

## OSPE's mandate strongly endorsed

The "In Council" report in the July/August 2001 issue (pp. 16-17, 41) did a good job of explaining the phase one transfer of programs from PEO to OSPE. OSPE is working hard in collaboration with PEO to ensure a smooth transition of programs and services from PEO to OSPE, and it's important to keep PEO members well informed during the three-year transition period.

Unfortunately, the article mistakenly reported that "several hundred P.Engs have opted out of sustaining membership in OSPE." In fact, as of August 13, 2001, only 97 out of more than 65,000 P.Engs had chosen to opt out of OSPE membership. (The "opt out" option has been publicized in OSPE print publications and in the membership section of the OSPE website.) We take this as a strong endorsement of OSPE's mandate by professional engineers in Ontario.

*Robert A. Goodings, P.Eng.  
Chair, OSPE Board of Directors*

## Relevant reference for EIT

I am currently an EIT and I work for Ontario Power Generation. The magazine has become a textbook, of sorts, used by the senior engineers, as a teaching aid, to help me relate my experiences to the relevant issues that apply to practising engineering here in Ontario. I have the benefit of learning from a top-notch electrical P.Eng. here at OPG. He is my mentor, who checks all of my work. He is very knowledgeable, a good teacher, and has used *Engineering Dimensions* on a number of occasions to illustrate why things are done the way they are done. I hope all EITs have the benefit of this type of education. I feel that when my time is up I will have a good understanding of how to practise professional engineering under the *Professional Engineers Act*.

*Shayne Chambers, EIT  
Peterborough, ON*

## Specialist program strikes chord

In the July/August issue, President Gordon Sterling, P.Eng. (p. 3) wrote about the proposed recognition of specialist categories in various fields of engineering.

This strikes a familiar chord for me. Together with a dedicated group of highly qualified engineers, I provided staff support to PEO's specialist program through much of the 1970s and 1980s.

PEO, even with CCPE's reinforcement, may find the same opposition out there that persuaded a former executive director to axe PEO's then Specialist Designation Program. Some of those firms providing engineering consulting services, together with their lobby, will no doubt again brand this as "elitist." The downside, as they see it, is that not only would a certified (or designated) specialist command an enhanced salary, but what to do with employees who are not certified?

Notwithstanding my caveats, I wish PEO every success in its initiation of this timely program.

*Christopher C. Hart, P.Eng.  
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## SEAB an idealistic dream

The article "CEAB accredits first software programs" in the July/August 2001 issue

(pp. 8-9) clearly describes the importance of the CEAB's decision, but there are two points worthy of further discussion:

- ◆ The article sometimes seems to equate computer engineering with software engineering; the two are really quite distinct. Computer engineering is a discipline close to electrical engineering that focuses on the design of digital devices and systems. Electronics and other physical issues are fundamental for this discipline. For software engineers the fact that the computer is built of electronic components is not very relevant. Compared to other engineering disciplines, in software engineering algorithms and logic are more important than electronics. All three institutions approved by the CEAB offer students a choice between computer engineering and software engineering.
- ◆ The article says Canadian Association of Computer Science/Association Informatique Canadienne (CACS/AIC) which comprises the Canadian university chairs of computer science depart-

ments takes the position that: "The engineering approach is to create uniform strong standards, strictly adhered to. The computer science approach also encourages strong standards, but these must be flexible and adaptable to the incredible speed of change in ITC." In my opinion, their position is not a credible one. Although an engineer by education, I have been involved with computer science (CS) departments since their inception 36 years ago. In that time I have never seen a computer science standard strong enough to support the rejection of any program on the basis of coverage. The standards are so weak that one cannot identify a "core body of knowledge" that will be known by any CS graduate.

Moreover, the speed of change in IT, does not justify CS "flexibility." Contrary to the impression held by many CS profs, information technology is not the only field to have changed rapidly in the last decades. When I was looking for a thesis topic in the 60s, I was told to avoid the semiconductor field because, "all that work is theoretical; semiconductors will

never be able to handle audio level power." I cannot remember the last time I was shown a new device that contained vacuum tubes. Other fields have also changed rapidly. Even an amateur can see the vast differences between roads and bridges built today and those built 40 years ago. Today's cars are incredibly different from those of my youth as well.

Engineering educators respond to the problem of rapid change by stressing fundamental principles in their courses. As a result, the majority of what I learned 40 years ago is still true and still relevant today. The CS approach, which tries to keep up-to-date by following every fad, is irresponsible because it does not meet the long-term needs of their students.

One must ask why computer scientists want the title "engineer" if they reject the "engineering approach." The engineering title is worth something only because the engineering approach is effective. We should not allow the use of one without the other.

The Software Engineering Accreditation Board's proposal, apparently rejected by the CS side, was the idealistic dream of a few people who did not understand how

deeply the CS view differed from the engineering view. Those of us who knew both sides knew it would never work. The only realistic solution is to reserve the engineering title for those who have met the strict standards of the engineering profession.

There are lots of other titles available for those who prefer "more flexible" approaches.

*Prof. David L. Parnas, P.Eng.  
Software Engineering Program Director  
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### **Inadequacy of the internal rate of return as project evaluation criterion**

In the March/April 2000 issue of *Engineering Dimensions*, Mr. Benzimra, P.Eng., discusses some of the economic criteria that are used for evaluating engineering projects [1]. Among these criteria, the internal rate of return (IRR) and the next present value (NPV) consistently rank, in various national and international surveys, as the most popular, with the IRR ranked in most cases at the top. The enduring world-wide preference of the IRR over the NPV results primarily from the fact that, unlike the NPV whose value is project-size dependent and expressed in somewhat artificial time-adjusted dollars, the IRR is expressed in the project-size independent form of an interest rate which is easily understood by anyone who has ever held a bank account.

Unfortunately, Benzimra's paper does not alert the reader to the essential circumstance that the immensely popular IRR is, in fact, a flawed and dysfunctional project evaluation instrument. Except for very special project cash-flow patterns of little practical significance, the IRR is either misleading by not reflecting a project's true rate of return, or it is mathematically undefined.

Symptoms of the IRR inadequacy have been known for at least 65 years now [2]. However, to this date academics have not been able to properly identify those symptoms' root causes, and thus persuade practitioners to abandon their favoured criterion. The IRR's undeserved popularity has resulted in unrealistic estimates of projects, anticipated rates of return, creating the potential for large-scale opportunity losses to both engineering companies and to money lending financial institutions, as a direct consequence of their ill-founded IRR-based decisions.

A simple and convincing explanation of the IRR inadequacy as a project evaluation and project ranking criterion can be found in this author's recent publications [3] and [4] which are illustrated with numerical examples and figures. The theoretically sound concept of a project's true rate of return, devised to replace the disqualified IRR, is introduced in [5]. For the reader's convenience, the above publications can be obtained upon request directly from the author, either as hard copies or in electronic format.

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- [1] Benzimra, S., 2000, "Economic and financial analysis of projects," *Engineer Dimensions*, Vol. 21, No. 2, pp. 22-24.
- [2] Wright, C.A., 1936, "A note on time and investment," *Economica*, Vol. 3, November, pp. 436-440.
- [3] Hajdasinski, M.M., 2000, "Internal rate of return (IRR)—a flawed and dysfunctional project evaluation criterion," *Mining Engineering*, Vol. 52, No. 8, pp. 49-56.
- [4] Hajdasinski, M.M., 2000, "Internal rate of return (IRR) as a project ranking criterion," *Mining Engineering*, Vol. 52, No. 11, pp. 60-64.
- [5] Hajdasinski, M.M. 1995, "Meaningful rates of return for project evaluation," *Proceedings of the 4th International Symposium on Mine Planning and Equipment Selection 1995*, Calgary, Oct. 31-Nov. 3, 1995. Singhal et al (eds), Balkema, Rotterdam, pp. 81-87.

### **Correction**

On page 36 in the article "No Easy Road" (September/October 2001) John Robinson, PhD, P.Eng., should have been identified as chief engineer and principal road safety auditor with Delphi Systems Inc. We apologize for the error.

Letters to the editor are welcomed, but should be kept brief and are subject to editing. Publication is at the editor's discretion; unsigned letters will not be published. The ideas expressed do not necessarily reflect the opinions and policies of the association, nor does the association assume responsibility for the opinions expressed. All letters pertaining to a current PEO issue are also forwarded to the appropriate committee for information.