THE MAGAZINE OF THE INSTITUTE OF MEASUREMENT AND CONTROL INSTMC.ORG

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INSTMC END OF YEAR REVIEW

Throughout 2023 we have continued to support our members in their professional careers, and I am delighted to have seen an increase in new members joining us compared to last year, as well as an increase in the number of members achieving professional registration. We remain committed to not just growing membership numbers, but also widening participation so that our membership becomes more representative of the Measurement and Control communities. We are starting to see that representation coming through in the new members, but there is obviously still a long way to go. That's why I am so pleased that this year saw the launch of the Institute's Women in Measurement, Automation & Control (WiMAC) network. This network will seek to offer support to existing members, whilst also looking at ways to grow our members, and look at ways in which we can encourage and inspire the younger generations to consider a career in measurement and control. The group is open to all, so please check the website for more information if you would like to be involved.

The SIGs continued their excellent work, and we have seen some fantastic outputs in the form of technical seminars, briefing notes and guidelines. Our newest SIG, the National Metrology Skills Alliance (NMSA), is now putting the final touches to its professional competency standard for Metrologists. This comprehensive standard has been written by the SIG and Industry partners and undergone both Alpha and Beta testing across a wider variety of industries and organisations. Once published early in the new year we will start the next step of developing and offering a professional qualification using the standard. With this project and others, 2024 looks set to be a busy and productive time for the Institute.

As we approach the end of the year you will start to receive your subscription invoices for 2024. You will notice that fees have gone up since last year. This fee increase was voted for by the membership and confirmed at our AGM in the summer and is the first fee increase since 2019. We have tried to keep our fees static for as long as possible, but after several years of no increases we have had to adjust them for next year. I want to remind members that we have remissions and discount options available for members who find themselves in a difficult financial situation. I encourage you to contact the membership team at member.communication@instmc.org if necessary, and let us see if we can find a way to support you to retain your membership.

I wish you all a Merry Christmas and a happy and prosperous 2024.

Steff Smith, Chief Executive
Institute of Measurement and Control

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BLAZING A TRAIL: EQUALITY, DIVERSITY, INCLUSION & MOTORSPORTS

A CONVERSATION WITH JAMES DORNOR, ENGINEER & FOUNDER OF 'DRIVEN BY US' CIC

James Dornor is a Principal Systems Engineer who has worked in the automotive & motorsport industry for the last 13 years.

He was previously responsible for maintaining all on and off car electronics & systems on a wide range of heritage chassis' driven by the likes of Sir Lewis Hamilton MBE. He is the founder of Driven By Us CIC, a non-profit organisation and the first ethnic minority club to be approved by Motorsport UK governing body as a recognised club focusing on STEM, Media and Equality, Diversity and Inclusion within automotive & motorsports.

James supports several STEM outreach initiatives and this year focused on forming a community network of like-minded folk within the automotive & motorsports space. He is an Association for BME Engineers (AFBE-UK) Executive Board Member working within the Industry Engagement team focusing on events across the whole engineering sector bringing expertise together.

The InstMC sat down with James to discuss his early years, career, inspiring others through Driven By Us and how organisations can support underrepresented groups in the workplace.

Finding a passion for engineering and tinkering from an early age when he was given a bicycle at age ten, James took an interest in Formula 1, in particular Michael Schumacher and Ferrari in the 2000s. At school he enjoyed sciences, his favourite subject being Design and Technology (D&T), and recalls having an inspirational teacher. At college he recompleted his English and Mathematics GCSE whilst completing a VCE in science and IT to enable him to get onto a foundation year degree to study engineering, as he didn't have the A levels for direct entry to University. He enjoyed academia but found himself leaning towards being a more visual and practical learner which he didn't fully appreciate or understand until he reached his 20s.

Prior to graduation, one of his lecturers helped him obtain a second placement with McLaren Automotive as a software tester. Whilst on the placement, he was offered a full-time car software testing position in 2011, identifying fault codes and reports issues on vehicle prototype and pre-production vehicles. This resulted in him leading teams in calibrating and programming control units and ongoing vehicle development.

Embarking on a motorsport career in 2012, James joined McLaren GT for a 5-year period where the GT cars he worked on won several global championships. Here he was responsible for calibration, re-program and fault finding on chassis and engine related issues and analysing data via monitoring tooling. He applied for a F1 trackside role in July 2017, got an interview in September in which his experience in GT impressed the Electrical Software Manager. He then had a phone interview with the Team Principal, was hired and flew out to the next race in Japan as part of the race team in October 2017.

James working as Support Engineer for Mercedes F1

In terms of supporting the community in the workplace, James has great experience in Equality, Diversity & Inclusion (EDI) and believes more can be done if companies and organisations provide training to all employees to increase awareness. This can help create a common understanding and language around these issues. Another area of focus is how organisations recruit to ensure diverse representation in the workforce by actively seeking out candidates from different backgrounds, not just to 'tick a box' but to ensure they're given the role based on talent and skill, then given the chance to progress within the industry. He believes creating unbiased job descriptions and interview processes eliminates any pre-existing employee culture barriers.

Over the past few years, James has benefited enormously from mentoring as well as being a mentee. He strongly believes mentorship programs allow underrepresented employees to grow in their careers, with the potential to be organisational leaders. Actions such as acknowledging and celebrating cultural, religious and other diversity-related events within the workplace is an area where he has noted the most impact.

James said: "We must remember that creating an inclusive workplace is an ongoing process that requires commitment from leadership as well as employees. It's important to listen to feedback, learn from experience, and adapt your strategies as needed to ensure a truly inclusive community."

Driven by Us

Driven By Us was set up as a Community Interest Company (CIC) and a club, after a year of building, and made official in 2023 with club recognition by Motorsport UK. It links minorities participating and working within motorsports, as well as providing STEM and media programmes and events in schools. These are led by industry personnel who provide encouragement and share knowledge about working in the industry for the next generation.

The mission of Driven By Us is to empower aspiring leaders by actively engaging the community and influencing perceptions in the industry. Their focus as an organisation is to empower ethnic minorities and underrepresented groups within the workplace as well as the wider motorsport community.

As an organisation, they work closely with schools to inspire and educate the next generation by providing hands-on workshops and advice on different motorsport career pathways. They focus on schools in areas with relatively high levels of deprivation and where educational attainment currently falls short against the national average.

Earlier this year, as founder, James received a Points of Light award from Prime Minister, Rishi Sunak. These awards recognise outstanding individual volunteers who are making a change in their community. In a personal letter to James the Prime Minister stated: "This country is a global motorsports powerhouse and leads the way in creativity and innovation so it is wonderful how you are ensuring more people can be a part of this thriving sector, bringing fresh ideas and driving positive change. You are an incredible role model for young people and blaze a trail for so many others to find work in Formula One."

To find out more about the work and activities of Driven By Us CIC, visit the website at https://www.drivenbyus.co.uk/.

Esteban Gutierrez at 2020 Goodwood Speed Week

Driven by Us Founder, James Dornor

James working as Vehicle Engineer for McLaren Automotive with Jenson Button


Ambassadors & volunteers from Driven by Us

AN APPRENTICE STUDENT JOURNEY

BY TOM WALTER

In a rapidly evolving world dominated by technology and innovation, my journey as an apprentice in Control & Instrumentation (C&I) and as a student member within the Institute of Measurement & Control (InstMC) has been nothing short of a thrilling quest for knowledge and professional growth.

This narrative explores my passion for C&I, the reasons behind my career choices, the invaluable benefits I have gained through my association with InstMC, and my vision for the future of this dynamic field.

Why I chose Control & Instrumentation

Engineering has been ingrained in my DNA from an early age. I carefully crafted my educational path, focusing on subjects during my GCSE and A-Level years that would provide a solid foundation for the job I hold today. When the time came to decide between a traditional academic route and an apprenticeship in C&I, I leaned towards the latter because this path offered me a perfect balance between the world of theory and the realm of practical application.

C&I has proven to be a captivating and demanding field. It requires an unwavering attention to detail, a keen problem-solving acumen, and the ability to adapt swiftly to changing circumstances. These challenges, rather than daunting me, energise me daily. What I find most fulfilling about my role is the palpable impact my work has on the reliability, safety, and efficiency of various industrial processes. It is important that we all recognise that we are not just a cog in the machine, but instead vital contributors to the seamless functioning of the systems, processes, and industries we work with. Even as a trainee C&I technician this sense of purpose and accomplishment drives me forward in my career.

Benefits of InstMC membership

In an era where technology evolves at rapid speed, C&I is assuming an increasingly pivotal role. It forms the backbone of automation, data management, and safety in a world that demands precision and efficiency. Recognising this, I have actively engaged with the resources offered by InstMC to stay ahead in this dynamic field.

I believe one of the most valuable resources that the InstMC provides is its series of online webinars. These webinars offer a window into the latest innovations and emerging trends in the C&I landscape. They serve as a valuable knowledge repository, where experts in the field share their insights and experiences. I have been lucky enough to attend some of these webinars and it has not only broadened my horizons but has also helped me stay current with the rapidly changing industry. I would strongly recommend these webinars to anyone seeking to deepen their understanding of the C&I field and stay ahead in their careers.

The InstMC calendar is filled with a variety of events and talks. These gatherings bring together brilliant minds from the C&I sector, creating a ground for networking and knowledge exchange. As a student, I cannot stress enough the importance of attending these events: they are not merely opportunities to gain recognition as a competent and actively engaged engineer; they are also avenues for networking and building connections. These connections are gold. They open doors to new opportunities, provide insights from like-minded individuals, and offer a glimpse into the vast and dynamic world of C&I.

My vision for the future

In the short term, I am committed to achieving my Engineering Technician (EngTech) status following the completion of my apprenticeship. This milestone is not just a badge of honour; it signifies dedication to the craft and my competency in the field. As I progress in my career, I plan to pursue higher qualifications, starting with a Higher National Certificate (HNC) and ultimately a degree. These educational milestones will not only enhance my knowledge but also elevate my status within the Institute and the wider engineering community.

What excites me most about the InstMC is its robust framework for professional development, leading to further career opportunities and progression. It offers a clear path for advancement, irrespective of one's career stage. Even as a student, I can see the tremendous value in gaining EngTech status. This designation will set me apart from other engineers, signaling my commitment to continuous learning and professional development.

The value of mentorship

As a student in the InstMC, I cannot overstate the immense value of mentorship. It is an opportunity that should not be missed, and this can be whether you are a student or a seasoned professional. A mentor is not just a guide; they are a bridge to new connections and opportunities. Whether you are looking for professional or personal development there are so many different things a mentor can support you with. At this stage in my career, having a mentor has allowed me to build new connections within the business, a network that is invaluable for career progression. I have had the privilege of learning from different individuals and teams, each with their unique perspectives and experiences.

Conclusion

My journey as a Control & Instrumentation apprentice and my affiliation with the InstMC have been instrumental in shaping my career and personal growth. My Mentor's guidance has enriched my technical skills, while the Institute has given me an invaluable community that encourages growth.

The world of C&I will continue to transform, and we must be at the forefront of this evolution. Together with the InstMC, I am eager to lead and contribute to this exciting journey of transformation. As a student, I recognise the immense value that the InstMC brings to my career, and I do not take it for granted. I look forward to a future where C&I continues to thrive, as I continue to learn, grow, and innovate.

C&I has proven to be a captivating and demanding field. It requires an unwavering attention to detail, a keen problem-solving acumen, and the ability to adapt swiftly to changing circumstances.

TÜV SÜD HIGH-PRESSURE GAS FACILITY TO UPGRADE TO CO2

As part of their commitment to support the energy transition and emerging carbon capture utilisation and storage (CCUS) industry, TÜV SÜD National Engineering Laboratory is developing a physical UK national standard facility to provide flow measurement traceability for gaseous carbon dioxide (CO2).

Funded by DSIT (the UK Government's Department for Science, Innovation and Technology) via the National Measurement System, the facility is nearing completion in East Kilbride, Glasgow, Scotland.

Head of CCUS, Gabriele Chinello commented: *"At TÜV SÜD, we are proud to be able to support CCUS projects with our extensive experience, consultancy services and cutting-edge facilities. The facility is scheduled to be up and running in the coming months, and its first job is already booked in where it will be used for some EU-funded research. It should be available for use by industry in early 2024. We are fully equipped to play a pivotal role in delivering the UK government's commitment to a greener, more sustainable future and energy security strategy."*

Currently, the facility (formerly known as the Wet-Gas Facility) uses nitrogen gas as the test fluid and is being adapted to be permanently used with gaseous CO2. The upgraded facility will be called the High-Pressure Gas Loop and phase one of the upgrade is due to be completed by the final quarter of 2023.

The High-Pressure Gas Facility will provide national standard traceability for gaseous phase CO2 in terms of: Fiscal/custody transfer flow meters, Process control, Carbon accounting and System integrity monitoring (safety). It will also offer research and development infrastructure for manufacturers and research institutions.

Following completion of the phase one upgrade, a test campaign with different metering technologies will take place in autumn 2023 as part of the EU funded project "Metrology for decarbonising the gas grid".

The facility will be available for commercial calibrations from early 2024, providing the following testing capability:

Flow rates

- CO2: 20 – 1000 m3/h
- Nitrogen: 20 – 1600 m3/h

Pressure & Temperature

- CO2: 0 – 45 bar.g
- Nitrogen: 0 – 60 bar.g
- Temperature range: 4 – 30 °C

Device Under Test

- Meter size: 1 – 12 inch
- Data/comms protocol:
- Regular protocols: Pulse, mA, Foundation Fieldbus, ModBus and Differential Pressure

Target Uncertainty

- ± 0.35 – 0.45 % (k = 2)

In phase two of the upgrade, the operating maximum flow rate will increase to 1600 m3/h with CO2 and to 2500 m3/h with nitrogen. Facility uncertainty will also be lowered to ≤ ± 0.25 % (k = 2) with the installation of new reference meters.

In parallel with the large-scale High-Pressure Gas Facility, TÜV SÜD National Engineering Laboratory is building a small-scale PVt (pressure, volume, temperature) primary standard for multiple gases including CO2.

Russell Brown, CCUS Flow Measurement Consultant, is investigating the transferability of calibration from nitrogen to gaseous CO2 by testing 1- to 2-inch flow meters against the small-scale PVt primary standard. This will be one of the first research projects in this area to be completed worldwide at a traceable calibration laboratory against a primary standard.

Q&A

Adam Piper

Under the spotlight is **Adam Piper** EngTech MInstMC, Control & Instrumentation Facility Engineer at AWE PLC, who shares his thoughts on the past, present and future of engineering.

What was the root of your interest in Engineering?

My interest in engineering formed at a young age and continued throughout school and college. I always excelled academically at maths and the sciences so it was natural that I would be drawn to a future in engineering. My Dad has been a mechanical engineer for 30+ years; he has always been a role model and inspired me towards a career in engineering.

During my final year at A-levels, I had a decision to make regarding my future. The choice was between either going to university to study engineering or follow the apprenticeship route and undertake a more practical approach to my learning. Ultimately, I opted to take the apprenticeship route and started my career at AWE as a Control & Instrumentation apprentice.

Upon completion of my apprenticeship, I moved into a maintenance role where I gained engineering and supervisory experience. I loved working within maintenance, and I met many brilliant people and had some great experiences. I have now moved into the world of facility engineering, where my role includes looking after the day-to-day running of a facility, providing engineering solutions, and function as a source of technical knowledge for current and future projects.

What is your vision of Engineering in Britain for the next ten years?

I would like to see Britain begin to regain its reputation as a figurehead for engineering and innovative technology. Currently, electric cars are not at a viable price point for much of the population, and Britain lacks the infrastructure to support wholescale adoption. Whilst electric cars are not currently the perfect sustainable transport solution, they are certainly a better option than our current reliance on fossil fuels. We are entering a new age of mainstream renewable energy that presents an opportunity for Britain to demonstrate a forward-thinking and proactive mindset and provide support to its population for the adoption of sustainable energy and transport.

We need to take an active approach towards promoting sustainable living through government funding or grants to incentivise the switch away from traditional living. There has recently been a trend towards households installing solar panels and heat pumps following the introduction of the various government schemes. This is a notable example of how the general population can use government grants to save money on installation and ever-rising energy costs. In ten years' time, I envisage Britain being a world leader in the adoption of sustainable technologies and making a push towards net-zero status.

What should the UK government do to address the shortage of UK engineers?

The future of engineering relies on our education system, and this is the perfect time to show people how exciting engineering can be. I think a positive method is to encourage students to consider engineering apprenticeships. I have first-hand experience of how the education system tries to push people down the university route, despite the apprenticeship route being just as viable and giving a real head start in life by providing key communication skills and real-life experience.

Although the value of young people joining engineering cannot be overstated, there are plenty of talented individuals already in the workforce that would be invaluable to the world of engineering. Whether an individual was unsure which career they were best suited to when they started or are just looking for a new challenge, they should be offered a route into engineering. For many people however, changing career path is simply not financially viable and too much of a risk to themselves and their families without additional support. The government has started providing grants for those wanting to reskill, but I believe they can do more. Until the government starts providing increased support for those with financial commitments wishing to reskill, engineering will not be able to attract this talent.

I believe the government and education system should also raise awareness of the many different branches of engineering. It was not until I began working within engineering that I realised just how many different types of engineers there are and how many different roles they fulfil. Raising this awareness could be the difference between attracting talent and losing them.

What do you do in your free time to relax?

I try to constantly have something to look forward to, so I am always planning the next event or holiday for my friends and me. I have recently started playing golf with a group of my friends; as frustrating as it can be, I find it incredibly rewarding and I keep coming back

Given one wish what would that be?

I wish Britain could return to its former stature as a powerhouse of engineering: an industry leader that other countries strive to equal. To achieve this, engineers need to be afforded the same creative licence as inventors and pioneers of past generations as well as the funding to make Britain a name synonymous with innovation and ingenuity.

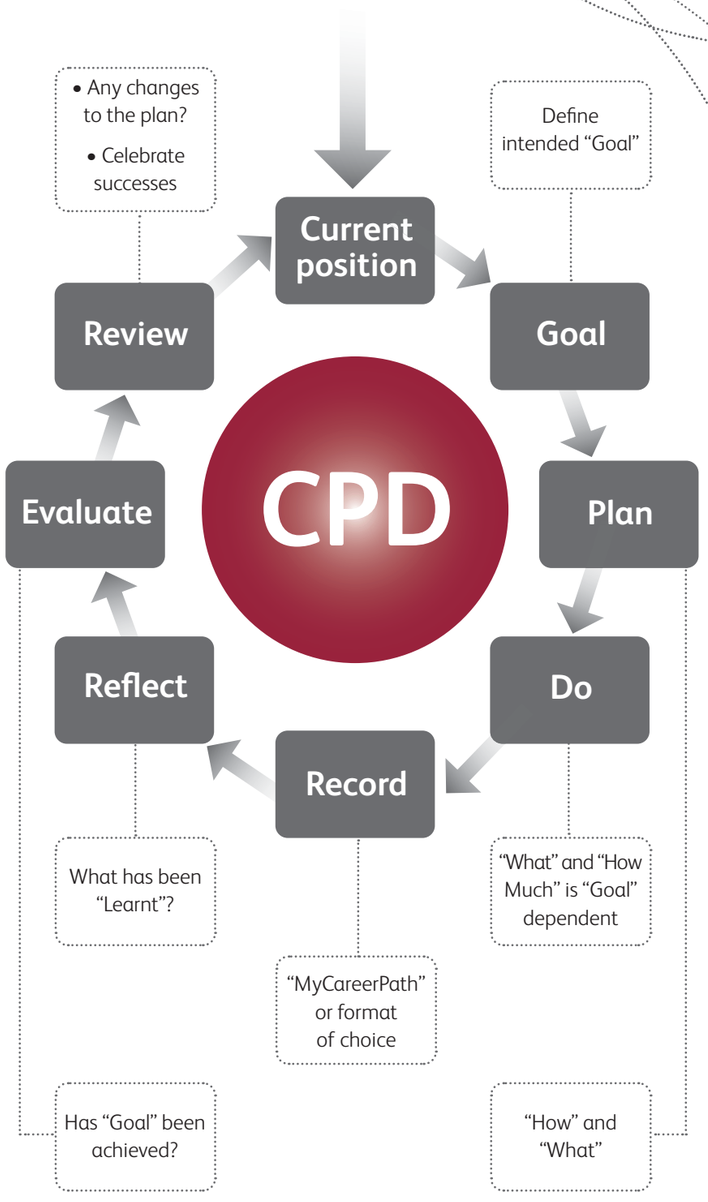
Or be better at golf…

We are entering a new age of mainstream renewable energy that presents an opportunity for Britain to demonstrate a forward-thinking and proactive mindset and provide support to its population for the adoption of sustainable energy and transport.

CPD: ANSWERING YOUR QUESTIONS

Continuing Professional Development (CPD) describes the learning activities professionals engage in to develop and enhance their knowledge, skills and competence. Examples of activities include attending training courses, conferences and workshops, reading or writing an article for a technical journal, volunteering, mentoring or sharing knowledge and expertise.

This year, InstMC implemented a new protocol and set of procedures for the 2023 CPD Audit with increased reminders and support for members, and a greater emphasis on the consequences of CPD non-engagement. We're pleased to report that with 98%, it had the highest level of engagement in comparison to previous years.



What is CDP?

CPD stands for continuing professional development. It is used to describe the acquisition of new skills and knowledge, and the development of personal qualities which help you maintain and grow your professional competence.

Engaging in CPD helps you keep your skills knowledge and experience up to date and supports your career development.

Why do I need to record CPD?

Recording and reflecting on your CPD activities will help you get the most from these activities and demonstrates a commitment to your profession.

Undertaking and keeping a record of CPD is a requirement for active, InstMC members (excluding students and affiliates) and Engineering Council registrants.

How does INSTMC check CPD records?

Every year the Institute conducts a CPD audit.

At the start of the audit a random selection of 5% of the current members and/or registrants are contacted and asked to submit their CPD record, covering the last 12 months, for assessment.

Those records are then sent to trained assessors to review. If your CPD record is found to be satisfactory you will be excluded from the random sample selection in a CPD audit for the next 3 years.

What activities can I record for CPD?

CPD can take many different forms and the following are some examples of activities you might include:

- Formal Learning: e.g. Courses, Seminars and Technical Meetings.
- Informal Learning: e.g. On-the-job training, Workshops, Reading Technical Journals/Books.
- Peer and Professional Interaction: e.g. Supporting the learning and development of others by mentoring and sharing professional expertise and knowledge,
- Contributions to the Profession: e.g. Presenting Research, Writing Technical Articles & Papers.
- Volunteering: e.g. Contributing to InstMC Activities.
- Developing wider Business Skills: e.g. Planning, Value Management, Financial Planning, Business Regulation, Charity Law.

What happens if I ignore requests to submit my CPD record?

Failure to engage with the CPD audit will lead to you being declared CPD Non-Compliant. Registrants with the Engineering Council who are found to be Non-Compliant by the end of the Audit period will be subject to the Institute's CPD Non-Compliant Procedures, which may result in us asking the Engineering Council to remove your name from the professional register.

Members may also be risking their membership with the Institute as a commitment to undertaking and recording CPD is a requirement.

InstMC will make every effort to get in contact with those selected for the CPD Audit, and this will include a mixture of emails, letters, and phone calls. However, we will only use the contact data that you have provided to us, so please check your details are up to date by logging into the Members' Area of the website.

How do I benefit from CPD?

EUR ING David Green BEng (Hons) CEng MIET FInstMC, Chartered Engineer / Functional - Machinery Safety Engineer

CPD allows me to refresh and improve my technical knowledge. The ever-changing world of engineering means that previous studies and work experience can become outdated. This may be a slowly changing area, such as Functional Safety or Hazardous Area Engineering which are well established concepts that are improved over time. Likewise, these may be in areas of rapidly changing techniques or technologies, such as Cyber Security, Artificial Intelligence or carbon neutralisation techniques.

The different activities have enabled me to grow my knowledge and additionally contribute more effectively to my company, clients and others in the technical networks (such as the InstMC Local Sections, Council and SIGs). CPD activities have also enabled me to review the path that I wish to take with my career, focusing on specific areas to grow and develop further. This allows me to progress towards future roles or opportunities with more confidence.

For more information on CPD and to view the InstMC Professional Development Guide & Policy Statement, visit the InstMC website at https://www.instmc.org/careers_learning/cpd/default.aspx.

CASE STUDY

HABIB FARIDOON BENG CENG PENG CAP MINSTMC SM-ISA

Education and qualifications:
BEng Electrical Engineering, COMSATS University, Pakistan
Certified Automation Professional (CAP), International Society of Automation (ISA), USA
Job title:
Control System Engineer
Employer:
Lean Automation

We are pleased to present InstMC member, Habib, who on achieving CEng, was recently chosen as an official case study by the Engineering Council. Here he shares his journey to professional registration.

What inspired you to become an engineer or pointed you towards an engineering career?

The moment I learned about the marvels that engineering could achieve, I knew it was my calling. As a child, I was always fascinated by how things worked, especially the mechanisms behind the machines that surrounded me. My natural aptitude for maths and physics only served to deepen my curiosity. As I grew older, I started exploring different fields, but none of them managed to capture my imagination like engineering did. I was drawn to the idea of creating solutions for real-world problems and making a tangible impact on people's lives. Engineering offered me the opportunity to put my knowledge and skills to the test, and to constantly challenge myself to come up with innovative solutions. Ultimately, my drive to use science to make a difference led me to pursue a degree in electrical engineering and become a control system engineer today.

What contributed to your decision to become professionally registered?

For me, becoming professionally registered was a natural progression in my career. It demonstrates a commitment to the highest standards of professionalism and ethical conduct and shows that I have achieved a certain level of competence and expertise in my field. Becoming a CEng and a PEng also provides me with greater recognition and credibility within the industry, which can lead to new opportunities and career advancement. Additionally, being registered with professional bodies provides access to a wealth of resources, training, and networking opportunities that help me stay up to date with the latest industry developments and best practices.

In what ways has registration benefitted your career?

Becoming registered as a CEng has brought significant advantages to my career as a Control System Engineer. Firstly, it has allowed me to showcase my expertise and competency, thus elevating my reputation among industry peers and clients alike. Secondly, through the registration process, I have unlocked a treasure trove of professional resources and networks, equipping me with the latest knowledge and best practices to continuously refine my craft. As a result, I have become a more adept decision-maker and agile problem solver in my work. Additionally, my CEng registration has given me a distinct competitive edge, positioning me favourably in a highly competitive job market, and opening doors to new and exciting career opportunities.

How does your employer benefit from your professional registration?

My registration benefits my employer in several ways. Firstly, it assures clients that they are working with a qualified and competent engineer who is committed to maintaining high standards of work. This can enhance our reputation, build trust, and lead to more business opportunities. Secondly, my ongoing professional development ensures that I am up to date with the latest industry trends and best practices, which can lead to more innovative solutions for our clients. Lastly, my registration helps to reinforce the company's commitment to providing high-quality services and upholding industry standards, giving us a competitive advantage in the market.

Is there any advice you would pass on to someone considering professional registration?

If you're considering professional registration, my advice is simple: go for it! Achieving a CEng or other professionally registered designation demonstrates your commitment to excellence, ongoing learning, and sets you apart in a competitive job market. To get started, research your options, set a plan, and seek out mentors and professional networks for guidance and support. With professional registration, you can unlock new career opportunities and enhance your expertise, making you an invaluable asset to any employer

Is there a great professional achievement or high-profile accomplishment that you would like to tell us about?

As a Chartered Engineer (CEng) and Professional Engineer (PEng), I have had the opportunity to lead and contribute to several significant projects. One of my proudest accomplishments was leading a team to develop our own product, the Industrial Data Diode, which supports multiple protocols and fully complies with cybersecurity standards. This project not only demonstrated our team's technical expertise, but also our ability to innovate and develop practical solutions for our clients. Another major accomplishment was my role in driving digital transformation for one of our clients. Utilising top technologies and our team's expertise, we were able to modernise their processes and systems, resulting in increased efficiency and cost savings. Seeing the positive impact of our work on our client's operations was truly satisfying. These achievements have not only enhanced my technical knowledge and skills, but also my leadership and project management abilities. I am excited to continue taking on new challenges and making a difference in my field.

Read the full case study on the Engineering Council website: https://www.engc.org.uk/news/case-studies/chartered-engineer-ceng/habib-faridoon-beng-ceng-peng-cap-minstmc-sm-isa/

If you are interested in finding out more on professional registration and how it could help your career development visit: https://www.instmc.org/careers_learning/professional_registration.aspx.

Engineering Council

For me, becoming professionally registered was a natural progression in my career. It demonstrates a commitment to the highest standards of professionalism and ethical conduct and shows that I have achieved a certain level of competence and expertise in my field. Becoming a CEng and a PEng also provides me with greater recognition and credibility within the industry, which can lead to new opportunities and career advancement.

Engineering
EngTech
Technician

ENGINEERING TECHNICIANS

(EngTech) apply proven techniques and procedures to solve practical engineering problems and apply safe systems of work.

What is professional registration?

- **Recognition** through membership of a relevant Professional Engineering Institution (PEI), that an individual's knowledge, understanding and competence have been assessed and confirmed through Professional Review.
- **Verification** that they have attained the standard required for inclusion on the national register in the appropriate category of registration.
- **Commitment** by an individual to maintaining their competence through Continuing Professional Development (CPD), professional behaviour for the benefit of society and their commitment to the engineering profession.

Registration is open to any competent practising engineer or technician, with different levels and pathways to registration available.

Why you should become professionally registered?

For yourself
- Recognition of your competence as an engineer or technician.
- Demonstratable evidence of your commitment to the profession.
- Internationally recognised status.
- Enhanced career prospects.

For your employer
- Increased technical/managerial credibility.
- Competent workforce.
- Competitive advantage.

For society
- Ensures the public is safeguarded through provision of independent and trustworthy advice, products and services and safe and reliable infrastructure.
- Assurance of ethical and sustainable behaviour.

Engineering Technicians shall demonstrate

- **Contribution to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services**
- **Supervisory or technical responsibility**
- **Effective interpersonal skills in communicating technical matters**
- **Commitment to professional engineering values**

www.instmc.org

For further details and application forms, please visit our website or contact the Director of Membership & Registration on +44 (0) 20 7387 4949 Ext 3 or email: membership@instmc.org

Scan QR Code to apply for professional registration via InstMC

INSTMC WOMEN'S NETWORK

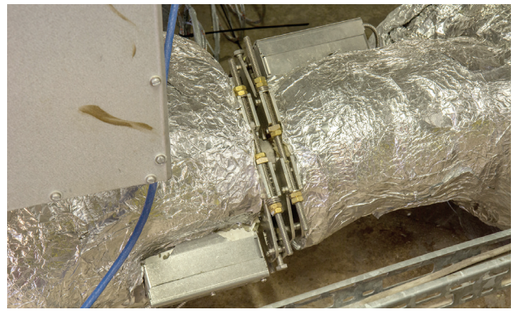
On 24th October we hosted the first meeting of the newly formed InstMC Women's Network. There was an excellent turnout and plenty of discussion on future plans and activities for the network, including a LinkedIn Group, career profiles on the InstMC website and collaboration with Local Sections and universities & colleges. We are pleased to announce that we also have a name for the network: **Women in Measurement, Automation & Control (WiMAC).**

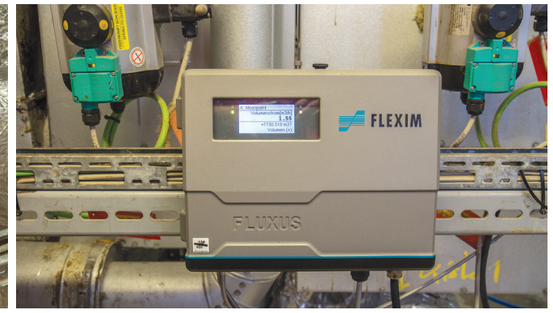
The aim of the group is to raise the profile of women engineers through discussion and engagement across a range of topics and activities including; leadership, professional development, mentoring, outreach, advocacy, support, technical knowledge and much more!

The next meeting is planned for January 2024 and anyone is welcome to join.

Visit the InstMC website at WiMAC for further information.

CLAMP-ON ULTRASONIC FLOWMETERS TAKE ON POLYAMIDE 12 FLOW MEASUREMENT CHALLENGE





Polyamide 12 is a high-performance plastic used in a variety of industries, from oil and gas production, to automotive, medical technology, and 3D printing. The production process involves several stages, beginning with the hydrocarbon compound butadiene and ending with the monomer laurolactam. When many of the components are connected, they form a chain - the base polymer polyamide 12.

Clamp-on ultrasonic flowmeters are offering a long-term measurement solution to the challenge of polyamide 12 flow measurement at incredibly high temperatures of around 280 °C. A revolutionary technology in the field of flow measurement, clamp-on flowmeters work by emitting ultrasonic waves that travel through the fluid inside a pipe. The time it takes for these waves to travel upstream and downstream is measured, and the difference is used to calculate the flow rate. This non-invasive technology offers numerous benefits, especially when dealing with challenging mediums and process conditions such as those involved in the production of polyamide 12.

Replacement of Coriolis flowmeters

At the production plant of the world's leading supplier of polyamide 12, the product stream of the base polymer behind the polymerisation reactor is divided into two sub-streams. Initially, Coriolis flowmeters were installed in both for quantity measurement. However, due to the process conditions, this wetted measuring technology was found to have serious shortcomings. The melting temperature of the polymer is around 180 °C, so the product stream needs to be heated continuously. This proved to be a constructive challenge for integrating the Coriolis flowmeter into the insulation. The minimum flow velocity required for vibration measurement necessitated a tapering of the pipe cross-section from DN50 to DN25, thereby causing a considerable pressure loss. Depending on operating conditions, the polymer may occasionally solidify causing irreparable damage to the Coriolis flowmeter.

This is where FLEXIM's clamp-on ultrasonic flowmeters proved to be a highly flexible solution. They are quick to install and do not require any alterations to existing pipelines or necessitate process shutdowns. Due to the extreme process temperatures of around 280 °C, ultrasonic transducers were installed on a patented mounting fixture at both measuring points. This high temperature device is designed to separate the transducers thermally from the hot pipe and ensures optimal acoustic contact.

Practical advantages

The measurement was initially intended as a temporary bridging, but proved so convincing that it was decided to permanently measure the two polymer partial flows using clamp-on ultrasonic technology. An additional advantage is the high sensitivity of acoustic measurement technology to low flow velocities. Therefore, tapering of the pipe cross-section can be dispensed with, which consequently means less pressure loss and allows a reduction in pump power consumption.

For more detailed information on the benefits of non-invasive ultrasonic flow measurement in the chemical industry, contact Simon Millington
www.flexim.co.uk
sales@flexim.co.uk
+44 (0)1606 781 420

A SUCCESSFUL INSTMC AWARDS NIGHT

We had a great night honouring our 2023 InstMC Award winners on 26th October. Around 45 attendees gathered at Prince Philip House in London to celebrate their achievements. InstMC President, Sheila Smith and Ken Grattan, Prizes & Awards Committee Chair presented the awards.

Professor Martin Dawson, winner of the Sir Harold Hartley Award, gave the Guest Lecture on 'Development and Application of Laser-based Instrumentation at the Fraunhofer Centre for Applied Photonics'. Martin gave a fantastic visual presentation, highlighting the vast range of sectors that photonics impacts including aerospace, defence, net zero, health, life science, quantum technology and high value manufacturing, as well as examples of instrumentation in use in both hydrogen and explosives detection.

There was plenty of time to socialise and network at the wine and canapé reception following the awards. Thank you to all those who attended and many congratulations to all our award winners: Professor Martin Dawson, Professor John Barbur, Professor Richard Brown, Mr Oliver Grievson, Dr Gregor Brown, Mr Martin Bragg, Dr Shu Lun Mak and Professor Philip Thomas.

If you would like to view or download any photos from the event, please visit the InstMC website at InstMC Awards Event Photos .

> Thank you to all those who attended and many congratulations to all our award winners.


Dr Gregor Brown, winner of the Cornish Award


Sheila Smith presenting the Sir Harold Hartley Award to Prof. Martin Dawson

COMPANION COMPANY SCHEME (CCS) SHOWCASE

The InstMC Companion Company Scheme has been running since 1992, enabling companies to raise their profile amongst our membership of 3,000 professional engineers in the measurement, automation and control sectors.

There are opportunities to network with other businesses, InstMC accredited universities and with individual members, at local and regional level, through Local Sections and Special Interest Groups. We currently have 70 active CCS members and are pleased to introduce some of them to you here.

ABLE Instruments & Control Ltd

ABLE are suppliers of a wide diversity of both cutting edge and traditional instrumentation to the process and research industries. In our 4th decade of operation, we continue to remain faithful to the philosophy on which the company was founded, to supply solutions and not just products. ABLE has forged long term relationships with some of the strongest brands in the world of process control and analytical measurement and developed our own solutions to some of the more difficult measurements across the oil & gas, petrochemical, chemical, utilities, food and pharmaceutical sectors.

Specialists in level, flow, temperature, pressure and analytic measurements, the depth of our instrumentation knowledge and our ability to apply a diverse range of technologies has established ABLE at the forefront of providing the right solution, whatever the requirement. In short, being able to make your measurement is more than what we do, its who we are.

Tel: +44 (0)118 9169407
www.able.co.uk

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www.draeger.com

ISA Global Cyber Security Alliance

Created by the International Society of Automation (ISA), the ISA Global Cybersecurity Alliance (ISAGCA) is a collaborative forum to advance OT cybersecurity awareness, education, readiness, standardization, and knowledge sharing. ISAGCA was created to address cybersecurity threats and vulnerabilities that are clear and present dangers to our facilities, our processes, and the safety of our communities.

Resources available at https://isagca.org/resources for adoption of ISA/IEC62443 Series of standards.

Quick Start Guide: An Overview of ISA/IEC62443 Standards: Security of Industrial and Control Systems Link: ISAGCA Quick Start Guide FINAL.pdf (hubspotusercontent-na1.net)

https://isagca.org/

LOCAL SECTION NEWS

CENTRAL NORTHWEST

Annual Dinner

On 13th October, Central Northwest held their annual dinner at the INNSiDE Hotel, Manchester. Over 100 attendees enjoyed the event which was hosted by the CNW Committee, with Paul Boardman as MC and impressionist Kevin Connelly providing the entertainment.

During the evening, awards were presented to the following students at Liverpool John Moores University: Harry O'Brien - Best Performance in a Control Module and Adam David Staniforth – Best Final Year Project: 'Refinery Dehydration Tank Oil in Water Detection Upgrade'.

The Manchester University Team Award went to 'Embedded systems project, white line following robot challenge'; the winning team, "much faster than the second place team" as they delighted in telling me, included Muskaan Haque, Changhao Liu, Ankit Singh and Elliot Winterbottom.

It was a great delight to talk with the students and hear of their experiences at the universities in which we have a long relationship.

I'd like to thank all of the companies that attended, the sponsors ITI and Sensia Global and the award sponsors for the Manchester University prizes, Sella Controls.

During the evening I was delighted to share that we have four new committee members joining us from November, Steve Warburton of Capula, Claire Jones of Endress & Hauser, Jon Alexander of Thyson Technologies and Darren Glover of ITI.

The date of the dinner for 2024 will be decided in November and we are looking forward to running the event once more next year.

Dave Green, Chair
Central Northwest Local Section

INTERNATIONAL: HONG KONG

InstMC visit and Accreditation of HKCT

In Early October a small group of us from the Institute in the UK travelled to Hong Kong to review the Accreditation status of several degrees offered by the Hong Kong College of Technology. The assessors were InstMC president Sheila Smith and Accreditation Committee Chair Andy Augousti, with excellent administrative support provide by Caroline Trabasas from HQ.

As well as visiting and reestablishing links with HKCT we were lucky enough to be able to meet up with representatives from the very active and committed InstMC Hong Kong Local Section. We were hosted by both Gary Tse (Then Chair of the HK Section, and member of the Trustee Board) and Eddie Lock (Now Chair of the Section). We were able to meet other members of the Section including Louis Lock (previous Trustee) and Senior members of the Hong Kong Institute of Engineers.

The Institute, although based and registered in the UK, has many international members and it was a privilege to be able to visit and show support for one of our most active international sections.

Steff Smith, Chief Executive
Institute of Measurement and Control


InstMC Hong Kong Section 2023 AGM


L to R: Louis Lock, Sheila Smith, Steff Smith, Andy Augousti & Gary Tse

FOCUS ON A SIG

WHAT IS A REGISTERED FUNCTIONAL SAFETY ENGINEER?

When talking about the Institute's Registered Functional Safety Engineer (RFSE), InstMC members often ask:

What is it? - What qualifications do I need? - How do I apply? - How is it assessed? - What do I need to do, if successful? - What benefit is it to me?

Most engineers operating in the field of Functional Safety (FS) attend and study short courses aimed at providing the knowledge and tools required to work in Functional Safety. Most of these courses are attended by engineers in their early years of working on FS projects, and are encouraged by the Institute, as part of the engineers' Continuing Professional Development (CPD).

RFSE - What is it?

The InstMC RFSE qualification is aimed at engineers working in FS who have significant experience across several areas of the FS discipline and want to demonstrate their competence and commitment in this specialised sector.

What qualifications do I need?

The first consideration is that applicants must be registered with the Engineering Council as either a CEng or IEng. This requirement is to ensure that all applicants can demonstrate their professional competence and commitment in accordance with the UK-SPEC.

The applicant must demonstrate an on-going and direct involvement in FS, within diverse areas of the subject, at a professional level for a minimum of three years, together with a comprehensive knowledge of the relevant standards and good practices relating to FS.

How do I apply?

If you feel you satisfy the above criteria, then request an application form from the Membership team at the Institute.

Within the form you will provide details to support your application:

- Qualifications and Structured Training in Functional Safety.
- Employment History.
- Continuing Professional Development & Professional Engagement.
- Competence & Commitment.

Once complete, you will then need to have the form verified by a Proposer/ Supporter. The form is then returned to the Institute and prepared for assessment.

How is it assessed?

The Membership team at the Institute will do the first part of the assessment, which includes confirming:

- Registration of the Engineering Council
- Employment and on-going work in FS for a minimum of three years
- Demonstration of CPD
- Supporters evidence of the application.

The Institute will then appoint two of the panel of RFSE assessors to review the application.

The RFSE assessors panel have developed a scoring methodology which is used in reviewing the application. Depending on the outcome of the assessment the application is either:

- Approved
- Recommended that an interview is conducted to further discuss the application
- Unsuccessful

The assessors may also provide additional comments to the applicant.

What do I need to do if successful?

Once the qualification is awarded, then there is a requirement for the holder to maintain their involvement in FS and enhance their CPD.

To monitor this, every three years the RFSE will need to submit, for review, proof of their ongoing involvement in FS together with a detailed CPD record relevant to FS.

What benefit is it to me?

Becoming an RFSE illustrates to others that your competence and commitment in the FS field has been assessed to a defined criteria by your peers.

As an RFSE you will be included in the Institute's public register.

The Institute has just formed a LinkedIn group, accessible only to RFSE holders, to allow free discussion on FS matters between RFSE's.

To see how it has helped one RFSE see the case study in Precision - Issue 29, September 2023.

Dave Ransome
InstMC Functional Safety SIG

Most engineers operating in the field of Functional Safety (FS) attend and study short courses aimed at providing the knowledge and tools required to work in Functional Safety.

REGISTER OF FUNCTIONAL SAFETY ENGINEERS

Surname	Given Names	EngC Reg No.	RFSE Reg No.	Date of Registration
Walton	Mark	561902	23/002	13/06/2023
Izzeldin Hussein	Abdelaziz	695819	23/001	05/03/2023
Gowen	Myles	693060	22/001	12/09/2022
Samuel	George	676182	21/001	19/04/2021
Rafferty	Ronald	441128	21/002	14/09/2021
Dolan	Ian	661135	20/001	22/01/2020
Easton	Colin	364463	19/001	24/06/2019
Wilkinson	Nathan	656962	19/002	25/06/2019
Pyke	Gregory John	650519	19/003	17/07/2019
Tack	Jason	634361	19/004	02/12/2019
Wood	Jeffrey	371036	18/001	31/01/2018
Holden	Samuel John	620981	18/002	19/07/2018
O'Murchu	Padraig	391846	17/001	10/01/2017
Blackmore	Lawrence	312527	17/002	16/02/2017
Derbyshire	Andrew	589348	17/003	17/02/2017
Southan	Christopher	399831	17/004	31/08/2017
Wheeler	Christopher	565789	17/005	21/09/2017
Reeve	Pau	561859	17/007	20/12/2017
Green	David	553776	16/002	18/05/2016
Dearden	Harvey T.	331365	16/003	14/06/2016
Ransome	David	555021	16/004	21/09/2016

MEASUREMENT QUALITY MATTERS: ASK TREVOR

My customer is asking for "17025" - Where do I start?

Firstly, let us consider what "17025" is and why there is such interest.

ISO 17025:2017 is the international standard for demonstrating the competence of people making measurements. Referring to testing or calibration laboratories, it is in fact aimed at anyone or any organisation making objective measurements whether in-house or as a supplier to others.

Anyone wanting valid measurements made needs to be assured about the competence of the people doing that work. This Standard is used both in-house by owners or managers wanting to have such confidence and it is demanded by customers who buy testing or calibration work commercially. It is also specified by Government and regulators for some work.

The Standard is designed to be used by all sizes of "laboratory" from one person set-ups to multinational corporations employing hundreds of measurement staff.

Accreditation by bodies such as UKAS (United Kingdom Accreditation Service) is available for ISO 17025:2017 where independent third-party assurance is required but the Standard is also used without accreditation and you can apply it yourself to your work. The system for this would be very small and simple for small measurement organisations and extensive and comprehensive for larger and more complicated bodies.

So, the interest arises because compliance with ISO 17025:2017 demonstrates measurement competence for users and customers without them having to hold the expertise themselves or spend resource on assessing their suppliers.

What does 17025 require?

This can be summarised as having three elements as shown here:

1 Technical Competence: about your people

"getting it right" "valid results"

2 A Management System: following procedures

"consistent" "once right…always right"

3 Check that it is right in practice: PT/ILC

"Demonstrated Competence" by comparing your work with others, giving added confidence"

Technical competence is key. You will need to have a regime for training, checking and authorising your people to undertake specified tasks. Simple and not heavy for smaller labs.

A **Management system** for consistency. This is just a case of deciding how you want things to be done, writing it down and ensuring that every time the same task is undertaken it is done the same (right and agreed) way. This needs to cover everything you do that could affect the validity of results including sample preparation, internal calibrations, doing the test or calibration and report writing or certificate generation. The risk and opportunity approach in modern management system standards ensures that you pay detailed attention to things that matter for you and do not need extensive treatment for things that do not matter. A small lab using ISO 17025:2017 would probably need no more than a dozen documented topics of policy and practice description with pointers to lower procedural instructions.

Checking validity in practice is achieved by comparing your results with those of other labs. There are a variety of ways that this can be done including taking part in proficiency testing schemes (PT) or interlaboratory comparisons (ILC). See www.eptis.org for ideas. If you are doing something unusual or rather special you might choose to arrange a comparison yourself with your technical friends in other similar labs. A completely valid result in a comparison would show an En ratio or Zeta score of less than 1. If you have your measurement uncertainty correctly established you should achieve this and if not, then you are able to investigate any differences.

Do I need to get accredited?

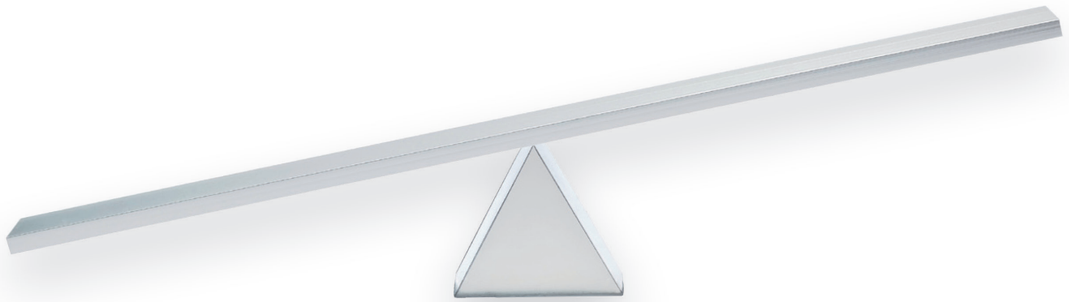
Accreditation is effectively just third-party approval of your activities. In the United Kingdom this is provided by UKAS and if your customers require such approval, then yes, you will need to ask UKAS to assess your compliance with the Standard and accredit you. This is for particular listed calibrations or tests and attests your demonstrated competence for those activities.

Otherwise, you may just use ISO 17025:2017 yourself, conduct competent internal audits, and if all appears well then you will have enhanced confidence that your work is valid.

Trevor Thompson is a metrologist and accreditation consultant, previously for many years at NPL and UKAS, now working independently as www.bestmeasurement.com and he offers help for laboratories with their management systems and internal audits. He also delivers training courses, for UKAS and others.

Trevor is here to offer some expert advice in all measurement quality matters! If you have a question, please email him at questions@bestmeasurement.com and we will feature your question and answer in a future edition of the magazine.

> The risk and opportunity approach in modern management system standards ensures that you pay detailed attention to things that matter for you and do not need extensive treatment for things that do not matter.



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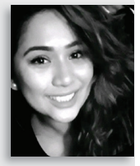
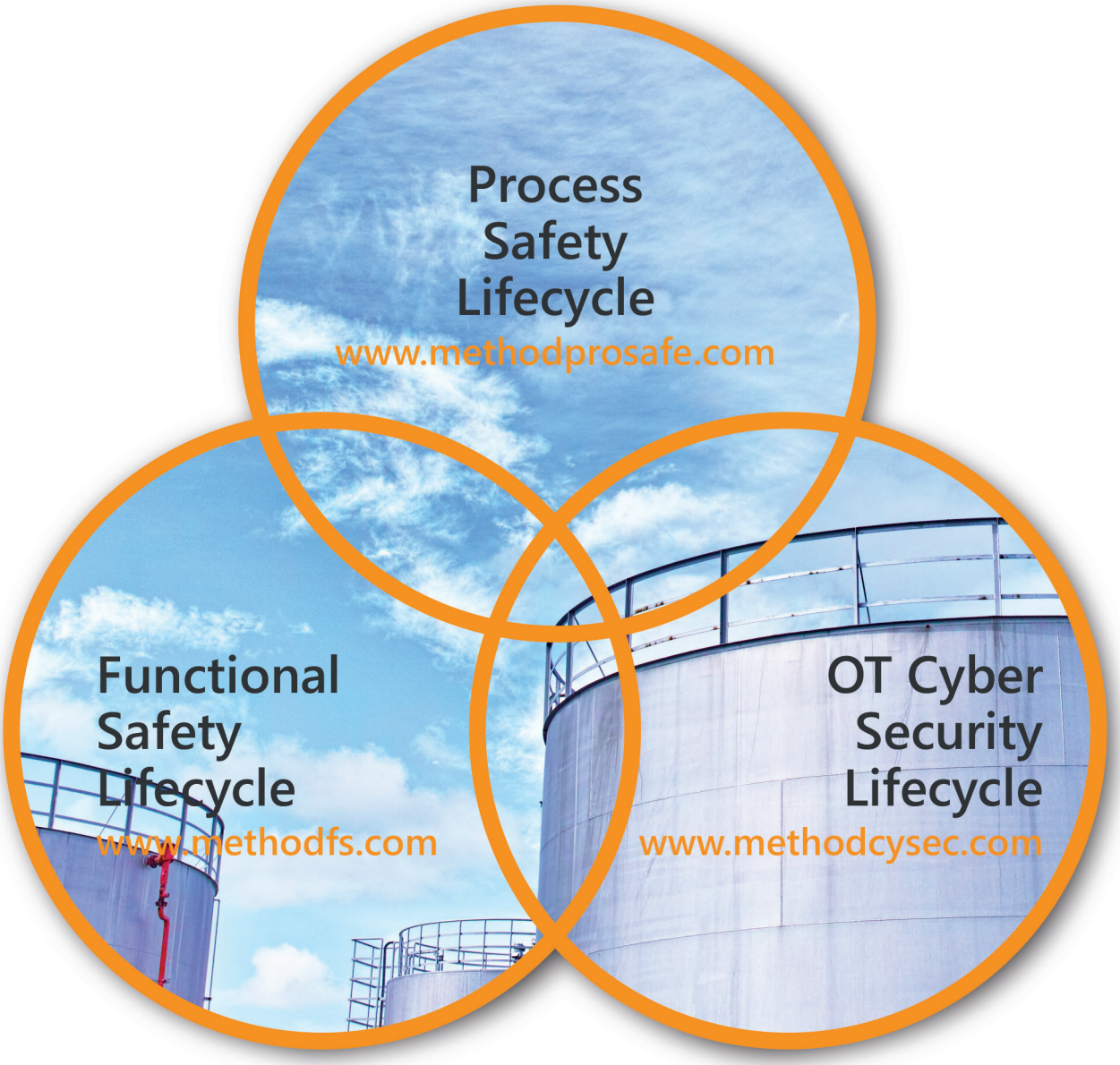


= Method
Functional Safety

Do It Right
Do it Once



Integrate 3 Lifecycles

The =Method website for each discipline has more information and insight.

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