Index

O SPRING/SUMMER | O 2021

Newsletter of the Commissioning Specialists Association

PROFICIENT PROFESSIONAL COMMISSIONING

In this edition of Index:

This Edition of Index is sponsored by:

Ashford

THE CATEGORIES

- Project of the Year
- Commissioning Management Award
- Product Innovation of the Year
- Commissioning Provider of the Year
- Investment in Training Award
- Student of the Year
- Engineer of the Year

Celebrate at the 2021 CSA Awards

11th November 2021,
The Tower Hotel St. Katharine's Dock,
London E1W 1LD

Ashford BSRIA CSA MBS MEDIACONTROL HDR Andrew Reid RED

PLEASE MAKE YOUR NOMINATIONS AND BOOK YOUR TICKETS

CSA SOCIAL MEDIA – LINKEDIN

We are proud to share with you that the Commissioning Specialist Association now has over 2,500 followers across the UK and globe on LinkedIn. This following enables us to reach members, potential members and experts in the commissioning field with the latest CSA news and updates. On our platform we are happy to re-share any of our members' posts if we feel our audience would benefit from or be interested in this. Therefore, please can you ensure that you hashtag #Commissioning and/or #CSAHorsham when posting updates on LinkedIn for your opportunity to feature on our page.

NEW MEMBERS

We would like to welcome the following new members to the Association.

Corporate: *Aventus, P & A Environmental, Select Commissioning Ltd*
Associates: *Rush Associates Ltd*
Individual Associates: *Mohamed Moustafa Elsayed, Ayten Demitras*
Individuals: *Brian Carpio, Glenn Rirao, Raymark Charez, Randy Catadonia, Rodmar Lachica, Englebert Gautini, Arnel Ando, Charlito Riveral, Majd Jwayyed, Bachir Hatem, Elie Yafet, Hussein Mostafa, Kayssar Ibrahim, Rawad Diab, Wafi Rafeh, Youssef Abuzeid, Nick Antonio, Charles Sevillena, Osamah Hafeez, Sharif AL Shakaa, Zaghloul Khalifa, Lewis Arnold, Ahmed Younis, Aabid Mehraj, Bhushan Ghumre, George Abraham, Shaikh Razak, Mohd Shastri Fakhruddin, Ammar Omar, Tom Townley, Muhammed Shakeem, Luke Sheridan, Fathy Syed, Burak Ozkan, Mazen Ayyash, Taha Khalefa, Jason Morris, Syed Hussan, Dimitrios Achontidis, Kenneth Celino, John Vergara, Gary Artiaya, Joseph Manhuod, Joseph Perez, Andrew Holmes, Aaron Gibons, Ahmed Mounir, Neil Allen, Mark Beagan, Richard Gilmour, Jamie Aldred, Levent Sevinc, Gary Haze, Daniel Rothwell, Matthew Harker, Andrew Sharp, Paul Farrugia, Daniel McAndrew, Stephen Milne, Andrew Dickinson, Anthony Byron, Peter Range, Beslim Duraku, Mark Harris, Jonathan Fogg, Adam Floody, Adam Harris, Ethan Raoof, Daniel McEnaney, James Hale, Joshua Fisher, Nikolas Harbin, Craig Thomas*

CSA SOCIAL MEDIA #CSAHORSHAM or #COMMISSIONING

Jules' News

Hi everyone welcome to the Spring/Summer Edition of Index. Who would have thought we would still be in this situation a year down the line but I hope you are all well and had your Covid jabs. It's been a difficult year for everyone but I hope you feel the same that the CSA office has kept everyone running as usual and efficiently.

To those of you who did not know, our Jo Jo has been very unwell and is having Chemotherapy and Radiotherapy and was out of action for a few months but she is back working remotely from home and I am so happy to have her back! She is on the road to recovery and I am sure you join me in wishing her well and she can't wait for the Gala Awards where we can all get together again!

2020 was the CSA's 30TH ANNIVERARY which we unfortunately couldn't celebrate as we would have liked due to Covid but we are going to make up for it at the Gala Awards/AGM this year (11 November) – don't forget order your table/ tickets now on the CSA Awards website www.csa-awards.co.uk as they are selling fast and we may still be limited to the amount of people we can accommodate.

The AGM will take place in the afternoon of the 11 November and a handover to the new Chairman and Vice Chairman will take place. Neil Burdess of Banyard Group will be taking the reins of the CSA Chairman for the next 3 years and Andrew Watkin will temporarily take the positon of Vice Chairman. A full report will be recorded in the next issue of Index after the Gala Awards (Autumn/Winter 2021 edition).

Please take time to read the most interesting articles in this edition of index
"Join us on a journey to net zero " – Pages 3 & 4 article from Roger Carlin MD Ashford
"Commissioning Management – Where is it now and where is it going" – pages 7 & 8 by Keith Barker – CSA Marketing Chairman and Director Tectonic Techniques
"It's not M & E" – pages 9 to 14 by Glenn Hawkins – Clear Construction

Distance Learning Courses A, B & C

Well Done to those listed below who have recently passed the DLC tests.

DLC A

SAM DRISCOLL , JOSH SPENCER, SAM TOBIN, TOM MILLER, RICHARD MORLEY, LOUIS BIRBECK, CHARLIE FRISTON, BRADLEY PARSONS, JOSH HOLDEN, CHRISTOPHER JONES, JOE CARROLL, ELLIOTT SHEPHERD, JACK TAYLOR, HERISON HOXHAJ, MATTHEW JOHNSON, CALLUM O'CONNOR, ALAN CRAWFORD, SLAVA VEREDA, JOSEPH BOARDMAN, SAM JACKSON, JACOB MCCULLY, RYAN MCCULLOCH

DLC B

EAN O'CONNOR, LUKE MYERS, KAYLEIGH LOWE, RYAN MCCULLOCH, ANDREW MARCH

DLC C

MARTIN DOUGLAS, KEIRAN PATON, DANNY DUNECLIFT, RICHARD MORLEY, ANTHONY BYRON, GLEN CONLON, GEORGE DICKINSON

GRADE 4 EXAM RESULTS FROM 8 MAY 2021 EXAM

Well Done to those listed below who have recently passed the Grade 4 Exam.

ANDREW GREEN, NIGEL TYRELL, VOLODYMYR FRANYUK, PAUL MCCULLY, JAE ARR MARTIN, JAYSON CANDELAVIA, ROLLAN MENEZ, RENEEM POONTHURUTHY, RIZWAN KHAN, MOATAZ KAMAL, ASRAR RASHID, NARAYANAN VARADHARAJAN, SYED ABDUL RAHMAN, EMERSON CHAN, MATT ATIENZA, PAUL CALABIA

The next Grade 4 Exam will be 16 October 2021. Please email CSA office to book.

GRADE 5 PASSES

Congratulations to those listed who passed the GRADE 5 THESIS

PATRICK MCMAHON

Join us on our journey to Net Zero

Roger Carlin, managing director of Ashford Environmental Services, invites the whole of the CSA membership to join his organisation on the journey to Net Zero as the UK sets its sights on 2050.

Ashford Environmental Services is on a journey. It is one that we share with the whole construction industry and the UK. The destination is Net Zero carbon emissions – and we must all get there by 2050, if not before.

I and the other directors and managers at Ashford Environmental Services have set a target of becoming a 100% carbon neutral business (compared with our current emissions level) within four years. We have also given ourselves the interim milestone of reducing our carbon footprint by 85% by 2022.

We have set these challenging targets for ourselves because we want to contribute to reaching the climate change target that the government has set for the country – to achieve national Net Zero greenhouse gas emissions by 2050. There is also an interim target of a 78% reduction in emissions (compared to 1990 levels) by 2035.

The government introduced its roadmap to achieving those national goals in November 2020 in a Ten Point Plan for a Green Industrial Revolution. This document outlines how key areas of the UK economy, from travel to finance and the built environment, will get to that Net Zero destination.

As part of the programme of improving the carbon performance of buildings, the government has released a Future Buildings Standard. This document outlines government proposals for new Building Regulations, particularly Part L (Conservation of fuel and power) and Part F (Ventilation).

The government will introduce a new Part L of the Building Regulations in 2025. However, we can also expect an interim change to Part L in 2022 because the government wants the construction industry to start working towards tighter carbon emissions targets as soon as possible. The current proposal is that interim Part L will require a 27% reduction in emissions against current Part L (2013) standards. There will also be higher standards for existing buildings when carrying out refurbishment works.

Perhaps more importantly for those of us in the commissioning sector, the Future Buildings Standard puts greater emphasis on our specialism. The proposal extends the commissioning requirements and makes them more transparent by providing a dedicated section in the updated Part L.

This change reflects the government's view that high performing services in buildings can only be effective if the services are "tested and adjusted properly after installation."

The proposed update will include a legal requirement with guidance on how to meet the regulations, stating: "We also propose to expand guidance on commissioning by referencing specific commissioning guidance beyond the currently reference CIBSE Guide M."

Join us on our journey to Net Zero Continued

So, there is no doubt that the construction industry and its clients are heading for a time of change. As a result, we must all look closely at the outputs of our work. Several influential organisations in the sector have committed to Net Zero carbon goals. For example, in January 2021, Mace announced that it had achieved net zero carbon. Skanska has set a target of Net Zero carbon emissions by 2050. And developer BAM is aiming to become 'net climate positive' by 2050.

It is gratifying to see that an updated Part L will recognise the crucial role that commissioning has in the long-term energy-efficient operation of buildings. As commissioning specialists, we can offer our customers sound advice on how they can achieve their Net Zero carbon emissions.

To get the construction sector (and its clients) to Net Zero, we must all take responsibility where we can. Here at Ashford Environmental Services, we are looking to reduce our energy use and use renewable sources where possible. We are also rationalising our transport and business travel while reducing materials waste.

Changing how we do things requires effort at the start – finding reliable information, researching what areas of business we need to target, sourcing new products and suppliers. But I am hopeful that we can make a difference and do our part to solve the climate emergency. I would call on my peers and colleagues in the CSA to look at their businesses and join us in making the journey to Net Zero.

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Roger Carlin – Managing Director of Ashford Environmental Services Ltd

Chairman's Say

It is with great affection for the CSA and all of its working parts, I say farewell with immense gratitude, I am stepping down as Chairman after three fantastic years of service.

I hope that the incoming Chair, Neil Burdess, will accept the role with as much enthusiasm and diligence as I have enjoyed putting in to the association over that time. I shall miss working closely with Julie, Jo, and Tracy, and every other member of staff, and colleagues who have played a peripatetic role in the organisation with me. Thank you, all.

The past year and a half has been the single most challenging time we at the CSA and indeed, every company has faced in our history. The spectre of Covid still ever present on the horizon will make navigating the future tricky but I have no doubt that the team will continue on to make a success of the future of our highly regarded association. Neil of Banyards will take over at the next awards and AGM ceremony in November this year and it is with great thanks to them that I extend my absolute gratitude and good luck. I have very much enjoyed my time working with the CSA to improve and innovate and I know that it will continue to do so under the watch of Mr Burdess.

The Covid situation has proven to be the biggest disruption to the way we have always worked and has not only provided enormous problems but as I always say, a problem is an opportunity to evolve and do things better. I feel that many of working practices have been adapted for the better; working remotely from home was something nobody would ever have accepted before due to the messy logistics but we have proved that this was not nearly as hard as previously imagined. So many staff have maintained their output and even increased their productivity under this modality. The need for isolations, 'pings', and social distancing have been barely manageable in the beginning but those colleagues who have had to adapt have done so admirably with creativity and conscientiousness. As we forge a 'new normal' under new restrictions and guidelines, I believe that the transformation of the work environment is for the better for all. Zoom and Teams have replaced face to face meetings and are frequently more expedient which is something I am sure will stay in place. Logistical glitches will continue to be smoothed out as we keep innovating and creating our new and better future.

I am aware that the majority of staff across the board have been vaccinated and take the PPE situation seriously which all helps to seriously diminish the risk of acquiring the virus, creating mutations, and infecting others. I commend you all for this as it has been annoying at best and prohibitive at worse but you have acted admirably to maintain safety and hygiene at work. It is with a somber heart that I take stock of those who we have lost; colleagues, friends, and family, and my condolences go out to those people who have suffered. Please, if you have yet to receive the vaccine and are eligible to do so, go and book your jab now and help protect yourself and others.

In my final few months as Chairman I am still 100% available to all who need me in terms of CSA work and advice. I fully intend to work to the very end of my tenure in this position and strive to put in place any measures that improve our working environment and personal wellbeing. Please do not hesitate to bring to my attention any difficulties you may encounter and we can work them out together, Also please feel free to contact me for anything else you may need; my door is always open to new ideas and better practices for our industry. Together we can implement them and pass the torch to the new iteration of the CSA which will go from strength to strength with Neil at the helm.

Finally, before I hand over to the new man in charge, I'd like to thank the CSA staff and all of our members, colleagues, and collaborators whole heartedly for their stalwart work and support. May we raise a glass in toast to everyone involved and to Neil Burdess for the future of our great organisation.

Cheers.

Mark Todd – CSA Chairman & Director of Ashford Environmental Services Ltd

COMMISSIONING

Commissioning Management – Where is it now and where is it going?

Keith Barker, Director of CSA Member Tectonic Techniques and Chair of the CSA Marketing Committee, offers his appraisal.

Commissioning Management appeared about forty years ago and pretty much paralleled the significant increase in specialist mechanical, electrical, and public health sub-contractors. Main contractors realised that, with separate companies providing the electrical installation, the drainage and domestic water, the heating and cooling pipework systems and the ventilation installation, their staff were becoming more and more focussed on a particular package and there was nobody charged with co-ordinating the testing and commissioning of all these elements to ensure that the services in a completed building worked as a comprehensive system.

As with the development of air and water system commissioning companies, the main contractors soon found that they could not afford to carry the staff through the peaks and troughs of workload and so came the growth of commissioning management sub-contractors, coming on board part way through a job to plan, co-ordinate and manage the commissioning activities across the project.

Initially the service was often provided by new divisions within established commissioning companies. These drew on their more experienced commissioning engineers to fulfil the role. Soon, however, newer companies appeared that provided the commissioning management services exclusively. The role encompassed more systems as time went on:

- My first experience of working with commissioning management was on the Lloyds Building project around 1984
- Still very much mechanical system / BMS based until early 90's, albeit with 'bolt-ons' like fire alarm cause & effect tests. Black-building tests were also introduced, especially where standby generators were involved
- I seem to recall starting to use PCs (anyone remember Amstrad 1640s) around 1990
- Beginning to involve UPS systems and the CCTV / intruder detection / access control elements from late 90s / early 2000s
- Further developments of these systems and interactions between them so that opening a restricted door resulted in the nearest CCTV camera view coming to the fore on monitors
- Remote SCADA reporting and control of electrical switchgear around the same time
- Digitisation of everything from around 2005 onwards, but pace of change picking up 2010 onwards
- The major effect of this was the reduction in size of things like variable speed drives (VSDs), shrinking from wardrobe size to briefcase size
- BREEAM / energy conservation to the fore from say 2008
- Mechanical plant VSDs everywhere from 2010 on - the death of the belt & pulley change!
- The growth in further software driven systems such as lighting control
- Full integration of all building services and use of PLCs to run everything more common from 2015 on
- Control systems run across a common fibre network with each system having its own Virtual Private Network (VPN) from 2015

The adoption of these technologies has recently been driven by the ever-increasing importance of energy efficiency and conservation.

So where is commissioning management now?

Pretty much every major project (and quite a few smaller ones) now has a commissioning management function involved, usually bolted on to the main contractor's organisation. OK, so sometimes this is only because it gets the developer another BREEAM point, but it is more often because the project team recognise that the wide range of systems in a building needs a particular skill set to pull them all together to provide the client with a properly co-ordinated building. The fact that the function does have a particular skill set not found across the building industry in general is underlined by the popularity of the Commissioning Specialists Association's (CSA) "Introduction to Commissioning Management" training course that has been running for the last few years. This draws interest from many facets of the construction industry, not just the commissioning industry.

Today's commissioning manager needs an appreciation of many different types of equipment and systems – remember, the basic building environment is still provided by fans and pumps pushing air, chilled water and heating water around the building which is all operated by electricity running along cables to feed control panels and lighting. It is the way those basic systems are interfaced and controlled in an ever more sophisticated manner that is changed and the commissioning management role is perfectly placed to identify and deal with any gaps in the way those systems interact.

Accepting all of that, where is commissioning management heading?

The contention is that the following influences will affect the role over the next few years:

1. Breadth of Focus – more and more people in the building services industry are in roles where they have a very narrow view of the world. They have a specific work package to look after, and they must devote all their energy to getting those works completed on time and on budget – or as near as they can get!
2. Commercial Emphasis – it does not matter what form of contract is in place, be it JCT, NEC, etc., the importance of getting the money right will not diminish – see 1 above.
3. Bureaucracy – everyone hates paperwork, right? Correct. The drawback is that it is not going to go away. And it is not just that, it is the complexity of it. Plonking a stack of test sheets on the desk will not cut it anymore.
4. Building sustainability and energy efficiency will be ever more important, especially as governments introduce more stringent targets – are carbon neutral commercial buildings a realistic target?

So, tomorrow's commissioning manager must:

a) Have a holistic view of the different systems and be fully aware of the ways in which they interface. Yes, it does mean taking time to identify those interfaces, being aware of their importance in proving systems and acting as a co-ordinator between the narrowly focussed package managers so that the right bits of the systems come together at the right time to meet the project requirements, but no one else is going to do it.

b) Have an appreciation of the commercial aspects of the work packages, but not necessarily to be concerned with the last couple of pounds. It is more to do with convincing people that spending a few extra pounds now to get the systems dovetailing correct saves money in the long term.

c) Be on top of the paperwork! The adage that 'if it isn't written down it never happened' is truer than ever before. The basic commissioning of a system generates a test sheet pack. But it needs to be presented as a proper report to identify the scope, summarise the results and provide conclusions about the success (or otherwise) of the exercise. The next step is dealing with interfaces between systems. These often do not generate off the shelf test sheets so require the production of bespoke check sheets that again need to be compiled into a proper report. Perhaps the real skill at this point is making sure the report audit trails pass muster. An interface between systems has two ends. Make sure the reports cover both ends!

Of course, none of the above mentions the programme aspect; and that is deliberate. It has always been an issue and will continue to be so, but that is another story.

Are there distinct project management aspects to where the commissioning manager role might be going? Is that a natural progression resulting from the developments in the construction industry? The CSA feels that it is a distinct possibility. That is why they are looking at extending and developing their training efforts into the project management sphere.

For further information on the training programmes and other services offered by the CSA, please contact Secretary, Julie Parker, on **01403 754133**, by email at **office@csa.org.uk** or via the website **www.csa.org.uk**

2021 CSA AWARDS

Recognising and Rewarding Commissioning Excellence

It's your chance to prove to peers, clients and competitors that you're at the top of your game!

Following the huge success of past CSA Awards Ceremonies, 2021 will again see the sector come together in celebrating the wonderful achievements of commissioning businesses, large and small, on 11th November at The Tower Hotel, St Katherine's Way, London.

If you or your company have something to shout about these awards provide the perfect platform to get your accomplishments noticed.

Check out the categories opposite and see which ones you will be entering! Entry is easy, completely free of charge and you can submit as many nominations as you like. Just visit **www.csa-awards.co.uk** to complete an online entry form... and if selected as a Finalist, enjoy some fantastic publicity as we count down to the Gala Awards Ceremony.

THE CATEGORIES

- Project of the Year
- Commissioning Management Award
- Product Innovation of the Year
- Commissioning Provider of the Year
- Investment in Training Award
- Student of the Year
- Engineer of the Year

2021 EVENT CALENDAR

NOMINATIONS OPEN	NOMINATIONS CLOSE	JUDGING SESSION	FINALISTS ANNOUNCED	WINNERS ANNOUNCED
	15th Sept 2021	29th Sept 2021	6th Oct 2021	11th Nov 2021

2021 EVENT PARTNERS

HDR | Andrew Reid · Ashford · BSRIA Instrument Solutions · CSA · MEDIACONTROL MANAGEMENT · MBS MODERN BUILDING SERVICES · RED A company of ENGIE · VEXO

www.csa-awards.co.uk

Organised by Touchwave MEDIA on behalf of CSA

CSA ANNUAL GENERAL MEETING 11TH NOVEMBER 2021 4.00PM GREAT HARRY ROOM THE GUOMAN TOWER HOTEL

We would like to invite you to the CSA 31st Annual General Meeting on Thursday 11th Novembert 2021 at 4.00pm in the Great Harry Room, The Guoman Tower Bridge Hotel, St. Katharine's Way, London E1.

The AGM will be presented by the CSA Chairman, Mr. Mark Todd and Vice Chairman, Mr. Roy Tyler, who will highlight the successes of the past 24 months as well as focus on plans and key objectives for 2021/2022. Each sub-committee Chairman also reports on their committee.

The handover of Chairman and Vice Chairman will also take place to;

Neil Burdess – CSA Chairman (3 year tenure)
Andrew Watkin – CSA Vice chairman (temporary)

Everyone is welcome and we look forward to seeing you.

Tel: 01403 754133

E-mail: office@csa.org.uk

Website: www.csa.org.uk

Julie Parker – CSA Secretary

It's Not M & E

Picture this scene.

Below my feet is a raised access floor system and above my head is a suspended ceiling void. As I turn 360 degrees, I see a curtain wall system and the plasterboard walls of the building's central core area. A variety of different trades are working on this level of the building.

A heavily-set man in his fifties wanders over to me. He is the site engineer for the principal contractor and he says to me:

"Glenn, why don't people take M & E seriously?"

I respond:

"You have just provided the answer to your own question."

He replies:

"What do you mean?"

Let me try to explain what I mean.

M & E stands for Mechanical and Electrical and it is a commonly-used term in the vocabulary of the built environment. It is a catch-all abbreviation intended to represent the incredibly diverse range of engineering systems that bring buildings to life.

These systems include *air conditioning, lighting, heating, data, water, fire detection, drainage, sprinklers, access control, medical gas, small power, refuse disposal, closedcircuit television, sanitary appliances, steam, dry risers, lifts, smoke extraction, compressed air, public address, local ventilation, commercial kitchens & laundries, building management systems, cold rooms, lightning protection, intruder alarms, stairwell pressurisation, cinema systems, fuel distribution, escalators, electronic visual displays, water features...*

For the building where my conversation with the site engineer took place, these systems represent 37% of the construction cost. More importantly, if these systems do not function correctly – individually and collectively – the building will not meet the needs of the people that will use, manage, operate and maintain it; it will just be a dark, dead, useless carcass.

Imagine that you have two glass pots.

In one pot, you place all the money that will be required to deliver these systems on this project.

In the other pot, you place all the money required to deliver the structural frame & upper floors, the roof, the external walls, windows & doors, the internal walls, partitions & doors and the floor finishes.

Both glass pots would contain the same amount of money.

In this building, there are over 60 different types of these system that need to be designed, specified, costed, programmed, procured, installed, commissioned, handedover, operated, maintained and eventually brought out of service. Many types of system occur multiple times within the building because they serve different spaces, zones or floors.

The building contains hundreds of system-specific assets, such as chillers, electrical panels, boilers, air handling units, generators, extract fans, UPS units, calorifiers, fan coil units, pumps, sinks, chimneys, recording devices, photovoltaic arrays, water storage tanks, and control panels.

There are thousands of individual pipework, ductwork & cabling circuits. These circuits connect tens-of-thousands of terminal devices such as switches, sockets, detectors, taps, data points, sensors, actuators, floor drains, disabled access buttons, hand dryers, cameras, card readers, light fittings, rainwater inlets, breakglass units, air supply grilles and radiators.

Collectively, these systems are composed of hundreds-of-thousands of individual elements – from commodities such as nuts & bolts, anchors, drop rods, unistrut, cable clips, pipe supports and basket tray, to thermal insulation, firestopping and labels, through to system-specific fittings for pipework, ductwork and cable-based systems.

Furthermore, the installation and commissioning work associated with complex engineering world is undertaken by a huge range of onsite, offsite, system, product, manufacturer, material, treatment and validation specialists; there is not just a mechanical tradesman and an electrical tradesman.

However, many people working on the delivery of construction projects and in facilities management still try to cram all of this incredible engineering diversity into two categories – M & E. This was a problem five decades ago when buildings were technologically less complex. In the 21 century built environment, this dysfunctional oversimplification is big problem because it adversely how construction projects are delivered and how buildings are used, managed, operated and maintained.

We do not boil-down the complexity of structural engineering to C & B: Columns and Beams. We don't condense the richness of architecture to W & R: Walls and Roofs. Civil Engineering is not compressed to R & T: Roads and Tunnels. Sustainability is not hollowed-out to just E & M: Energy & Materials. So why would we ever try to use the inappropriate abbreviation M & E for the huge range of systems that, in simple terms, make modern human life possible across the planet?

I am not sure whether it is laziness, ignorance, an inferiority complex, or some other factor that has led to the corruption of this incredibly important aspect of the built environment.

In the UK, the professional body that represents this engineering world is CIBSE – The Chartered Institution of Building Services Engineers. It is not called The Chartered Institution of M & E Engineers.

So, we have two terms: Building Services and M & E. It could be argued that Building Services provides no greater clarity than M & E about this incredibly diverse engineering world.

I think that this misses the crucial point; it is what the term Building Services does not do that makes it so much better than the term M & E.

This is because M & E implies a binary simplicity that does not exist; a system, and all the work associated with it, cannot just be placed in the mechanical or the electrical pot.

Let's put the physics about the flow of charged particles to one side for a moment. From a practical project-delivery perspective, data, fire detection, closed-circuit television, nurse call, building management, refuge alarm, public address and access control systems are no closer to being an electric mains or a power installation system than a sprinkler, medical gas or fume extract system.

Cold water, chilled water, hot water, sprinkler and central heating systems all contain water, but they are all fundamentally different "mechanical" systems with lots of interfaces to other systems.

The same principle of difference and inter-connectivity applies to ductwork-based "mechanical" systems such as ventilation and air conditioning.

And so on, and so on for other Building Services systems.

In the built environment, the aim for all teams is not just to safely deliver a building on-time and on-cost. Any building also needs to:

- Be operationally-ready at handover
- Perform to suit its required purpose
- Function efficiently and effectively in the long-term

These outcomes are entirely dependent on the correct execution of Building Services work. And the successful delivery of Building Services work must be a whole-team endeavour.

Built environment professionals – both Building Services and non-Building Services – therefore need to have a structured way of making sense of the complex world of Building Services and managing all the work associated with it.

All of my training about Building Services is structured in accordance with the 14 categories of Building Services defined in the New Rules of Measurement (NRM).

In my 40-year career, I believe this is easily the best method that has been developed to make sense of, and thereby more successfully manage, this complex range of engineering systems. Over 2,000 people from some of the world's leading built environment businesses have attended my training courses – and their opinion is overwhelmingly the same.

Let's briefly look at the NRM

The NRM provides a standard set of measurement rules and guidance for the management of construction projects and the operation & maintenance of buildings. It is published by the Royal Institution of Chartered Surveyors (RICS).

It provides a structure for the management of work associated with all elements of a building – as illustrated by the table extract on the right.

	ELEMENT	Element				
		Total Cost £	Cost per m² GIFA	Unit Quantity		Unit Rate
1	SUBSTRUCTURE				m²	
2	SUPERSTRUCTURE					
2.1	Frame				m²	
2.2	Upper Floors				m²	
2.3	Roof				m²	
2.4	Stairs and Ramps				Nr	
2.5	External Walls				m²	
2.6	Windows and External Doors				m²	
2.7	Internal Walls and Partitions				m²	
2.8	Internal Doors				Nr	
	Total Superstructure					
3	INTERNAL FINISHES					
3.1	Wall Finishes				m²	
3.2	Floor Finishes				m²	
3.3	Ceiling Finishes				m²	
	Total Internal Finishes					
4	FITTINGS, FURNISHINGS AND EQUIPMENT				m²	
5	SERVICES					
5.1	Sanitary Installations				Nr	
5.2	Services Equipment				Nr	
5.3	Disposal Installations				Nr	
5.4	Water Installations				m²	
5.5	Heat Source				kW	
5.6	Space Heating and Air Conditioning				m²	
5.7	Ventilation Systems				m²	
5.8	Electrical Installations				m²	
5.9	Fuel Installations				m²	
5.10	Lift and Conveyor Installations				Nr	
5.11	Fire and Lightning Protection				m²	
5.12	Communication, Security and Control Installations				m²	
5.13	Specialist Installations				m²	
5.14	Builder's Work in Connection with Services				m²	
	Total Services					

The NRM defines 14 categories of Building Services; Category 1 – Sanitary Installations is at one end and Category 14 -Builders Work in Connection with Services is at the other end. In between are 12 other categories containing a huge range of individual system types.

There are also 11 categories of External Services defined elsewhere in the document, from Category 1 – Water Mains.

Supply to Category 11 – Builders Work in Connection with External Services.

For each of the 14 categories of Building Services there are specific sub-categories, as illustrated by the extract from material relating to Category 4 – Water Installations on the right.

So system-by-system, category-by-category, the NRM creates a world of Building Services that is structured in a logical way.

This system-based framework means that built environment professionals can design, specify, cost, programme, procure, install, commission, handover, operate and maintain Building Services in a clear and consistent manner.

The NRM is familiar to young people entering built environment professions. An increasing number of companies and project teams are also using it.

5.4.1 Mains Water Supply: Incoming water main from external face of external wall at point of entry into buildings.

Includes	Excludes
◊ Water main pipework ◊ Pipework fittings ◊ Valves ◊ Water meters ◊ Rising main to (but excluding) storage tanks ◊ Mains supply to fittings ◊ Insulation, trace heating, etc.	◊ Water storage tanks ◊ Taps to sanitary fittings (see 5.1 Sanitary Installations) ◊ Taps and valves to services equipment (see 5.2 Services Equipment)

5.4.2 Cold Water Distribution: Cold water supply from storage tanks to appliances and equipment.

Includes	Excludes
◊ Storage tanks ◊ Distribution pipework to sanitary appliances and to services equipment ◊ Pipework fittings ◊ Pumps, pressure boosters ◊ Valves and taps to pipework ◊ Insulation, trace heating, etc. ◊ Internal rainwater/grey water harvesting systems including collection pipework	◊ Taps to sanitary fittings (see 5.1 Sanitary Installations) ◊ Taps and valves to services equipment (see 5.2 Services Equipment) ◊ Header tanks, cold water supplies, etc. for heating systems (see 5.5 Heat Source) ◊ External rainwater harvesting systems (see 8.7 External Services)

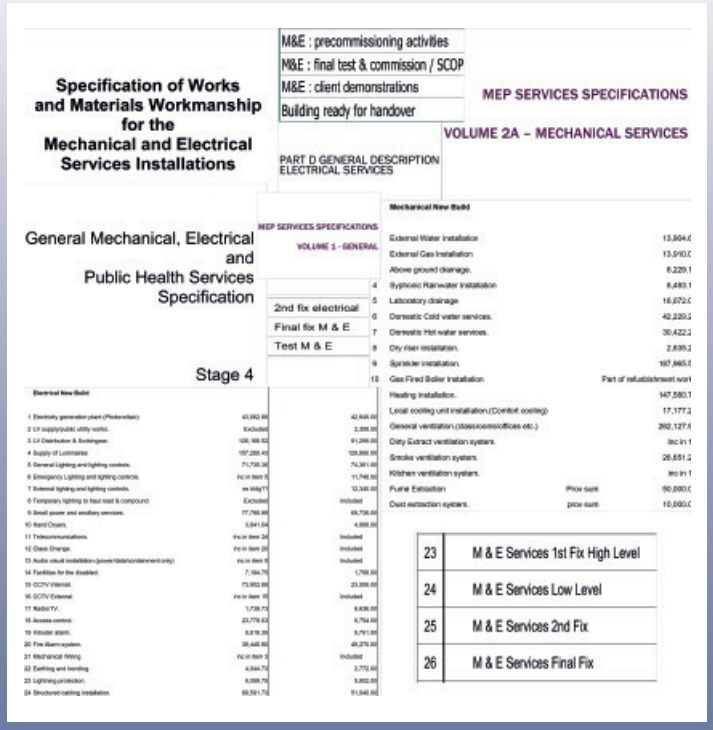
5.4.3 Hot Water Distribution: Hot water and/or mixed water supply from, and including, storage cylinders, etc. to appliances and equipment.

Includes	Excludes
◊ Storage cylinders, calorifiers ◊ Distribution pipework to sanitary appliances and services equipment ◊ Pipework fittings ◊ Pumps, pressure boosters ◊ Valves and taps to pipework ◊ Insulation, trace heating, etc.	◊ Taps to sanitary fittings (see 5.1 Sanitary Installations) ◊ Taps and valves to services equipment (see 5.2 Services Equipment)

And yet in 2020, I am still amazed to see work scopes being described in terms of M & E, specifications structured as M & E, quantities being taken and cost plans being configured in terms of M & E, work being planned using M & E programmes and M & E contracts being awarded.

All of this is characterised by a lack of clarity and consistency in defining things such as technical inputs, performance outcomes, roles & responsibilities, money needed, task durations, sequences of work, commissioning logic, maintenance regimes and skills required.

Even within the same organisations, I see different offices and project teams produce crucial documents like cost plans in completely different ways and without any discernible structure. So, the use of the binary term M & Eis hugely problematic.



When used by the Building Services community, as it still too commonly is, it creates a dysfunctional, two-lane starting point for project execution that undermines the ability to manage work in an efficient and effective way.

It also sends a dangerous message from those within the world of Building Services to all other built environment professionals; a message that this engineering world is simple, insignificant, unimportant, inferior to your world, not worthy of your attention...

The remarkable thing about Building Services is that when delivered correctly, these systems become more than the sum of their parts – something beyond just an assembly of components. They become the key to success for the construction of any building. They become dynamically functioning, interconnected systems that bring buildings life and make everyday life on Earth possible.

Given their incredible diversity and importance, an absence of structure and clarity is the absolute enemy of efficient and effective execution of Building Services work.

The question the site engineer posed me was:

"Glenn, why don't people take M & E seriously?"

The short answer would be:

"Because M & Eis not a serious term."

It is Building Services that everyone working in the built environment needs to take seriously. Below is a short manifesto to help make this happen:

Building Services professionals:

You are working in one of the most technologically-rich, challenging and important aspects of the modern world.

Your systems enable buildings such as hospitals, schools, offices, shops, airports, laboratories, data centres, stadiums and homes to function. You connect and automate the world. You keep people comfortable, safe, secure and clean. In your hands, you hold a key to a sustainable future for our planet.

Be proud of what you do and take your profession seriously. Develop a detailed understanding of how your Building Services world is composed and classified – and take personal responsibility

to explain this to other built environment professionals.

Only use the term M & E to explain why the term M & E should not be used.

Client organisations:

The success of your construction projects, and the ability for your buildings to do what you need them to do, is entirely dependent on the correct execution of Building Services works.

When appointing any construction project delivery team or facilities management provider, demand that they define in detail how they are going to use the NRM classification structure for Building Services to plan, monitor and control this crucially important work scope – on a system-by-system basis.

If anyone uses the term M & E, show them the door.

Cost consultants and other front-end project professionals:

The work that you do at the pre-design and concept-design stages of a project is key to its ultimate success.

Your work breakdown structures, programmes, cost plans and other project documents need to create the conditions for success by using the NRM classification structure for Building Services.

In 2020, there is still too much variability and inconsistency in front-end work relating to Building Services – and this causes unnecessary problems in the subsequent stages of projects.

The terms Mechanical and Electrical or M & E should not appear in any of the outputs that you create.

Main contractors:

Your projects are only ever going to be as good as the Building Services sub-contractors and suppliers that you enter into contract with.

When all the people you employ think Building Services instead of M & E, you will get better project outcomes.

For each project, you need to clearly define the Building Services work scope in accordance with the NRM and develop a detailed shared, understanding of this work scope with your Building Services partners.

You should only work with Building Services specialists that think in terms of the NRM.

Facilities management companies:

Building Services bring your buildings to life. They are also the principal cause of failures and performance problems in your buildings.

Make sure that all of your management, operation and maintenance work for Building Services is configured using tools that use NRM terminology, such as the SFG20 Standard Maintenance Specification for Building Services.

Do not form relationships with suppliers and sub-contractors that think in terms of M & E.

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Due to COVID this Seminar was postponed – we anticipate rearranging this event for March 2022 – Date and venue to be advised.



Commissioning – the progressing of a completed installation to full working order

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This is a must attend event for anyone involved in:

- property development
- services consultancy
- MEP services
- architecture
- main contracting
- commissioning

It would also be of interest to any end users who wonder why their current buildings don't seem to work as well as they should.

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