Moving from electrical installations to interconnected technologies

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Electrical Contracting – The Market

- £13Bn market
- ECA – 3,000+ members, 30,000+ employees
- Highly skilled technical workforce
- Vital to the UK economy
- Not just about cables, power sockets, lighting and appliances
- Covers ICT, energy infrastructure, life safety, emergency systems & AVI
- Ready to encompass renewable energy sources, energy efficiency solutions and sustainability
New Technologies create many Challenges and Opportunities

The electrical installation industry has been flooded with new technology which introduces challenges and creates business opportunities for manufacturers, wholesalers and electrical contractors.
Interconnected Technologies

Most, if not all, future electrical and electronic installations will be controlled and monitored by an ICT system.
Home & Building Owner Requirements

Owners of homes and buildings will expect more in the future:

Homes: Office, School, Shopping Centre, Audio Visual Entertainment Centre, Care for Special Needs, Security & Energy Efficient Controls

Other buildings: Environmental Controls, Security, Energy Efficient Services, Energy Monitoring, Effective Control of Services & Digital Signage

How will these services be provided?
Bus Based Systems
Used for Power, Control and Communication

- EIB (or KNX)
- Lon Works
- BACnet
- DALI (lighting system)
- Many other bespoke systems
Wireless Systems Used for Communication and Controls

- ICT system networks
- Communication systems
- Control systems
- Security & alarm systems
- CCTV systems
- AVI systems
- Many other functions
Internet Protocol (I.P.)

- Started developing in 1970s
- Grew in popularity in 1980s
- Became more popular in 1990s
- Now one of the most widely used technologies
- Can be used over a mixed network
- Used by many industries including security, alarms, communications, controls, audio visual and many more functions
Power over Ethernet (PoE)

- Provides power over data cables
- IEEE 802.3af power limited to 15.4 Watts (12.95 Watts max load)
- Limited to systems 100Base T or lower
- IEEE 802.3at draft 4.2 power limited to 34 Watts (25 Watts max load) over 4 pairs
- Problems regarding conformity – up to 95W
- Further development now at a slow pace
- Reports of problems due to cables overheating and arcing in connectors cause concern
Powerline (PLC)

- There are several standards for PLC
- Some bespoke standards
- Broadband over Powerline to IEEE 1901 standard approved in 2009
- ICT functions over the existing internal power wiring installation
Electrical Industry Technical Challenges

- Smart meters in all buildings and homes
- Smart homes and intelligent buildings
- Providing energy efficiency solutions
- Transformation to a smart distribution grid
- Development of infrastructure for electric transportation (electric vehicles)
- Integration and interoperability of new technologies
- Introduction of renewable energy sources
- Refurbishment and upgrading of existing buildings
- Up-skilling and training of existing workforce
Early Involvement

The technical challenges mean that the early involvement of the electrical contractor and exchange of project team information is essential, plus:

• Keeping up-to-date with the new and changing technology

• Providing solutions for integration and coordination of services and systems
Business Opportunities

- Energy efficient lighting
- Effective control systems
- Energy metering and monitoring
- Electric vehicles – charging points and infrastructure
- ICT integrated solutions
- Renewable energy solutions
- Smart house and intelligent building systems
- Refurbishment of existing building stock
- Energy Performance and Display Energy certificates
Electrical Contractors and Manufacturers must work together

Common topics:
- Energy efficiency
- New technology
- Electrical safety
- Electric vehicles
- Smart grid

Driven by government energy policy
Core Skills

Most competent electrical contractors have the core skills needed to deal with the transformation of our existing built environment, but they will need to up-skill and change their traditional ways of working in the future.
Cost of Change

Keeping up with changes in technology costs money:

- Education & training and up-skilling
- New working practices
- New standards
- Continued development and keeping up-to-date with the new technology and products
Training and Up-Skilling

- Up-skilling and training for electrical contractors and awareness material for the end-user clients is needed for this new technology
- Sector Skills Councils, such as Summitskills, can lead the way to creating educational pathways for new and existing people engaged in the electrical contracting sector
- Supplier/manufacturer training essential
Conclusions

• The whole supply chain must work together
• Electrical contractors will need to up-skill and include new technology solutions within their scope now and in the future
• Electrical contractors will need technical support and guidance from the manufacturers, suppliers and their trade association
• If electrical contractors do not embrace the opportunities offered to them by these new technologies in the future, others will
• Electrical contractors need to become integrators of electrical services and systems
Thank You
Any Questions?

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