

Engineers set to help forge Norway's energy future



Above: Professor Oluf Langhelle (second from left) in discussion with (left to right) David Mofflin FIEAust CPEng, (CELM Chair), Doug Aberle FIEAust CPEng (Managing Director Western Power), Professor Tony Lucey FIEAust (President EAWA Division) and Stuart Payne FIEAust CPEng (Manager of Engineering - Australia and New Zealand, WorleyParsons).

Norway's booming oil and gas industry is providing a secure future – and a very healthy pension fund – for the country's five million or so citizens.

But there are concerns over the country's reliance on non-renewable fossil fuels, and engineers have been identified as crucial to making Norway more energy efficient.

They were some of the points made by Professor Oluf Langhelle at a breakfast address organised by the Centre for Engineering Leadership and Management at the UWA Club in late October.

Prof. Langhelle, a political scientist at the University of Stavanger in Norway, spoke on 'Economic Sustainability – the Norwegian Experience'.

The offshore oil and gas industry has delivered an economic miracle for Norway.

"Oil and gas moved Norway from being one of the poorest countries in the 1950s to being one of the richest in the world in 2010," Prof. Langhelle said.

In Norway, the petroleum sector drives the economy and accounts for 22% of GDP, 27% of State revenue and 47% of exports.

But the dilemma is how to ensure economic sustainability when the non-renewable oil and gas reserves peter out. In some respects, it's the same dilemma facing Western Australia with its abundant – but finite – natural resources of oil, gas and iron ore.

Continued on page 2

Hatch and WorleyParsons share strategies for a successful PDP



A special event was held recently for Professional Development Program (PDP) Coordinators to network and hear presentations about the highly successful PDPs at Hatch and WorleyParsons, which are both rated in the top five implemented programs nationally.

Hatch has one of Engineers Australia's longest running PDPs first established in 2004. The past two years have seen the program increase in momentum and it is now producing Chartered Engineers.

Hope Sullivan, the Lead at Hatch Corporate Learning Centre and one of the main drivers of the program, presented a holistic picture at the session, explaining the structure, strategies and reasons behind Hatch's PDP success.

Hope identified support, communication and the embedding of the PDP and Chartered Status as three key components at Hatch.

Also at the session, Calynn Ch'ng from WorleyParsons spoke of the practicalities of disciplinary group sessions for CER Writing, a new strategy for 2010.

Find out more detail about the Hatch and WorleyParsons PDPs on page 4 of this newsletter.

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Engineers set to help forge Norway's energy future (continued)

The solution the Norwegian government came up with is to use the taxes paid by the oil and gas sector to pay for an investment fund – the Government Pension Fund Global – to provide the retirement pensions of all Norwegians.

The fund is one of the largest pension funds in Europe, and some 60% of it can be invested in the share market.

"I can stand here and say I am an owner, a shareholder in more than 7,000 companies all over the world, because the State has put my money into the stock market globally," explained Prof. Langhelle. "And my share of this stock is now 600,000 Norwegian Kroner, or about A\$110,000.

"I have three kids and a wife, and they each have the same amount of money."

The fund is huge. Langhelle says it is now worth some three billion Kroner, more than Norway's GDP.

The fund is made possible due to the high rate of tax – 78% – the petroleum industry pays in Norway.

With Norway's economic sustainability assured, Langhelle says environmental sustainability is more of a challenge, despite the country's efforts so far.

In 1991, the country was one of the first

to introduce a carbon tax, and is part of the European Union's Emissions Trading Scheme (ETS). It is also spending a lot of time and money on exploring carbon capture and storage (CCS).

"What Norway has done is to invest, I would say, more money than any other nation in terms of GDP, in carbon capture and storage," he said.

But Langhelle says more needs to be done in the area of renewable energy to meet Norway's ambitious climate change targets.

"We need energy efficiency, we need cleaner fossil fuels, we need CCS, we need new (types of) cars," he pointed out.

"The transport sector is the real challenge in my view and that's where we're stuck with oil. We need something else than oil. Then, we can use the oil for something else.

"We need to make new renewable energy more efficient and cost competitive, and we need to integrate renewable and fossil fuel energy sources – biomass, wind and solar.

"Only engineers can do that. You are the only people who can make these changes.

"You are the most important people on the planet in my view."

By Tony Malkovic

Fremantle Fortress awarded Heritage Landmark

On November 10 a ceremony was held on Rottneest Island to commemorate the award by Engineers Australia of an Engineering Heritage National Landmark to the Fremantle Fortress - Rottneest Island World War 2 Coastal Defence Facilities.

important base for American, British and Dutch submarines.



*Colonel Michael Page, Assistant Commander, 13th Brigade, Australian Army; and Mr Laurie O'Meara, Chairman, Rottneest Island Authority; after unveiling the EHNL disk.
 Photo by L Margetts*

The facilities were constructed in the 1930s to provide a coastal defence system for the Port of Fremantle, in the event of a possible seaborne enemy attack.

A complex infrastructure was installed at Rottneest including two 9.2 inch gun batteries at Oliver Hill and two 6 inch batteries at Bickley Point. Army engineers and civil contractors constructed the works without the benefit of modern earthmoving equipment and mobile cranes.

Fremantle subsequently became an

From the President

Energy, creativity and confidence

Professor Tony Lucey FIEAust

'Enhanced energy, creativity and confidence' in 2010 was the rallying cry of outgoing WA Division President Chris Fitzhardinge one year ago. Through the combined efforts and dedication of our many member volunteers, the professionalism of the Division Office, our engaged partners and the increased drive of the Engineering community in WA, 2010 has responded magnificently to the call. In short, it has been a 'big year'. It brought the confluence of major events including the new Strategic Plan 2010-2015, the 2010 Infrastructure Report Card and Ballot2010, overseen and intertwined by the theme of Engineering Leadership. In tandem, membership numbers in all ranks grew rapidly while participation in, and the number and quality of, technical events has been nonpareil. Energy and creativity have built a more comprehensive culture of confidence in our organisation and, more broadly, within Engineering. This now permits Engineering to scale even greater heights of achievement in delivering the wellbeing of our communities, state and the nation.

Great organisations respect, learn from and are inspired by their past achievements. Equally, they live and act in the present to meet current needs while also following a path that leads to the fulfilment of clearly articulated long-term goals. Mindfulness of the past-present-future continuum underpins the enduring value and sustained development of an organisation. In Engineers Australia the major events of

2010 – the launch of the new strategic plan, the infrastructure report card and Ballot2010 - were preceded by careful preparatory work stretching back over two years. This work built upon the past, admixing our present capabilities and aspirations, so as to set our course and prepare us for the future.

However, the aforementioned signature events are only half of the story of 2010. The conduct and continuous improvement of our core activities – technical programs, conferences, PDP, CPD, and the opportunities provided to network and be part of a community – has continued apace. This is the measure of the life and energy of our organisation that exists to support and improve engineering practice.

While organisational plans serve to articulate and guide, the actual culture of an organisation resides in its people – all of them. Thus, through the core activities in which our members most tangibly engage, 2010 has been a year in which the all-round confidence of Engineering and the individual engineer has grown. This confidence covers both technical and societal aspects, allowing Engineering to assume the justifiably greater role it has in assuring the wellbeing of our communities in a sustainable future. Through 2010 the full meaning, direction and responsibilities of engineering leadership have become clear.

I would therefore like to acknowledge all of the people – our members - in the WA Division who have made 2010 a 'big year' through their participation in, and contributions to, activities

and events. In particular I pay tribute to the volunteers on the committees of our many panels, groups and societies. The chairpersons of these deserve special mention for their leadership and personal commitment. I would also like to thank Bob Broadway for his leadership of the Divisional Advisory Board of Western Australia (DABWA) that brings together, harmonises and synthesises the culture and aspirations of our Division – no easy task. Bob is stepping down after two years of service as the inaugural DABWA chairperson. We welcome Helen Pederson into this role in 2011. I am also extremely grateful to every member of the 2010 Division Committee for bringing their energy, creativity and experience to what was a wonderful team that made my tenure as President so rewarding.

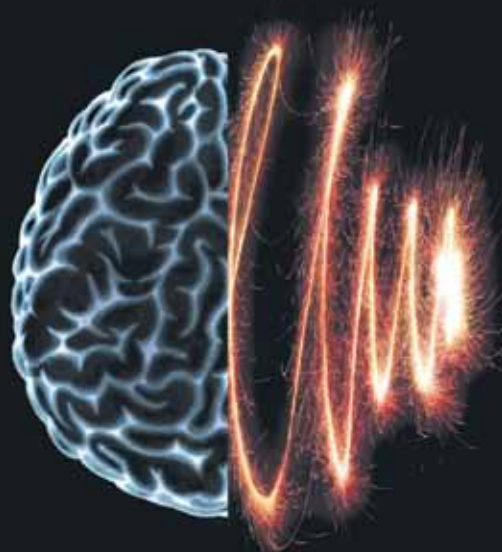
The WA Division Office team, under the leadership of Director Janice Lake, is to be congratulated for its exemplary work through 2010 that quietly underpins all of the services provided by Engineers Australia and the success of its many events. Their approach uniquely combines professionalism, dedication and a liveliness that makes it a pleasure for member-volunteers to give their time to Engineers Australia.

It is with confidence in our future that I welcome Professor Mark Bush as the 2011 President of Western Australian Division.



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Hatch and WorleyParsons share strategies for a successful Professional Development Program

Continued from page 1



Hope Sullivan, Lead at Hatch Corporate Learning Centre WA, outlined three main reasons for Hatch's PDP success.

Support

Hope identified that a successful PDP needs to include mentoring, internal networking and a variety of targeted Learning and Development opportunities.

Included in the presentation was an innovative collage of interviews with senior management, mentors and graduates illustrating the level of support and impact the program has across the organisation. This level of support from all groups is integral to the programs success.

Communication

Internal communication between senior management, mentors and the graduates is vital.

It is the role of the PDP Coordinator and Hope to ensure that the lines of communication remain open. Opportunities for Graduates to meet regularly with mentors and Hatch senior management provide an opportunity to network and build internal relationships. Such sessions also encourage information

and knowledge sharing through presentations and workshops.

Another vehicle of communication is via the online communities of practice (CoP's). The PDP CoP includes online presentations, an opportunity to participate in blogs and forums as well as a variety of resources including CER writing support.

These different modes of communication have assisted in the building of relationships and sharing of ideas which has produced benefits for the organisation beyond the graduate's attainment of credentials.

Embed

Self determination and encouragement of engineers to create their own career journey is part of the development strategy at Hatch.

The PDP is recognised at all levels of the organisation as an important component ensuring Hatch remains an innovative organisation that can continue to deliver to its clients.

The attainment and assessment of competency through working towards Chartered Status on the PDP supports this and is embedded in the development of their engineers.



The WorleyParsons PDP is a long established program and one of the largest in Australia.

The process of attaining Chartered Competencies is well embedded into WorleyParsons development strategies. The program is coordinated by the Graduate Development Organisation (GDO) and supported by senior management and mentors.

Calynn Ch'ng is the Accreditation Director on the WA GDO and spoke of the practicalities of disciplinary group sessions for CER Writing, a new strategy for 2010, and how this has created a positive impact on WorleyParsons' Graduate Development Program.

The Study Groups

Discipline specific study groups were formed to assist the graduates CER writing. The study groups were formed to discuss project work and how it relates to the competencies and are facilitated by a Chartered Engineer from the discipline.

The Chartered Engineer provides insight on work examples that will address the different competencies and facilitates discussion around recently approved CER's to allow the group to share and learn from feedback from the National Assessors.

The groups have experienced a high level of participation and feedback has been very positive.

The Outcome

The change to discipline specific study groups has seen excellent outcomes for the program and the organisation.

The submission rate of CER's raised by 25% from the first round of meetings after a CER Writing Workshop.

The activity of graduates from common disciplines meeting and discussing work facilitated by a Chartered Engineer has also assisted in knowledge transfer within the discipline and throughout the organisation.

"The Hatch and WorleyParsons Professional Development Programs do not function in isolation. It is part of the wider people strategies actively supported by senior leadership, mentors and the graduates themselves."

Alexandra Sparvell
National Industry Relationship Manager
Engineers Australia

Engineers Australia extends a warm thanks to both Hatch and WorleyParsons for their participation in the special session for PDP Coordinators. It is fantastic to see organisations that are willing to share their strategies that will assist others and ultimately benefit the profession.



Woodside recommits to PDP



Pictured above: Sherylly Yap, Eamonn McCabe, Sophie Chapman, Mike Concannon, Ashara Wickramasinghe, Alex Sparvell, Simon Hamblin, Steve Cooper, Lindsey Hershman.

Woodside continues to strive to improve its development programs for new engineering Graduates. To support this development, Woodside has recommitted to the Engineers Australia Professional Development Program to compliment Woodside's existing programs.

"This is important for individuals, important for the projects and for the company and the profession. This program is part of a wider strategy around professionalism at Woodside," said Eamonn McCabe MIEAust CPEng, Vice President Oil and Gas Development, Woodside.

The Professional Development Program will help Woodside's young Engineers to develop in a structured and supported way the competencies of a mature engineering professional. Additional benefits are also anticipated in the following areas:

For the Graduates;

- A shorter period of professional formation
- A supportive environment for the acquisition of competencies
- To enable Graduates to become well rounded experienced Engineers
- To increase Graduates confidence in their professional ability
- To provide Graduates with an external benchmark for professional formation and recognition

For Woodside;

- A structured framework for the professional formation of the Engineering team
- Woodside being viewed as an "employer of choice" thus enhancing recruitment and retention of high calibre Graduates
- To have access to an external benchmark for professional quality, and capability

Woodside looks forward to working with Engineers Australia to continue to provide structured and supported development for young Engineers.



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Women welcomed to the world of engineering



Above: Challenger Institute's managing Director Liz Harris (front, left) and Chevron's managing director human resources Kay Butler (front, 2nd right) with the first engineering scholarship winners.

Eleven women have been given a unique opportunity to gain rewarding careers in engineering through new industry-sponsored scholarships at Challenger Institute of Technology.

The women were presented with inaugural Women in Engineering Scholarships in November at Challenger's Australian Centre for Energy and Process Training (ACEPT) in Perth. The Certificate III in Civil and Structural Engineering course will provide foundation skills for employment in construction industries associated with Western Australia's expanding resources industry or serve as a pathway to higher-level engineering qualifications.

Special Feature

Influencing the next generation of engineers



Professor Parisa Bahri is the Dean of the School of Engineering and Energy at Murdoch University. The School has some 400 engineering students.

One of the key lessons Parisa Bahri has learned in her career has nothing to do with engineering – but everything to do with working with people.

“Something I learned through engineering education is that you have to think a lot, be a good team player, and you have to be able to work with people who are not engineers and are not exactly from your discipline,” she says.

“You have to be able to analyse the problem, make lots of observations, then come up with a solution.”

That sort of can-do approach has helped Professor Bahri shape the careers of many engineers across Western Australia.

Prof. Bahri is the Dean of the School of Engineering and Energy at Murdoch University. The School has some 400 engineering students.

“We don’t cover the traditional engineering disciplines, it’s all specialised,” Prof. Bahri says.

“Murdoch offers renewable energy, industrial computer systems, instrumentation and control, electrical

power, bioprocess, medical and environmental engineering (through another school).”

She says she’s interested in promoting engineering as an exciting career throughout the wider community, but especially addressing the low number of women in the profession.

Prof. Bahri began her engineering career in Iran as a research engineer, specialising in process modelling and control which included optimising the operations of chemical and mineral plants.

She says a key factor in shaping her career was undertaking further study – a Masters degree and PhD in chemical engineering – and becoming an engineering educator in the university sector.

Two people in particular have played a part in shaping her leadership style.

“When I came to Murdoch, the engineering dean at the time – Professor Peter Lee – and the dean after him, Assoc. Professor Maurice Allen, were the two main people who influenced me,” she says.

2010 YEAR OF
ENGINEERING
LEADERSHIP

As part of the Year of Engineering Leadership, the Centre for Engineering Leadership and Management (CELM) is profiling prominent engineers for their thoughts on the profession and leadership.

“Their vision, their dedication, and their great mentoring abilities – made them perfect role models.”

Likewise, Prof. Bahri believes in fostering leadership in others by finding out what they want to achieve and helping them set goals.

“I try to work with people and involve people in the process of decision making,” she says.

“I like to help people to know what it is they want to become, to realise their potential and to find the path way.”

Bahri says the key to engineering leadership is to realise there are always problems and issues to resolve.

“Becoming an engineer gives you the ability to solve whatever problems come your way,” she says.

“If you are a good engineer, your vision and problem solving abilities could help you to become a good leader.”

By Tony Malkovic

International geotechnics experts gather in Perth

The world-class research and industry collaboration being used to help pave the way for Australia's largest resource projects was in the spotlight in Perth in early November.

Key industry figures from as far afield as Houston, London and Norway were among the speakers featured at the International Symposium, Frontiers in Offshore Geotechnics held at UWA.

The conference was organised by the Centre for Offshore Foundation Systems, which is part of UWA's Oceans Institute.

In opening the conference, Shell's head of oil and gas in Australia, Ann Pickard, indicated that Shell is due to make a final decision next year on the proposed Prelude floating LNG facility earmarked for the Browse Basin.

She said the project would be the world's first deployment of a floating LNG facility.

It will be huge. At 480 metres long and 75 metres wide, she said it would be as long as a par five golf hole.

"It will be one of the largest floating structures ever built," she said.

Ms Pickard also outlined other projects Shell is involved with such as the \$43 billion Gorgon Project and stressed the value of local expertise in areas such as sub-sea pipelines.

"The designers of the Gorgon pipelines utilised some of the latest research techniques, many of which have been developed at UWA, to predict the behaviour of the pipelines through the life of the project," said Professor David White, of the Centre for Offshore Foundation Systems.

The centre is acknowledged as an international leader in offshore geotechnical engineering research.

It is now involved in all of the major projects currently under development in WA, having performed studies to support the Pluto, Wheatstone, Browse, Ichthys, Sunrise and Scarborough projects.



Professor Susan Gourvenec and Winthrop Professor Mark Cassidy of the Centre for Offshore Foundation Studies with the head of Shell, Ann Pickard, and Tim Shanahan of the Energy and Minerals Institute at the ISFOG conference at UWA (l-r). (Photo: Tony Malkovic)

Face to Face Expo for Young Engineers

Saturday 2 April 2011
Robinson Pavilion, Claremont Showgrounds

By participating in the Face to Face Expo for Young Engineers 2011, your company has the chance to inspire and gain the trust of enthusiastic and motivated students and begin the dialogue necessary to attract the right people.

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Seasons Greetings from Engineers Australia

Engineers Australia WA Division would like to wish all members and their families a very Merry Christmas and a happy, healthy and safe New Year!

Please note the WA Division will close 5:00 PM, Wednesday 22 December and re-open 8:30 AM, Tuesday 4 January 2011.



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Dates for your Diary

ENGINEERS AUSTRALIA
WA DIVISION NEWSLETTER

Date/Time	Host	Event & Venue	For more information
12 - 16 Dec	Engineers Australia's National Committee on Applied Mechanics	The 6th Australasian Congress on Applied Mechanics Perth Convention and Exhibition Centre	Visit the congress website at: www.acam6.org or email acam6@acam6.org
Wed 15 Dec 5:30 PM	Engineers Australia	Chartered Status Workshop Auditorium, Engineers Australia WA Division	Register Online: www.engineersaustralia.org.au/wa
Thu 10 Mar	Engineers Australia WA Division	2011 WA Engineering Excellence Awards Breakfast Launch	Contact: Sharleen Mantle P: 08 9321 3340
Sat 2 Apr	Engineers Australia WA Division	Face to Face Expo for Young Engineers	Exhibitor Bookings: BPA Ph: (08) 9409 5143
1 - 5 Aug	Engineers Australia	Australian Engineering Week	For more information: www.makeitso.org.au
Sat 17 Sep	Engineers Australia WA Division	2011 WA Engineering Excellence Awards Dinner	Contact: Sharleen Mantle P: 08 9321 3340
28 - 30 Sep	Engineers Australia's National Committee for Coastal and Ocean Engineering, PIANC, IPENZ and the NZ Coastal Society.	Coasts and Ports 2011 Coasts & Ports 2011 will bring together engineers, planners, scientists and researchers to focus on the technological, scientific, policy, planning and design issues related to our diverse and developing coasts.	Website: www.coastsandports2011.com.au

Some event dates and times are subject to change. Please check our website www.engineersaustralia.org.au/wa/events for up-to-date information



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