

NB

News Bulletin

Australian Branch



NUMBER 181 MARCH 2018

Institution of
**MECHANICAL
ENGINEERS**

PRODUCED FOR INSTITUTION OF MECHANICAL ENGINEERS MEMBERS LOCATED IN AUSTRALIA

PRINT POST APPROVED 100020771

PRICE \$4.00

MANDATORY REGISTRATION OF ENGINEERS - A SPECIAL REPORT

Registration requirements within our profession are due to expand over the next few years. Why is this being done and what are the implications for IMechE members?

Engineers play an important role in the economy and undertake safety critical activities. Yet, unlike lawyers, doctors and many other professionals, they are seldom required to hold a licence in Australia. Although licensing is considered by some as merely a source of unwanted expense and paperwork, it also offers a chance for increased prestige if a profession is clearly defined in legislation and given suitable protections.

IMechE members based in Queensland- or in specific industries such construction- are already subject to mandatory registration. The concept is gradually spreading around the rest of the country. In ACT, the state government announced an intention as far back as 2012 to introduce a mandatory register in response to high profile construction incidents. The project has reportedly been postponed pending a clear agreement on the definition of engineering work. In Victoria, the state government has made registration an election commitment and is progressing rapidly towards implementation. Judging by newspaper reports and social media articles, there is broad support for a scheme, although it is recognised that registration is not capable of reducing poor practice unless carefully designed.

The situation in Victoria prompted IMechE Fellow Brian Carter- who has worked as a professional engineer for 37 years- to bring news of the latest push for registration to the attention of his local panel. He had discovered a consultation paper from the State Government's Department of Treasury and Finance that had not been widely circulated and only allowed a very short period for comment. Around this time, two prominent engineering bodies were engaged in publicity campaigns urging Victorian engineers to prepare for state registration by joining their in-house registers. Brian had these initial thoughts:

'At first blush registration would seem to be a good idea. It could protect the profession, it could improve the standing of engineers in the community and it could lead to higher standards of design and manufacture. However, there could be a downside too. If not introduced with enough forethought, it could end up simply as a requirement to apply for renewal of registration every year, accompanied of course by payment of a licence fee. Worse still, registration could be delegated to an organisation that you may not normally consider joining (and paying fees to) but doing so could be the only way of gaining registration. In short it could just become a bureaucratic and financial burden on engineers.'

After careful consideration, the Victorian panel's committee decided that state registration would provide a chance for the IMechE to strengthen its local membership and reputation, but the opposite could happen if it was not able to shape policy. So the panel wrote to the state government and arranged a meeting with them to express support for the scheme, providing that it was developed through detailed consultation and operated using a 'co-regulatory' framework.

The principle of co-regulation is seen as one of the best ways of ensuring a good outcome for the institution, its members and the industry at large. Under a co-regulatory

ON THE INSIDE

'Rest of World' SOFE Competition
Rapid & Agile Development
The Future of Work

Good Vibrations
Panel Roundups
Stargazing for Engineers

scheme, engineering bodies such as the IMechE and others would become approved assessment bodies, able to assess an engineer's qualifications and experience on behalf of the governing board.

The main advantage of co-regulation - as mentioned by the Victorian consultation paper- is avoiding the cost and time of additional vetting which has already occurred as part of an engineer's registration with a professional body. An additional bonus is that it would allow engineers to remain with the professional body of their choice without needing to switch or take up dual memberships. For many, this is an issue that is extremely important. Affiliation with a professional body is a personal decision, based on professional identity, influence from industry peers, the amount of support offered in the local area and other factors. A scheme that respects this is therefore highly desirable and far more likely to be embraced by those it governs.

The arrangement in Queensland illustrates how a co-regulatory arrangement would work. The governing body- BPEQ- authorises nine potential routes to becoming registered, depending on sector. One common method for IMechE members to become registered is to convert their CEng title to CPEng through Engineers Australia under the terms of the two institutions' Mutual Recognition Agreement. CPEng can then be used to join Engineers Australia's National Engineering Register - and hence qualify for BPEQ- without becoming a full member of Engineers Australia. Members in Queensland should note that an application by the IMechE to become an approved assessment body is pending; a move that would simplify the process even more.

Back in Victoria, the state government has released the Engineers Registration Bill 2018. Mechanical engineering will be one of the first sectors enlisted and the establishment of a co-regulatory scheme has been proposed. The

bill is based largely on the model operating in Queensland. Only minor differences are expected once registration becomes operational.

The IMechE Victorian panel has written to its members stating that no action is currently required to prepare for state registration. Although there is wide speculation over who will become approved assessment bodies, the mechanism for conforming this is still many months away from reality.

So what can our members do at this time? As Brian Carter explains, one action is to track development of the Bill as it passes through parliament. Even members who work in a state or territory that is not subject to mandatory registration scheme are also advised to follow developments in Victoria closely in case registration reaches them shortly afterwards. Brian says,

'As in many pieces of legislation the devil will be in the detail. In this case it will be in the Regulations, which will be prepared once the legislation has been passed. When the opportunity arises to comment on the next stage, which could be the writing of the Regulations, make a comment. If you don't do so, you will have passed up the opportunity to shape a registration scheme into a form that you would wish to see.'

Another recommendation is for members to brush up on their Continuous Professional Development (CPD) records. CPD is expected to form a central part of state registration schemes and is an excellent way of supporting ongoing competence as the world around us changes. To make the process of recording development easier, the IMechE has developed a Career Developer tool which is available online via a member's online portal.

Finally, think carefully about what it means to be an engineer and ensure that people inside and outside the industry are using this term correctly. For example, managers preparing

job adverts should only to use the word engineer or engineering when the words are well suited to the role. This has always been important, but now there is more at stake, because it will be difficult for the 'engineer' to obtain a licence and provide CPD records if they are performing duties that bear little resemblance to what is in the legislation.

The credentials offered by the IMechE are highly regarded in many countries around the world, so it is in an excellent position to contribute to the development of state wide registration schemes and act as an approved assessment body. Registration need not be feared, as it comes with both privileges as well as responsibilities. But to ensure the schemes reflect everyone's needs, it is critical that engineers make their voices heard.

- For more information on the development of a state registration scheme in Victoria, visit legislation.vic.gov.au, then choose Bills under the Parliamentary Documents section.
- To find out about the various routes to registration in Queensland, visit BPEQ's website: bpeq.qld.gov.au.
- For other enquiries, contact your local IMechE panel.

Nic Coulthard - Editor

Institution of
MECHANICAL
ENGINEERS



Donald Dalli (Europe region) presents his winning lecture

REPORT FROM THE 'REST OF WORLD' SOFE COMPETITION

New Zealand - 17th February 2018

The beautiful City of Christchurch, New Zealand was chosen as the venue for the 2018 Rest of World Speak Out for Engineering (SOFE) competition during previous International Strategy Board meetings. The location of a city being rebuilt after the devastating earthquake in 2011 seemed a fitting backdrop.

The winning competitors from six Regions- representing the Americas, Europe, South East Asia, North East Asia, Southern Asia and of course our local representative, Oceania- gathered at the Commodore Hotel in Christchurch on the evening of 16th February to be warmly welcomed by the Oceania Region Chair, Ian Mash and the New Zealand representatives who organised the event. The evening was spent introducing the competitors to each other and networking with some of the Oceania representatives.

The morning began with the competitors determining the sequencing of their presentations through an impartial process. After an Introduction by Ian Mash and a safety briefing, the competition got underway. The order of the presentations was:

- Shajee Jurangpathy, Southern Asia - *Thermoacoustic Cooling*
- Mohammad Allam, South East Asia *Autonomous Vehicles*
- Roman Stromeier, Americas *CFD modeling of wings*
- Andrew McLaren, Oceania *Aerial grasping for drones*
- Donald Dalli, Europe *Hip Joint test rig*
- Anne Beh, North East Asia *Sustainable solutions for transport*

As winners of their individual regions, the standards were expectedly high. The three judges, Andrew Lezala - Australian Branch Chair, Siddharta Khastgir - International Young Member representative and Tom Morton – Engineering NZ had a lot of deliberating to do before making a decision. The competitors were notified of the results during the group dinner that evening. Unlike the Academy Awards of 2017 (where human error resulted in an incorrect announcement for the award of Best Picture), Ian Mash made the right

presentations to the right people.

- Shajee Jurangpathy – Third Place
- Andrew McLaren – Second Place
- Donald Dalli – Winner

The judges hinted that there were not many points separating the competitors and the high standard made judging very difficult.

Our congratulations go to all competitors for making the effort and competing through the various heats in their respective countries to culminate in a very successful Rest of World SOFE competition in Christchurch, New Zealand. Perhaps, in keeping with the Institution's desire to have a global presence in Mechanical Engineering, the UK might join the next Rest of World SOFE competition in 2019 to enable the winner to be the first SOFE World Champion. Our thanks go to the NZ Organising Team for organising the logistics surrounding the competition which was enjoyed by all who attended.

Leslie Yeow - Hon. Secretary, Oceania Region

**Institution of
MECHANICAL
ENGINEERS**

RAPID & AGILE DEVELOPMENT.

In the world of business, those who stand still risk getting swept away. The answer is to employ a few simple techniques to keep your business moving alongside the competition.

Agile development might sound like a management “buzz-phrase” but it is the true nirvana of what we all should aspire to do in this big data world we now find ourselves in.

The need for continuous improvement and maintaining a competitive advantage is no longer optional when you look at those fallen examples of the past. Kodak, Nokia, Blockbuster Video, Polaroid and Xerox all come to mind when we talk about a lack of improvement and maintaining a competitive advantage.

The key principles to agile development are:

- Providing rapid feedback
- Adopting simplicity
- Changing incrementally
- Embracing change
- Encouraging quality work

Mature and high performing organisations that promote innovation, invention, and learning are typically more scientific and data-driven organisations. They are also happier places to work too. The maturity of an organisation's culture around change and continuous improvement can be categorised by the following three levels:

- Level 1- No need to change. Old adage of, “If it ain't broke, don't fix it?”
- Level 2- Need to change but it's going to take forever to implement the smallest change

- Level 3- Need to change, develop, adapt and learn continuously

There is also everything in between. The challenge also becomes knowing and understanding the true impact of the change you implemented.

Why can't and why don't we in other change rapidly, adapt, develop, and learn from the teraflops of data we amass? The oil and gas industry- like many others such as manufacturing, energy and utilities- runs 24 hours a day and 7 days a week. We can't surely be blaming it on risk and pulling the “safety” card every time a change is required either.

A key factor which heavily influences and aids the rapid development and implementation of change in simple-to-complex systems in industry is a true understanding of the system and the interdependencies of the sub-systems and components which make up the whole. Second to this fundamental aspect of agile development and change is understanding the end users' requirements and other key functional specifications.

Other things that we can learn from the Formula 1 industry is that a full-scale model that can be changed/ tweaked in reality and or virtually is highly beneficial. In Formula 1, the instrumentation and data collection over the years has grown tremendously.

‘During a typical 90-minute race, 10 terabytes of data float through the system, which makes it the biggest science project on the planet for that period of time, eclipsing even the human genome project,’ says Ian Rhodes, CEO of McLaren Applied Technologies.

This massive transfer of data (~111Gb/min) is synthesized and run through many simulations, models and race scenarios in real time. Suggestions of vehicle tweaks and changes are then sent back to the pit garage and technical director and changes are made in mere

minutes in order to squeeze every last bit of performance out of the car and maximize points from that race weekend.

In Formula 1, the virtual model has the added benefit of being tested under specific conditions teams expect to see at the upcoming race track(s).

The technical teams supporting the pinnacle of motorsport use this massive amount of data to make live changes and tweaks to the vehicles as conditions change throughout the race so that they can find that extra two one hundredths of a second or added 0.15% torque in second gear.

It might be said that some companies have simply experienced some bad luck in picking the wrong for a product or service, however, this boils down to knowing what your end users' expectations and requirements are and tweaking/re-developing/changing your product and/or service to suit. Rather than guessing and hedging everything on one scenario, it is essential to develop, release, test, revise quickly in order to remain competitive.

An example of a missed opportunity of using technology for growth and not understanding the changes of your end users is the simple uptake of the smart phone by Uber to flip the conventional taxi experience on its head on a global scale. The most amazing fact about this example is that Uber's mobile app was launched in 2011 yet the smart phone had been in existence since the early 2000's with Nokia and Blackberry and later in 2007 with the LG Prada and the first Apple iPhone. The first Uber app only allowed for users to hail luxury cars typically costing 1.5x more than a conventional taxi. UberX and UberPOOL were later launched in July 2012 and August 2014 respectively. Two great examples of tweaking a service model, and testing out what the future demands of the end user is likely to be.

Some herald Xerox as one of the biggest failures of all time given their series of inventions over a short five year period in the early 1970's.



The Kodak ECam, developed in 1989

Xerox's Palo Alto Research Centre (PARC) pioneered many of the core elements of the digital world as we know it including; 1) personal computers, 2) bitmap displays, 3) overlapping windows graphic user interfaces, 4) desktop publishing, 5) real object-oriented programming, 6) laser printing, 7) peer-to-peer and client-server computing, and 9) internetworking.

Even today, innovation is promoted, but invention is feared and frowned upon.

Technology disruptions come into the world and can be seen as a threat or an opportunity. They are sometimes embraced and harnessed to drive growth and a step change in the health of the balance sheet, performance of the system, and access to an otherwise inaccessible market.

The challenge or major "no-go" is if the technology disruption calls for a fundamental change in the business model of a company. This is typically a hurdle too great for even a mature organisation to consider let alone adopt and grow from. An example

of this is Kodak and its inability to see digital cameras as neither an opportunity nor a threat but simply a cute invention to be dismissed.

Ibrahim Shahin - Young Members Chair

Institution of
MECHANICAL
ENGINEERS

Did you know?

Steven Sasson, a young engineer with Eastman Kodak, was asked to investigate whether CCDs (Charged Couple Devices) could be used in the photographic industry. He helped develop Kodak's first digital camera, but it was not seen as a worthwhile venture.

The main objections came from marketing and business leaders, who knew the company had a virtual monopoly on the US photography market and made money on every step of the photographic process, including developing. The prototype was also hampered by technical restraints, taking 23 seconds to record a low resolution image to tape.

When Kodak executives asked when digital photography could compete with conventional techniques, Sassoon quoted Moore's Law, which predicts how fast digital technology advances. He said it would need two million pixels to compete against 110 negative colour film, so estimated 15 to 20 years.

OPINION PIECE - THE FUTURE OF WORK

Data has the potential to change the way we live and work. But only if we are willing to share it.

There is a view that the “Future of Work” is a term favoured by management consultants to describe the progressive change we manage every day. This has some merit due to the engagement we have with those in suits rather than boots. I believe that the future is already here and that we as engineering leaders should drive its adoption and implementation.

Whilst the workplace of today has not changed substantially from that of 10 years ago, the expectation is that the workplace five years from now will be very different. The expectation is that that we will engage on virtual platforms for meetings, we may not attend the office all that much and we will not be using reams of paper to support our monitors!

The technology to enable this change is available, but its adoption to date has been slow. I propose this is because we are comfortable with what we know and are not able to see the true benefits of change. The benefits of many technologies have been oversold and as such the adoption has not been as planned – but the gradual integration of technologies has unarguably changed the way we live.

A simple example for this is personal fitness devices. 10 years ago the best that money could buy was a GPS watch that could monitor your heart rate. This information could be uploaded to a proprietary application by plugging the device in to a PC. You could log activity and potentially see your performance improvement over time.

In 2009 Strava was launched – this “social network for athletes” took until 2015 to gain 1 million users, but in



Personal Fitness Trackers- a form of data monitoring

2017 the site was logging 16 activities per second. This volume of data is incredible and allows for comparative analysis never previously possible. This has led to a huge change in the way people exercise using applications such as Strava to compare themselves to their peers – as well as data analysis to map forward military bases across the globe.

As engineering leaders, if we apply the same change to condition monitoring of equipment then imagine how this would change our machine fitness monitoring. The sharing of information of this kind should facilitate a step-change in how maintenance is planned and conducted. The technology to do this is widely available. The will to share is not.

The reasons behind why we don't want to share information are complex and deeply rooted in human culture.

A common view expressed is that by sharing our data we may be giving away some competitive advantage. This view is interesting but incorrect. The data sharing protocols allow for the data to be generally anonymous and the conditions under which the data are obtained are not shared – again returning to Strava; Chris Froome logs his rides but is not giving up his competitive advantage gained through years of specialist training and coaching. I suggest that

all we have to lose in sharing data is that our equipment component performance, good or bad, might be exposed. I suggest that we compete in the market with our products and so should be willing to compete with our machine data so as to truly understand our process and manufacturing equipment performance and allow us to define our performance against real metrics. These metrics could also be personalised to suit our performance goals – King of the Mountain for turbine vibration? Highest operating pressure in Age Group? Lowest operating temperature in Weight Range?

As leaders we should drive the move from engineers being producers of data to consumers of data. We should manage the change this will bring to our workplaces and embrace this future of work to improve our companies' competitive advantage through use of comparative system component performance analysis against a global data set. The challenge to this is our ability to communicate in an open manner and share our insights to the new datasets we will be working with.

Ben Witton - WA Panel

**Institution of
MECHANICAL
ENGINEERS**



Warning

High vibration risk

GOOD VIBRATIONS NO EXCITATION

How a proactive approach from Wood is providing the solution for effective piping vibration management.

In the field of asset integrity management, it is corrosion and erosion that attracts the lion's share of management time, resources and analysis. The majority of plants usually have a full-time corrosion or integrity engineer whose principal responsibility is identifying, preventing or mitigating possible corrosion or erosion damage.

In contrast, vibration and its consequences attract significantly less attention and management activity. But inadequately managing the threat of vibration can be equally catastrophic – and, in fact, accounts for a relatively high percentage of reported failures, notably in the harsh environments of the UK North Sea sector.

Vibration and risk

Piping vibration management has traditionally been seen as a bridge

to be crossed when necessary, not a problem to be addressed through pre-emptive measures. The view that vibration is a high-impact but low-probability issue without much room for proactive planning can also account for its historical absence from international piping design codes and standards (with the notable exception of API618/674/688 which are limited to covering very specific aspects of piping vibration associated with positive displacement pumps and compressors).

It is telling that vibration is still considered to be something covered by rotating-machinery specialists, whereas the more insidious form of vibration affects static equipment – for example, piping, vessels, valves and heat exchangers. In other words it affects offshore, subsea and topsides and onshore piping and associated static equipment; and in a largely invisible and stealthy fashion.

That said, there have been regional differences in attitudes towards vibration management. In the UK, the Energy Institute's 2008 document "Guidelines for the Avoidance of Vibration Induced Fatigue Failure in Process Pipework" 2nd Edition (the most recent output from a project looking at the threat of piping vibration first started by the Marine Technology Directorate in the mid-1990s) is the standard reference for vibration screening methodologies and management approaches.

This series of joint industry projects was originally established to examine the issue of vibration and how design guidance could be developed to avoid problems that were being seen on newly commissioned installations both on and offshore.

The Energy Institute and de facto standards

As a methodology produced by a UK body, it is inevitable that its main focus originally was the UK's North Sea continental shelf, where vibration had caused a number of high-profile issues in the 1990's for a number of operators during plant start-up and commissioning. However, it also reflects a consensus in Europe that vibration was becoming more of an issue. A report from the UK's Health and Safety Executive also made it clear that vibration was an important issue to be considered alongside corrosion and erosion.

There has been a notable shift to a more global approach, where the assessment of piping vibration risk through the deployment of screening methods is deemed necessary irrespective of the asset's location. In part this has been driven by oil majors (or those with UK affiliates) who are active in the North Sea.

Having used the Energy Institute's approach toward vibration screening in their European operations for some time, they are now starting to push their operating companies in other parts of the world to consider vibration as a real issue that should, and could, be proactively addressed.

Identifying vibration risk at the design stage

The Energy Institute's pre-eminent position in this particular field also accounts for another change we are seeing take hold in the oil and gas industry: vibration management during the design stage. This is further aided by some design codes

-for example, ASME B31.3 (Appendix F) - now referencing the Energy Institute Guidelines for direction on design for severe cyclic service.

The screening approach takes information regarding basic piping information, and the range of process conditions that the plant will be operating under, and enables operators to identify potential vibration hotspots and the applicable excitation mechanisms (which might include, for example, mechanical excitation, acoustically induced vibration, pulsation, flow turbulence or multiphase forcing). It is designed to give designers and operators the necessary additional information to design out potential vibration issues before the plant is built and commissioned.

Identifying vibration risk on operational plant

Using piping vibration measurements to identify potential issues is a useful part of the overall toolbox of techniques available to a plant operator.

However, piping vibration is often very dependent on how the plant is being operated and the flow rates that are being experienced – a vibration measurement survey is therefore often just a snapshot of what is happening at the time of the survey. However, by combining a plant wide screening assessment with a targeted vibration measurement survey (similar to the type of screening performed on a new design) – which covers all operating scenarios – a far better understanding can be built up of the risks and process conditions under which issues might be experienced. This results in a targeted approach to vibration measurement surveys, system modifications and the implementation of suitable vibration control measures.

Risk-based vibration screening assessments use very similar, if not identical, data to that used for risk-



Fatigue cracking of a small bore connection caused by vibration

based inspection (RBI) programmes. Screening of operational plant is now being picked up by a number of the oil and gas majors in Australia who are applying the Energy Institute methods to understand their risk profile, both now and for future operations.

To aid this, Wood's web-based piping vibration screening tool – Veridian VS – has now been made freely available to operators, engineering contractors and consultants. Accessible through an online browser, it enables operators to implement their own screening assessments from any location in the world.

About Wood

Wood is a global leader in the delivery of project, engineering and technical services to energy and industrial markets, operating in more than 60 countries. Wood's Vibration, Dynamics and Noise team, with dedicated vibration and acoustics

engineers across the Americas, Europe, the Middle East and Australasia, undertakes more than 200 projects every month to mitigate the threat of vibration and improve plant reliability and safety.

Rob Swindell, Bruce Loneragan
and Raj Singh -
Wood - Asset Integrity Solutions -
Vibration, Dynamics and Noise

Institution of
MECHANICAL
ENGINEERS

PANEL ROUNDUP

Latest news from around the region

YOUNG MEMBERS

Engtravaganza 2017

In November, the IMechE Oceania Panel gathered in Sydney. The fifth annual Australian Young Members Engtravaganza was held at the famous and iconic Sydney Opera House. Very few realise that the Opera House is actually designed by a Danish architect by the name of Jørn Utzon. The expressionist building, which is now a UNESCO World Heritage Site, has a total seating capacity of over 5,500 people underneath its concrete frame and ribbed roof.

The Young members really enjoyed their technical tour, learning much about the design, acoustics and history of the iconic Opera House.

Three fun facts about its construction are:

1. The Opera House roof structure, sometimes referred to as shells, a composed of sphere sections with a radius of 75.2 meters
2. The foundation for this iconic building consists of over 588 concrete piers reaching depths of more than 25 meters below sea level
3. The shells forming the roof of the theatre are not all white. The 1,056,006 chevron roof tiles are a mixture of white and matte cream.

Giving Back – The Power of Mentoring

Congratulations to those of you who have recently become chartered and to those who continue to maintain their chartered status through a multitude of CPD opportunities. I would encourage you to consider giving back to the mechanical community, share and impart your knowledge, present, say 'yes' to a panel event and help mentor younger

engineers. I was fortunate enough to have a mentor who encouraged me and followed up but not all of us are fortunate enough. I encourage you to seek out those who could benefit from some guidance or advice, buy them a coffee, have a chat or simply ask them how they progressing along the route to chartered status. I believe that we could all learn a lot from each other and strongly encourage you to become a PRI interviewer, become a mentor, and simply share a cup of coffee every now and then. For more ideas, visit:

www.imeche.org/get-involved/volunteering-opportunities/volunteering-opportunity-details/professional-review-volunteer

Calling all Mechanical Engineering Student Clubs/Societies

The Young Members Section is actively seeking to form closer connections with student clubs at Universities in states across Australia.

We would like to understand what types of events would be of most



Some of Our Young Members - Outside the Sydney Opera House

interest to your members and are also looking to offer sponsorship agreements on a first-come-first-served basis; the sponsorship would help financially support the running of relevant events. Please get in touch with your local YM Chair for further details.

Webex Functionality

Now, more than ever, IMechE Young Members recognizes the challenge in staying in touch with the rest of your function and peers in industry when work takes us to remote places. The YMs are working together to provide people working remotely with the opportunity to attend just as many CPD events as those working in the big cities. Watch this exciting space and keep working on your CPD.

Ibrahim Shahin - Young Members Chair

NEW SOUTH WALES

I am pleased to be writing my first update as the new Chair of the NSW Panel, having started the role a couple of months ago. My first job is to thank Monika Sud for her incredible commitment to the IMechE over more than 10 years as the previous NSW Panel Chair, and for her assistance in handing over the role to me.

Although she is stepping down from the Chair role I'm glad to say that Monika will still be an active member of the committee so we will have the continued benefit of her drive and enthusiasm.

In addition to my new role, we have also had a refresh of the committee with Rohit Lele taking on the Honorary Secretary role, Neal Fleming becoming Treasurer and David Wong being appointed as our Communications Officer.

The last few months of 2017 were busy in NSW with the highlights being the SOFE competition and our annual Industry Night, where a group of young engineers had the opportunity to quiz a range of industry experts

on their career path experiences. In addition to events, we have been busy completing a wave of Professional Review Interviews for CEng applicants following a successful and motivating 'Associate to Member Upgrade' workshop towards the end of last year.

2018 has so far been all about planning activities for NSW, with a focus on regular engagement with our members in addition to rerunning successful events such as SOFE and the Industry Night. We are also keen to promote engineering in schools and to young people, with a couple of possible events in the pipeline – watch this space!

Neil Moriarty - Chair

NEW ZEALAND - AUKLAND PANEL

I've now been the IMechE NZ Representative (assisted by Simon Fleisher as the NZ Assistant Representative) on the Oceania committee for nearly three years, and as we recently had elections for the new IMechE Oceania Chair and Young Member Representative, it's a good time to take stock and reflect upon how much more we're managing to do in New Zealand as a whole, supported by the outstanding efforts of our members.

Without doubt, the jewel in our crown has been the Speak Out For Engineering (SOFE) competitions, and over the past 3 years, NZ has twice hosted the Rest-of-the-World final. This happened very recently (February 2018) in Christchurch, and two and a half years ago, we held the equivalent event in Auckland. I'm delighted to say that our NZ representatives have always "punched above their weight" and our representative from Auckland (Andrew McLaren) finished second this time around.

Last year, we also managed to hold our first Wellington SOFE final, and the winner of that competition (Jimmy Batch) acquitted himself really well in the Oceania final which was held in Sydney in November 2017.

SOFE is a great event and, on behalf of IMechE, we're committed to holding more of these competitions and we will hold at least three of these events in New Zealand in 2018 (Auckland, Wellington and at least one other location). It's a great way for us to help to invest in the future engineering talent that exists, and a great initiative for us to be involved with.

Darren Sharpe - Chair

NEW ZEALAND - WELLINGTON PANEL

As I write this article, I'm in the slightly unusual position of being able to report that Wellington has an absolutely outstanding summer and we've had a significant number of days where the temperature has been in the high 20s. What difference does this make to us as Engineers, you might ask. Well, as the seasons change and the third cyclone in a month heads towards our wonderful country, it is a good reminder that Engineers have a crucial role to play in improving the resilience of our built environment. One of the things that currently differentiates NZ from some of our neighbours in the Pacific is our ability to withstand the shocks and stresses of extreme natural hazard events such as cyclones and earthquakes.

Wellington is still recovering from the aftermath of the effects of the November 2016 Kaikoura Earthquake, and many of the buildings that used to be part of our landscape (including the "new" Defence House in Aitken Street, Thorndon) no longer exist. Change is coming and there are some great infrastructure programmes that are being built that will make a huge difference to our infrastructure (Transmission Gully is one very obvious example). Engineers are a priceless commodity in being able to scope, design, manufacture, install, commission and accept into service systems and equipment that our society needs to change things for the future. Let's celebrate our successes locally (and regionally) and make sure that we all do our bit to help the Engineers of the future to come to the

fore to be able to continue successfully delivering infrastructure projects of the scale and complexity of Transmission Gully.

Simon Fleisher - Chair

VICTORIA

On behalf of the Victorian Panel, I would like to wish everyone a (belated) Happy New Year! We celebrated the end of 2017 with a Bollywood themed Christmas luncheon. The luncheon was attended by 25 guests who participated in a 30 minute Bollywood dance workshop and then partook in a splendid Indian buffet.

We started 2018 with a presentation on "Developing Large Scale Solar Photo Voltaic (PV) Farms in Australia". The presentation was delivered by Anthony Concanon who is the CEO of Reach Solar Energy. We are very proud of the fact that Anthony is a member of the IMechE Victorian Panel Committee. Anthony and a colleague lead a fascinating presentation followed by a discussion on their experience in developing the Bungala Solar PV farm which will have an output of 375 MW once fully operational.

2018 is going to be another busy year for the Victorian Panel. We have technical presentations, site visits, social networking events and

mentoring planned for the year. One highlight is due to be the presentation of an IMechE Heritage Award to the Psyche Bend Pumping Station which is located in Mildura.

The Victorian Panel is closely following the developments of the push by the Victorian Government to roll out a Statutory Registration Scheme for Engineers practicing in Victoria. This bulletin features a dedicated article about the process. Please be assured that the IMechE Victorian Panel is following developments very closely and we will do our very best to make sure the process is fair and that the IMechE has a major part in the process.

Roshan Dodanwala- Victoria Panel Chair

WESTERN AUSTRALIA

The West Australia panel has been busy with change at the top. Ben Witton was voted into the WA Panel Chair position in February replacing Andrew Gagg. Andrew has provided exceptional leadership over the last two years and Ben hopes to build upon the solid foundations constructed under Andrew's leadership.

2018 will be a year of many changes in Western Australia. Many of the large construction projects are nearing completion and commissioning. This

important milestone moves these assets into their operate phase. This transition into the operate phase is often difficult not only for the operators, but also for those who were employed in the construction who will be required to find new jobs.

Fortunately it seems that the deep cuts on maintenance expenditure caused by the last market contraction have ceased and there is a steady return to well-developed campaign maintenance programmes. This is essential to keep the skilled trades and engineers engaged in industry as we wait for the next round of projects to be sanctioned.

The committee will arrange site visits and social functions through the year. Details of all upcoming events will be published on the IMechE's event page.

Ben Witton- Western Australia Chair



Bollywood Dancing at the Victorian Panel Christmas Lunch

STARGAZING FOR DUMMIES ENGINEERS

Residents of the Oceania region enjoy some of the clearest night skies in the world. Here are some tips on how to capture amazing shots next time you're out..

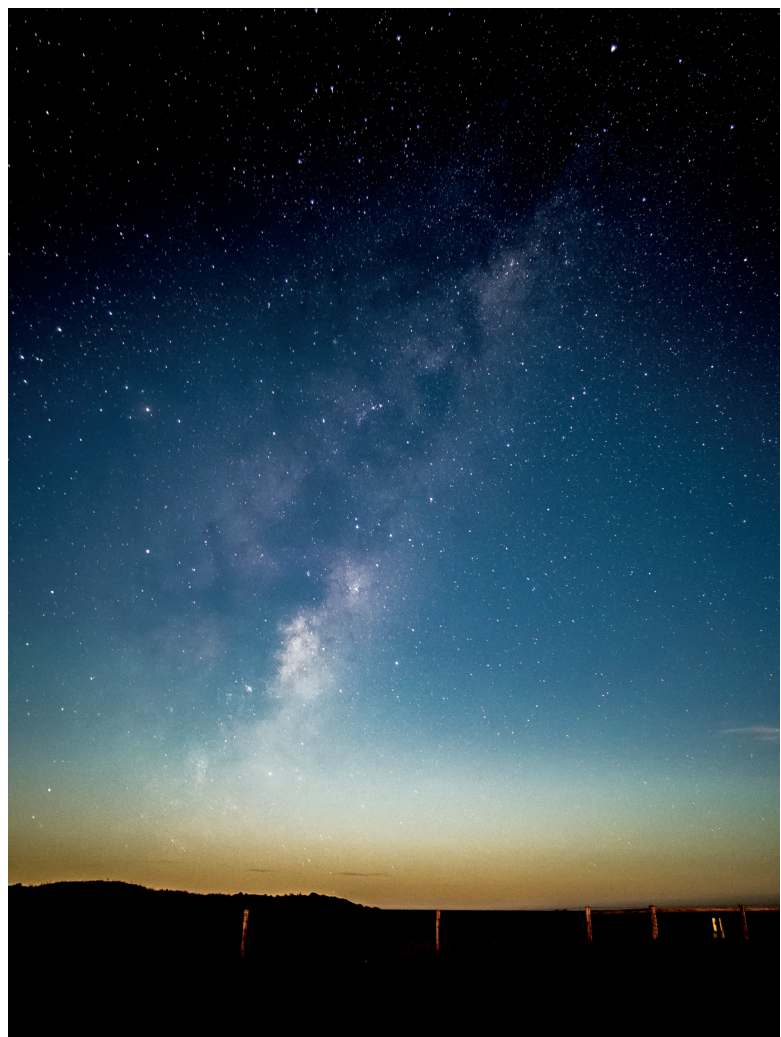
It is no surprise that many mechanical engineers enjoy photography. Cameras are a gadget lover's dream and many technical considerations are involved in planning a photograph that will provide satisfaction for years to come. The night sky is an awe-inspiring target, but capturing all the hidden detail can be a challenge unless you follow a few simple tips.

Naturally, investing in good equipment is advantageous. After all, light coming from a starry sky will be faint, so a DSLR or Mirrorless camera with large sensor and a fast lens is recommended. But the most important aspect is the environment- get this right and even a modest camera will generate satisfactory results. Here in the southern hemisphere, we are blessed with many cloudless nights and an ability to escape the city glow within one hour's drive. So the first step in any night photography exercise is to check online light pollution maps and weather forecasts. Know what you plan to photograph and where it will be. Also be aware of phase of the moon and its position in relation to the horizon. Three great apps to help you here are Light Pollution Map, SkyView and PhotoPills.

Once on site, set up your camera on a sturdy tripod. Use the widest possible aperture (lowest 'F' number) if applicable, a high ISO sensitivity and shoot as a RAW file if the camera allows it. Check an online exposure calculator before choosing shutter speed- this is to understand when star trails will start to appear on long exposure images.

The image on this page arose from several identical images taken across a range of settings. The best set of identical images (in this case, four 20 second long exposures at ISO1600) were combined using the free program Deep Sky Stacker. This process improves the signal to noise ratio to raise clarity of visible aspects in relation to the surrounding sky. The stack included a set of 'dark', 'flat' and 'offset' calibration frames which can be taken at home and help the program correct for camera imperfections and lens distortion. Finally, the image was opened on Adobe LightRoom, where tweaks were made to contrast, brightness, vibrancy and saturation. It was not until this step that many of the most impressive details began to emerge.

Nic Coulthard- Editor



Institution of
MECHANICAL
ENGINEERS

Exec Committee:

Andrew Lezala, Leslie Yeow,
Ken Tushingham, Nic Coulthard,
Ibrahim Shatin.

Websites:

IMechE
www.imeche.org

Young Members on Social Media

Twitter: @IMechE_OzYM

Facebook: IMechEAustraliaYM

Enquiries & article submission

Please address all News Bulletin
correspondence to the editor:

australianews@imechenearyou.org