



North West Members Group

ICHEME NORTHWEST GROUP NEWSLETTER

WINTER / SPRING 2020 & 2021

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Welcome to the 2020 and 2021 amalgamated Edition of the North West Newsletter! Following a tumultuous two years, we are now beginning to see the break of dawn across all facets of society and the IChemE North West Branch is no different. Following a relatively successful period of networking, the North West Branch has retained its true core of committee members to ensure we came out of this pandemic with a unified front of championing chemical engineering across the North West of England at grassroots level.

To this extent, I would like to extend special thanks to all committee members past and present who have persisted in ensuring we met on a monthly basis, at the expense of being “Zoomed out”. I can proudly claim that the main purpose of the committee, which is to “support the local geographic member groups across the North West” has been met after being reshaped and focused.

The current aim of the committee over the upcoming period will be to support the local groups in organizing physical events and encourage not a return to normality, but using the lessons of this pandemic in an attempt to reshape our volunteer work across various boundaries, not just limited to geographic ones. The committee has effectively organized a popular series of virtual “pub” quizzes, over the past two years, ensuring the tradition is carried out. The annual Engineering Excellence Awards were held virtually for the first time in conjunction with the IMechE North West, to which we congratulate the winners of the awards. Both events will soon return to in-person and physical formats- a certain return to normality here! Lastly, after much deliberation, I have decided to step down as Chair of the committee after more than 4 years at the helm. The door for nomination is now open and a new chair will be voted at the upcoming in-person AGM in July. I would like to extend my gratitude to all colleagues and wish the next person all the luck in guiding the committee to support its goals. The past four years have been fantastic and I thoroughly enjoyed the process, but a new breath of fresh air would great for the committee.

The North West Regional Group of the IChemE is a volunteer led co-ordination group covering the geographic area of the North West of England (Chester, Cumbria, Manchester, North Lancashire and Warrington & Widnes). Since we are volunteer led, the committee is always on the lookout for new members of all backgrounds to join us in our co-ordination goal across the region. Please do get in touch if you would like to contribute to your local community of engineers. I personally hope you enjoy this newsletter and appreciate all the hard work the team has put in this.

Wadoud Hazineh, CEng MIChemE

North West Annual General Meeting—AGM

The IChemE North West held its first virtual Annual General Meeting on the 20th of July 2020, with guest speaker Professor Joseph Howe regarding Industrial Clusters. Professor Howe was appointed as a non-executive director and trustee of the Department for Education’s Engineering Construction Industry Training Board in 2018. He is the founding director of the North West Hydrogen Alliance which brings together some of the UK’s most influential business driving forward the work to develop the region as the UK’s primary hydrogen economy. The focus of the talk was Hydrogen power in the North West and its adaptation globally, including key governmental framework. The talk was well received, with questions during the webinar.



Use below link of NW IChemE page for more information on committee members <https://www.icheme.org/membership/communities/members-groups/north-west/committee/>

If you are interested in joining the committee please email: nwmgecm@ichememember.org

2021 NW Committee Members

Name	Position
Wadoud Hazineh	Chairman
Alex Allen	Vice Chairman and NW Congress Rep
Anthony Greenough	NW Congress Rep
Milton Avila	Vice-Chair
Dariya Nurtazayeva	Committee Member
Sam Haig	Treasurer
Madhuri Boddu	Interim Secretary
Perpetual Idehen	Newsletter Co-ordinator
Dongda Zhang	University Representative
Uchenna Onwuamaegbu	School’s Liaison
Bill Harper	NW Congress Rep
Oliver Pennington	Student Representative
Lee Constable	Committee Member
Vacant	Mentor Co-ordinator
Vacant	Social Coordinator
Vacant	Diversity and Inclusion Representative

TECHNICAL ARTICLE

COMMISSIONING STAGE OF A PROJECT

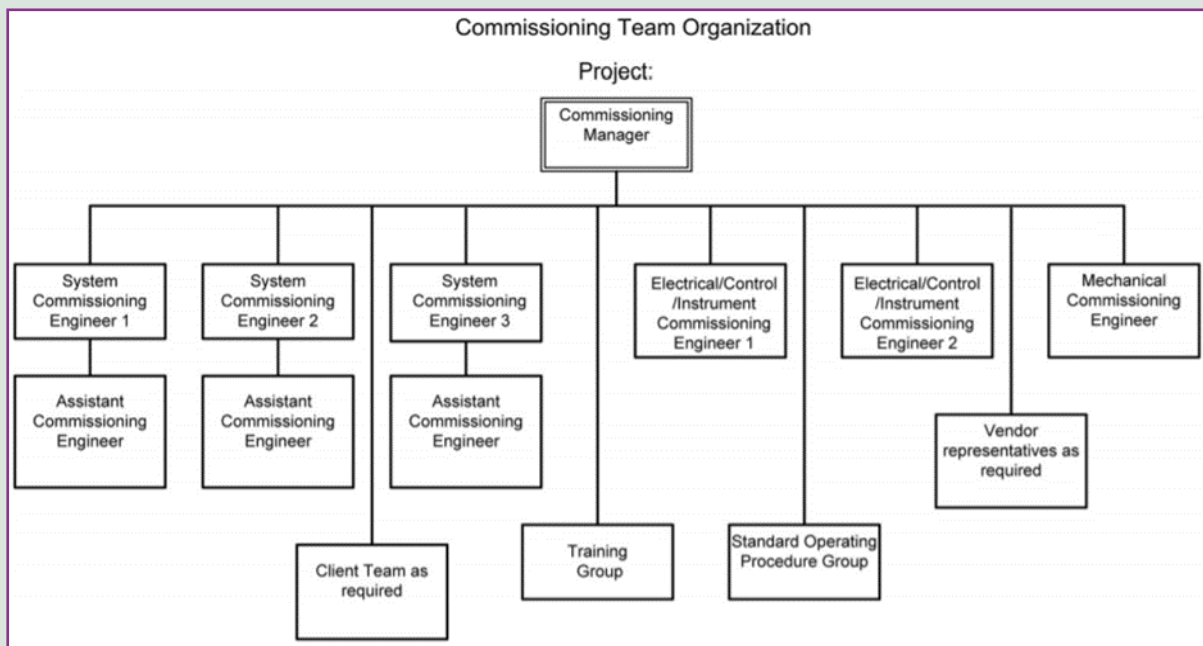
One of the key milestones of an EPC (Engineering, Procurement, and Commissioning) project is the Commissioning stage. The definition of the scope and handover point of Mechanical Completion, Pre-commissioning, Commissioning and Start-up tends to differ in different projects, final users and of course, contracts.

With the intention to get to a common understanding of the scope of these stages and the documentation and tasks included in the responsibility of the EPC contractor, what the contractor normally do is to produce a Commissioning Manual, which includes test methods and checklists to be used, a list of the systems and sub-systems the whole project is divided into, the information to be included in the dossiers to be handed over when the Commissioning stage is done, an organigram with the roles, names and the responsibilities of the different roles within the Commissioning team and, as said before, the scope and limits of Mechanical Completion, pre-Commissioning, Commissioning and Start Up stages among other documentation, definitions and relevant information that defines the approach to these stages of a project. Mechanical Completion is normally out of the scope of the Commissioning team but is necessary to have a clear understanding of the limit between that stage and Pre-commissioning as this will define the official commencement of the Commissioning tasks.

From the book "Chemical and Process Plant Commissioning Handbook" of Martin Killcross, I am sharing the definitions for these three stages:

1. **Pre-commissioning:** Activities carried out during construction that prepare and enable the unit to move to the main commissioning phase. The range of pre-commissioning activities include installation of filters, packing of distillation columns, filling a reactor with catalyst, cleaning pipes and equipment, vendor and factory acceptance testing, punch listing and instrument, electrical and motor loop testing.
2. **Commissioning:** Here the various systems and items of equipment are first put into initial operation. Utility systems, instrument air, cooling water and general-purpose water are made live and the core process systems are first made operational, typically with safe chemicals, air, or water. The unit is leak tested, started up, shut down, distillation columns and scrubbing columns are put into use. All of these are to gain the required confidence that when process chemicals are introduced, the plant will operate as designed and intended.
3. **Start-up:** The plant is brought into actual operation. Big projects require the whole plant to be divided into different systems and these systems are further breakdown into sub-systems, with the final objective of simplifying the activities and organising the completion of all the tasks for each system in order to optimise the duration of these stages and the cost to the project.

A Commissioning team is normally integrated by a Head of Commissioning, specialists to carry over inspection, calibration and testing of every component of the installation within the scope of the project (this includes and is not limited to the following disciplines: piping, instrumentation, process, electricity, rotating equipment, vessels, civil) and someone responsible for getting the documentation and dossiers to be handed over when finishing all the tasks of each system. A typical and general organigram for a Commissioning team is shown below (source: "Chemical and Process Plant Commissioning Handbook" of Martin Killcross).



TECHNICAL ARTICLE

The dossiers will typically include a Punch List for each system that include unfinished tasks, mistakes, corrections required or modifications according to the approved engineering of the project. The Punch List items are the result of the inspection of different disciplines of every system with the intention of achieving the completion of the system and hand it over to proceed with the next stage (Pre-commissioning, Commissioning, Start-up). The items of the Punch List are categorised as A, B or C depending on the restriction it represents in order to proceed with the next stage of the project. For example, an instrument that does not have the earthing cable connected cannot be approved for its pre-commissioning stage and then the system where the instrument is cannot proceed to the next stage which would be Commissioning (this would be an A category item). An item with B category can be approved for Pre-Commissioning but needs to be completed and finalised to get approval of Commissioning. Finally, a C category item can be completed after the unit has been started up (for example correction of a TAG number).

The completion of each milestone (Mechanical Completion, Pre-commissioning, Commissioning, Hand-over/Start-up -again, these always depend on what is agreed on the contract) will normally lead to the release of a payment to the contractor. This is why it is very important to clarify the definition and scope of these stages beforehand which is typically specified in the Commissioning Manual as described before.



Milton Avila is a Chartered Chemical Engineer from the University of Buenos Aires (Argentina) with +15 years of experience in the Oil & Gas sector. He founded Carbobasic Engineering Ltd and provides Engineering Consultancy to companies in the Oil & Gas industry. Other technical articles like this one can be found on Carbobasic Engineering Ltd Facebook page <https://www.facebook.com/Carbobasic>

Website: <https://www.carbobasic.co.uk/>

LinkedIn: <https://www.linkedin.com/in/milton-avila-5b729419/>



REGIONAL GROUP UPDATES

MANCHESTER BRANCH UPDATE

In the year 2020, Manchester members group started off the year normally with Get Chartered event on 5th of February and helped many experienced engineers in their chartership application. However due to the lockdown measures, Social Networking event and Mock Arbitration events were postponed and are yet to be confirmed. After several committee meetings on executing online webinars, the group re-started the member engagement with AGM event on 23rd July and then successfully conducted a one hour online webinar on *Managing Creeping Changes on Manufacturing Assets* on 8th of October which was presented by Deputy Director of IChemE Safety Centre Dr. Zsuzsanna Gyenes.



On 26th November, in an attempt to create awareness and support for members on *Mental Health*, which is one of the key health issues often go undiagnosed during the lockdown, the group created a free online course with the help of Mind—mental health charity that highlighted myths and stereotypes, causes, signs and symptoms and how to support including signposting to local and national support agencies. Overall, Manchester's members group supporting their members not only through technical presentations and professional development but also extending their support on in-general yet important issues such as mental health. *For more information please contact Martin Hyde at: Martin.Hyde@ghd.com*

WARRINGTON & WIDNES BRANCH UPDATE

Warrington & Widnes branch collaborated with Chester branch for inviting members to their Get Chartered event on 30th January 2020 which was presented by IChemE Regional Support Executive Heather Black and supported members on interview advice, assessment process and report writing guidance.

Later, on 27th of February, the group organised a technical talk on Decarbonisation of the Mersey Industrial Cluster by Prof. Joe Howe who has been working on the North West Hydrogen Alliance to develop the region as the UK's primary hydrogen economy. During the lockdown, there were no events planned in 2020 but the committee was working on introducing online webinar talks for more member engagement. *For more information please contact Phil Egan at: philegan2000@hotmail.com*

NORTH LANCASHIRE UPDATE

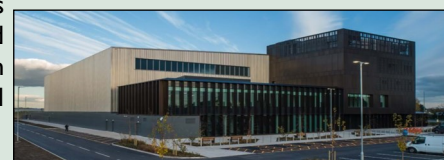
After got off to a strong start in 2020 with events focusing on Small Modular (nuclear) Reactors—SMRs, (a subject back in the spotlight following the recent announcement from Rolls Royce) by Prof. Gregg Butler who highlighted the barriers for design approvals and likely timescales for its usage, and a thrilling topic on Forensic Science and criminal investigations by Caroline Eames who introduced the traditional sample collection methods such as DNA, blood, fingerprints as well as the importance of 'digital' forensic material in today's generation. Unfortunately, events on fluorochemical processing, and a site visit were postponed due to national lockdown. However, North Lancashire group are pleased to announce that the 2021 season will be commencing in November as planned, with events taking place online, as per government guidance. Topics this season include use of the Bow Tie methodology in Process Safety Management, and manufacture of Hydrogen for vehicle fuel cells. Please watch out for our emails over the coming weeks giving more information. North Lancashire are also pleased to welcome a new committee member, Katie Oxley to the group. Katie will be leading on online communication and webinars.



For more information please contact Peter Macalpine at pmacalpine@sky.com

CHESTER & NORTH WALES BRANCH UPDATE

Chester & North Wales branch is known for organising several industrial visit events around the region. On 11th of February, the group organised a visit to the newly opened AMRC (Advanced Manufacturing Research Centre) Cymru facility which has an expertise on supporting businesses to adopt industry 4.0 technologies through automation, virtual reality, robotics with wider Catapult network of innovation assets.



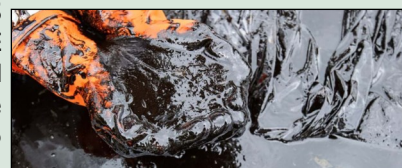
Later on 10th of March at Thornton Science Park, Just before the first lockdown, the group organised a technical talk on *The Lowdown on Blowdown* by prof. Stephen Richardson—president of IChemE. followed by *Early Career Research (ECR)* workshop. Stephen emphasised about the processes occurring during depressurisation of high-pressure hydrocarbon systems highlighting common pitfalls and how to avoid them. ECR-led workshop was conducted on Decarbonisation through large-scale Hydrogen Production and CCS Infrastructure. Due to the lockdown measures, two events, 'Leadership — A Chemical Engineer's Journey' and 'Maritime Simulator Visit' are yet to be postponed. However, Chester branch is eagerly waiting for the ease of lockdown to resume the postponed events and also conducting more online webinar talks.



For information please contact Peter Swanson at: peterswanson120@btinternet.com

CUMBRIA BRANCH UPDATE

During the year 2020, Cumbria branch held online member engagement events through various technical talks. Some of their members went above and beyond during lockdown to help design ventilators for the NHS which was highlighted in Cumbria's Christmas newsletter. On 25th of February, The IChemE President—Stephen Richardson visited the Cumbria group at Beacon Museum and shared his vision for the future of the IChemE followed by the presentation on some of the accident inquires such as Piper Alpha and Ocean Odyssey that he was involved in and also the learnings from these accidents.



On 20th May, during the strict lockdown, Cumbria branch identified the importance of remote working strategies for supply chain engineers in delivering complex and demanding work. Therefore, the branch helped members by organising Digital Solutions for Engineers to Support Remote Delivery talk by two speakers Sam Stephens and Darren Grears from Atkins and addressed the issues of data collection, data management and visualisation and automation to support remote project delivery. Later on 24th November, Cumbria had their first virtual AGM which was held over MicroSoft Teams and Prof. Joan Cordiner who gave a guest presentation on her experience with major disaster planning at a large plant in Texas (hurricanes etc.,).



Finally, on 10th of December. 2020 year finishes with the first inter-institute Christmas virtual quiz through Microsoft Teams by using Google Docs as answer sheets. For more information please contact Clarie Johnstone Edwards at: Claire.JohnstoneEdwards@atkinsglobal.com

COVID-19 IMPACT ON STUDENTS & GRADUATES

Thomas Savage — Chemical Engineering student experience in his final year during the year 2020



COVID-19 has had an effect on students of chemical engineering as it has effected many other aspects of the field. In March last year, I was entering the second of three parts that made up my final year design project at the University of Manchester (UoM).

This somewhat stressful rite of passage, we were told, relied on large amounts of communication to be done efficiently. An aspect that obviously took on a whole new meaning in the coming months. As I'm sure is the goal of the design project, we were transitioning from students to engineers, however this transition wasn't as smooth as to be expected.

All group meetings were transitioned online, the one coursework we had changed date week after week before it was finally given up on, and we now had to make this important transition remotely. Immediate issues to do with software packages and meetings were first to affect our cohort. Virtual distillation columns stopped separating, reactors stopped reacting, and process flowsheets stopped converging (if they were able to converge in the first place!). The department was quick to provide us with licenses with the required software, and we were able to adapt relatively well.

I cannot say whether the experience was more or less stressful than if we were all together, but I can be sure that the comradery of seeing out a three year degree, all together, in the same computer cluster was lost. Given more optimistic news about vaccines, hopefully we will be able to meet up and celebrate this shared experience.

Madhuri Boddu — MSc Graduate sharing her job search experience during 2020 & 21

In December 2019, just before the pandemic has been declared, I completed a postgraduate degree in Advanced Chemical Engineering from UoM and graduated with high hopes of establishing my career in my first job. During this time, I joined in IChemE NW members group committee to build professional network with other chemical engineers, whilst also undertaking newsletter and webmaster duties to improve my interpersonal skills and CPD.



When I was at the peak of applying for jobs, the country went into the first lockdown and the overall job market went downhill. As a graduate, it affected my hopes on landing my first job due to the uncertain situations arisen from COVID lockdown measures. However, in order to keep myself motivated in these uncertainties, I took this time as an opportunity to develop my knowledge and explored various online courses related to my dream role in process engineering. I signed up for Aspen HYSYS process simulation and Lean Six Sigma quality management courses, which enabled me to apply chemical engineering concepts from university studies in the form of equipment design feasibility analysis and also learnt the importance of Lean Six Sigma tools for improving various industrial quality management projects. This has also widened my job search and helped me with my free time wisely.

I was also grateful to be offered a unique opportunity from the NW Committee's Vice Chair also an experienced senior process engineer—Milton Avila, who passionately shared his knowledge and expertise using his fantastic teaching skills on some of the important topics that were not covered in academia but are very important in chemical industries, such as pressure safety valves, flare design height, desiccant dryers etc., and I also published technical articles on these topics under his guidance.

As a result, with persistent efforts, I secured a Graduate Process Engineer role in the wastewater company and started building my career in the chemical engineering world. Finally, based on my experiences in these uncertain situations, I would like to suggest future graduates to be optimistic and look for opportunities to improve their knowledge in the relevant field of interest through various online courses and also join the IChemE member groups to develop professional networking.

International Women's Day : #BreakingTheBias2021

Imagine a gender equal world:

- A world free of bias, stereotypes, and discrimination.
- A world that is diverse, equitable, and inclusive.
- A world where difference is valued and celebrated.
- Together we can forge women's equality.
- Collectively we can all **#BreakTheBias**.



COVID-19 IMPACT ON STUDENTS & GRADUATES

Dr Perpetual Eze-Idehen—Ph.D. graduate in Chemical Engineering from University of Manchester (UoM)

Undertaking a PhD in Chemical Engineering has been a truly life-changing experience for me and one I was looking forward to completing in 2020. Aside being a postgraduate researcher in Chemical Engineering, I am a mother and wife, however, I am one of the students that combine research with caring responsibility of young family and have been managing very well until the pandemic struck.



My research was on developing sensor technologies that will allow real-time monitoring and control of petroleum contaminants using composites of non-conducting polymers and conductive filler.

Covid-19 caused unprecedented disruption to the world's daily life and presented a unique obstacle to teaching and research in universities. Even without the disruption and uncertainty caused by the pandemic, PhD journey is rarely smooth sailing. However, it is said a smooth sea never made a skilled sailor. For a researcher like myself, I was lucky to have completed my research experimental work, I was faced with peculiar situation, having to work from home with a family of very young children, I became very concerned about the completion of my work. The University recognizes this new reality and was sympathetic to the challenges, hence made provision for extensions with hope that the pandemic will end soon but it dragged on. This gave me more time to look through related literatures and found diverse ways my experimental data can be quantitatively analysed.

Overall, I would say—The global crisis provided an opportunity for the PhD students to show resilience as researchers negotiating the choppy ocean of their projects.

Rahul—Reorienting research towards Computation and Data Analysis during COVID-19 pandemic

I am a second-year PhD student working at the CEAS department of the University of Manchester. COVID-19 has led to several students being put under lockdown and disrupted the day-to-day life of many PhD researchers. I also faced similar disruption in my research project and this sudden change to working from home format was a very new and different experience. Overall, my experience of working on my research project during lockdown has been very satisfactory and I was quite productive in my research work in the entire duration.



My research project had a mix of experimental and computational work involved in the initial project plan. However, after the lockdown being imposed in the Greater Manchester region, I had to move my research out of the lab even before getting started with my experimental work. I am fortunate to have a very supportive supervisor Dr. Robin Curtis who helped me reorganize my research plan towards a computational analysis project in biopharmaceutical development. We discussed and working hard to propel my PhD into a Computation and Data analysis format that was achievable and feasible in a work-from-home setting. It was quite tiring but finally, we managed to decide a new project that matched my skillset and the lab's background.

Repurposing my research towards the computational side worked out to be very productive and I was able to get some quite impressive results and simulations after a few months of work. It is a decision that I admire because it has saved me valuable time in my 3-year PhD. Even though many of my friends have faced severe disruption by COVID-19 pandemic, fortunately, I have been happy and productive in 2020.

ONLINE NETWORKING

One important step most of us learnt during the pandemic lockdown is connecting with others through online applications and exploring online resources in the field of our interest. Checkout the links below for improving your online networking.

⇒ For more updates on IChemE, please subscribe to official IChemE channel on YouTube <https://www.youtube.com/c/IChemE/videos>

⇒ To discuss Chemical Engineering topics, click on this international group on WhatsApp — The Chemical Engineering Forum <https://chat.whatsapp.com/G8xOpbeyenV27IIRx9t0WJ>

Another link <https://chat.whatsapp.com/FfIdIOHujFj8DKBdyYxZiV> For Telegram <https://t.me/chemengforum>

⇒ Connect with chemical engineers on official IChemE North West Members group on LinkedIn—<https://www.linkedin.com/groups/8185214/>



Please contact IChemE Northwest Committee if you are interested in conducting any guest lectures / online webinars/ virtual industrial tours etc., IChemE Northwest Committee are open to engagements and volunteering for future events.

If you are interested in joining the newsletter editing team or would like to publish an article or update please email: nwmgecm@ichememember.org