus we went directly from our beds to visit VTT at 13 p.m. As usual Italian and French guys arrived late. And we had our first eating lecture with coffee and cake. We came into the virtual reality thanks to them.

In the evening we took part in Finnish student fun. We had a typical home party at Anne's place, before going to student party at Monalisa.



We started the night eating some pasta salad and drinking beers at Anne's. Time to go so as Krisse was not here to tell us "gogogo", "gogogo" and "GOGOGO". Anne took her place saying "come on", "come on" and "COME ON".

We went to the big student party at MonaLisa. During all the night we danced, drank and met Finnish girls. (Emmanuel)

Friday, 28th January

After a night of getting over the hangover from the previous night, we got up around 10 o'clock just to discover that we were expected at University at 11 o'clock. However, after skipping breakfast + hurrying to the bus, we discovered that the first lecture was cancelled.

We started our day by eating at University. After the lunch we visited the Computer laboratory. *In the Computer laboratory we learned about football playing robots in a simulated environment.* Next in the program was a visit to POHTO.

It was 14 o'clock Eastern European Time, when we entered the bowels of the infamous management training facilities of western Oulu: POHTO. The first slightly tedious lecture was stopped by a guided tour around the training factory, which produced SMD-based PCB's with the help of various expensive high-tech equipments. We learned once again that German technology (Siemens)

is superior to every other equipment available on this planet. After the well deserved and necessary coffee-break ,Mom swiftly compensated for a one hour organizational gap and led us to the one and only beach in Finland near (Garden) Eden. We experienced tremendously beautiful sunset while walking on the entirely frozen Botnic Sea.

The end of the week was near and time was ready for the farewell party at Teekkaritalo.

No need to mention that on our next meeting we had to wait for the French and Italian guys once again. It was interesting to hear about the small highly specialized company Noptel in contact to a large global place like Nokia. The opportunity to use Noptel's equipment, an air-gun, was a very nice feature of the evening even though it was only half the fun it could have been, because we had to use a low-quality Austrian-made gun. After an excellent dinner (once again) we were forced to participate in a dead-boring feedback exercise (You are reading the output of this session right now.)

Right now we are looking forward to an extensive sauna-session with appropriate consumption of alcoholic drinks. If there is time we will most probably end up in the very hot club "45" in Oulu-downtown.

We had time to go to "45". So we left Teekkaritalo and said goodbye for our new friends hoping that we will see each other some day in another EESTEC event.

Saturday, 29th January

The day of goodbyes... The wonderful week was over. We here in LC Oulu had succeeded organising a great event. And the rumor says, that someone among our guests will come to study or work here in Finland in the future.

Important opinions during the workshop

We will remember Sunday as the coldest day of the week. (The temperature was so low that we actually saw some penguins.) (Matteo and Peter)

Unfortunately, time was running out and Krisse (Mum), forced us to leave for the next meeting. After a rather slippery and sliding car trip in Jani's (Daddy's) car we arrived at POHTO (not portto!).

The amount of food exchanged during the following presents-exchange hour will last for the next couple of years and from formed experiences the donators can be certainly and absolutely positively sure that all of the food will be consumed in conjunction with raw amount of ketchup (Finnish ketchup!). It's a shame, really! (Max)

EXCHANGE Ljubljana-Zurich-Bologna-ReggioEmilia-Cosenza-Rijeka December 1999

Written by Špela Ivekovic, LC Ljubljana

We actually did it!

This was our first exchange after the elections where the board members exchanged their seats with new enthusiastic EESTECers... And a couple of days after this big event there was the first test for our new board: the exchange with Italy, Switzerland and Croatia. Luckily everything went OK and as you can see I am sitting at the desk and writing a report as I was told to do by our newsletter editor Denise, who is, I have to admit, very committed to her work.

It all began on a cold sunny Sunday. The participants arrived and joined the welcome party in the evening. First thing in the morning we visited our Faculty for Electrical Engineering and Faculty for Computer and Information Science. We were greeted by the deans of both faculties and after that we took a look at some of our laboratories. The most interesting was the Artificial Intelligence Laboratory where we got the chance to monitor our aura (electromagnetic field around a human body). Regarding the fact that there was a welcome party the day before and that some of the participants had a long uncomfortable journey to Ljubljana, the ones, who took the test, were not really thrilled by the results... But the professor in charge of the Kirlian camera, which was used to monitor human aura, told us, that this could not be an exact diagnosis. For an exact diagnosis we would have to get a lot of sleep and relax for a while and after that take several monitors with at least one hour gap in between. So it was not that bad after all... After lunch there was a city rally where the contestants tried out their counting skills and estimated the number of windows on a parliament building, counted the stairs of the castle tower and much more.

Tuesday was reserved for the visit of a brewery and a cottage in the hills... We were supposed to meet at 9 a.m. in front of our faculty, but the party which took place the previous evening was so exhausting that it took about 20 min for all participants to arrive to the meeting place. We were counting on that of course... Our first stop was the beer brewery Laško, which is one of two most known breweries in Slovenia. And the funniest thing about that is that people think of it as a kind of privilege when they say that they only drink beer from Laško brewery and the other ones are proud to drink beer from Union brewery, which is situated in the centre of Ljubljana. This story about our two breweries goes way in the past and there are many jokes concerning the both of them and people drinking one or the other beer. If you are ever going to travel to Slovenia, just ask for the difference between Union and Laško... Anyone should be able to explain it ...

Well in the brewery we got the chance to see the whole procedure of making beer, we were told about the growing, storing and ripening of hop and we were surprised about the fact that there were only few people taking care of the enormous quantities of beer. Of course we also tasted some of their products and as a matter of fact we were the first ones to try their new product, called NetoPIR, which was a kind of beer with a really funny name. By new I mean that they only started to fill the bottles for the sale and when we were tasting it, it was not available in the shops yet. I said that the beer had a funny name and that's because NetoPIR means "a bat", you know, that little mouse like animal which is hunting at night and sleeping with the head upside down... Well, the point of it was, that if you separated the name in two words: Neto and PIR, you actually got a new meaning of it and that was "a net beer". So much about Slovene excellent marketing ideas...

After the brewery our next stop was Mariborska koèa, a mountain hut in the vicinity of Maribor, the city in the north-east of Slovenia. We couldn't keep ourselves from thinking how nice it would be to use this huge quantity of snow all around us and that's what we soon did. We had a huge snow fight and even the Swiss people decided to take part in a war of "Balkan against Europe" as we later called it. That was mostly it for Tuesday.

On Wednesday we had a really busy schedule. We had an appointment at Drava Hydro Electric Powerplants and we soon realized that this would be a really interesting visit. There are several Hydro Powerplants on the river Drava and we were shown the centre of control of all of them and the communication centre. The nearest powerplant was only few minutes away so we took a look at it too. We had the opportunity to see the control room, the generators they used in the past, the dam, we saw the model of the powerplant itself and all the explanation about functioning of it. We were actually standing on a turbine too... After this exhausting visit we had a nice lunch in their canteen and after that we were headed towards the oldest wine cellar in Slovenia, called Vinag. We saw the oldest wine barrel, smelled the process of growing wine and, of course, tasted their wine. After the wine cellar we took an hour to explore the city of Maribor and buy some souvenirs and we were already on our way back home.

On Thursday we visited a famous Karst Air Dried Ham Factory, where we had a huge feast. It tasted fabulous and I think everybody liked it a lot. We were a bit unlucky because they couldn't show us the ham in process of rip-

ening, we only had the opportunity to see the game meet but it was not really of our interest. But we did get the opportunity to taste the ham afterwards and we were really satisfied about the results of this visit. That day we also visited the Škocjan caves, a natural phenomenon of Slovenia. It was not as comfortable as Postojna cave, where you can take a sort of train and visit the whole cave, but in spite of that it was brilliant. Actually the guide who was leading a tour through the caves was an EESTECer too, so we had it all well organized as EESTECers always do...

Friday was the last day of our busy schedule. First thing in the morning we visited the Nuclear Powerplant Krško. The most interesting part of it was the control room with all the buttons, lights and switches. I must say that after we finished with the tour around the powerplant, we had an excellent debate about the advantages and disadvantages of a nuclear energy with one of their engineers who happened to have been studying in United States for a couple of years and he was really good in answering our questions, especially because he knew all the technical terms in English so he could talk and talk for hours and convince us that there was no better thing than a nuclear power plant. After that we drove off towards our last appoint-

ment on our schedule, the Revoz Renault Car Factory. It was a surprisingly good event. At the beginning it seemed that we were treated as just another burden on their schedule but it turned out to be a wonderful journey through the production part of the factory, where we saw the process of assembling a Renault Clio. One of our guides actually got so involved in the explaining that the group he was leading actually finished their tour half an hour later than the rest of us. It was funny because we all thought that the other group actually got lost somewhere inside the factory.

Well, that was most of it for that week. Of course, we also spent the whole Saturday together, but it was mostly for sleeping, recovering, walking around Ljubljana and the event that always follows, the farewell party. We had the party in a hut in the suburbs of Ljubljana. We all agreed it was a wonderful week of adventures and that we should meet again. The proof of it is the photo... So the message is: if you can, you must come to Slovenia, you won't regret it. We are very hospitable, amusing and friendly people and we always have as much fun as possible. And of course thank you to all the participants of the exchange. We had a wonderful time with you all!

A Special Feature on the Headsponsor of the Congress 2000



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BORED TALK

Dear EESTEC-ers!

The honor is completely mine to write the last bored-talk™ of this board. Since last time I have told you all about the money, I don't feel like doing that again. Instead, I prefer to discuss with you the health of EESTEC, the congress and most important, the period afterwards.

While I am writing this, it is three days before the boardmeeting in London. The preparations are full of go, despite some setbacks we have had. It turned out for the third time now (LC Bologna, six LC's together and for the congress) that the EU is not one of EESTEC's potential funders. No doubt this will be a major topic during the general meetings. The workshops are not fully known yet but at least there will be workshops about the EESTEC History, cooperation with the European Space Agency, international sponsoring and the EESTEC website. And of course, LC Twente will present the very first EESTEC yearbook!

The board is very happy to be working with an active crew of VIP's running around throughout Europe this year. On behalf of the whole board I want to thank them for their work done this year. New people will hopefully occupy their posts after the congress. I have - as congress organizer - already heard some rumors on people anxious to run for the COC, the board etc....

Other rumors from the congress participants sound less promising though. A lot of active EESTEC-ers will graduate soon and they are searching for new active members to remain or become a healthy LC. Since EESTEC really is growing (five new observers this year!!) I hope that all LC's will succeed in finding new members, so everybody: let's work together to keep EESTEC healthy.

Last month a discussion arose after an e-mail of our internal vice-chairman Enrico Natalizio. He justly observed a danger for some events to have too little participants due to a tight series of events and advised a rescheduling. Unfortunately the response had an unexpected tone. Please let all of us concentrate our energy in activating and organizing, instead of arguing, and remember that the board is only supervising our organization between two congresses.

I would like to conclude that EESTEC has a very big potential and a great future in prospect. We should all be proud of that and work to accomplish more!

Paul Oudshoorn, EESTEC Treasurer

FORUM

In this month's forum, Paul Kushner from LC London posted a mail on a previous topic regarding MPEG videos on the ftp site.

He agreed with Bernie's refusal of his request to put the 400 MB London Workshop video on the ftp server, as it would slow down the system.

He wants to know if anyone has experience in 'Real Video' compression and streaming which would allow the files to be stored in a small space. With video streaming, the network will not be slowed down and the files will be available to everyone.

The online forum can be reached from the main EESTEC Web page URL <<http://www.eestec.org>>.

LETTERS TO THE EDITOR

Dear EESTEC members,

How do you find the previous issue of the newsletter? Do you have any comments or opinions? Please feel free to write to the editor at ateditor@eestec.org or hwee.ang@ic.ac.uk.

Furthermore, if your LC have organised any events recently, or have taken part in an exchange with another LC, please also contribute an article about it to the newsletter. Last but not least, if your LC is organising an event for the future, do not fail to grab the chance to publicise it. Write to the editor now!

Yours sincerely,
Denise
EESTEC newsletter editor

*Accepted letters may be edited
for length and clarity.*

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EESTEC is represented in its member cities through Local Committees. The association's head office is located in Zurich, Switzerland. Please contact your LC regarding all matters at a regional level. Please contact the board for all international matters.

EESTEC POSTS: 2000 - 2001

The following is a brief description (written by Enrico, Internal ViceChairman) of EESTEC Posts to be filled in the coming Congress in March.

BOARD (4 persons):

Chairman: with the rest of the Board, represents EESTEC officially, so takes care of all Association topics and targets. (Iikka.Vakiparta@hut.fi)

Internal Vice-Chairman: keeps the contacts with all the Bodies of the Association and propose solutions for the internal matters. (enatalizio@libero.it)

External Vice-Chairman: looks for new contacts with external subjects, in order to spread out EESTEC aims. (a.toni@ic.ac.uk)

Treasurer: administers the financial means of the Association. (p.c.h.oudshoorn@its.tudelft.nl)

OVERSIGHT COMMITTEE (2 persons): Supervise and check the Board's work, in order to make it follow the directions given by the General Assembly. (oc@eestec.org)

INTERNATIONAL BUREAU: Being the International Secretariat, collects and keeps all Association records, including Yellow Pages. (ib@eestec.org)

MAILMANAGER: Maintains and updates EESTEC communication structure, based on electronic mailing system. (manager@eestec.org)

WEBMASTER: Takes care of EESTEC International Webpages. (webmaster@eestec.org)

NEWSLETTER EDITOR: Prepares monthly EESTEC Official Publication, that includes articles, reports and news from EESTEC World. (editor@eestec.org)

FLYER & POSTER EDITOR (in Board's ideas): Prepares soon after the annual Congress the official EESTEC Flyer and the official EESTEC Poster.

YEARBOOK COMMITTEE: Takes care of the preparation of the annual report, that should include all the highlights of the Association for that year. (yearbook@eestec.org)

CONGRESS ORGANISING COMMITTEE: Organise the Congress for the following year. (coc@eestec.org)

CALENDAR

19/3/00 to 25/3/00 Congress to be held in Delft	3/4/00 to 9/4/00 Exchange LC Vienna	1/5/00 to 5/5/00 Exchange LC Twente
7/5/00 to 13/5/00 Electromagnetic Pollution LC Bologna Workshop	30/6/00 to 8/7/00 Hiking Week in Switzerland LC Zurich Fun Event	28/5/00 to 3/6/00 Internet Improvements LC Cosenza Workshop
October 2000 Exchange LC Reggio Emilia	October 2000 Mechatronics LC Munich Workshop	



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