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In an intelligent building solution, why certified, structured cabling?

“As engineers or integrators and builders, we are all becoming aware of the trend towards an integrated ‘single-platform’ or structured electronic cabling system for buildings. But what we are not necessarily clued up on is the way quality, consistency and sustainability is being managed by the various stakeholders.”

This is according to Bradley Hemphill, Managing Director of Electrical Engineering Solutions (EES), a leader in project managing the provision of Information Technology (IT) solutions to the built environment.

Let’s have a quick recap: structured cabling is a unified network or electronic data backbone, consisting of interconnected purpose-built rooms, with copper and fibre connectivity throughout a building in a pre-engineered intelligent system design. Its purpose is to carry all electronic services on a unified network or internet protocol (IP) platform, enabling more effective and efficient management of these building services.

Commonly used building services (or systems) include a BMS/HVAC system (controlling ventilation and air-conditioning), lighting control, access control, CCTV, computer networking (Data) and now more frequently telephony, multimedia and energy management systems.

“The installation of certified, structured cabling is crucial when building a reliable and resilient intelligent infrastructure that can meet future demands,” explains Hemphill. “However, when installing such a cabling network, the partnership between manufacturers and integrators becomes vital in ensuring a quality end product.”

There are two fundamental aspects here which need to be considered:
1. The manufacturers, who supply high quality cabling
2. The contractors or integrators, who install the cabling

Manufacturers

Individual manufacturers have registered trademarks for different products. Each manufacturer may use their own trademarks, but must ensure the cabling conforms to standards, such as Ethernet 10GBASE-T (10 Gb/s), an Institute of Electrical and Electronics Engineers (IEEE) standard.

A commonly used cable is 22-24-AWG twisted-pair copper LAN cable, such as CAT6a which can support a wide variety of applications, as long as stringent specifications of installation are adhered to.

Structured cabling manufacturers offer 15- or 20-year warranties on installation of their products, which include accessories such as connectors, flyleads, consolidation points and patchpanels. This assurance includes guaranteeing compliance with the essential requirements of the European Electromagnetic Compatibility (EMC) Directives.

“So since the cable manufacturer is responsible for the cabling guarantee, he must be certain that it is installed correctly,” says Hemphill. “The installation is therefore as important as the specifications, quality and capability of the cabling, and it is here that the capability of contractors and integrators becomes paramount.”

Contractors and integrators

The contractors or integrators need to install the cabling according to stringent industry standards, which ensure continuity and consistency in the overall specification for network performance AND additionally in ensuring that the system will support current and future technology for the next 15 or 20 years (depending on manufacturer certification period).

“In order to achieve this longevity, integrators need to be accredited by an external body, and must demonstrate ability and capacity to obtain accreditation,” Hemphill states.

Once the installation is complete, post-installation performance testing may be conducted. The integrators must certify the installation by conducting a high level instrumentation test to verify that the cabling will meet performance requirements.

“A structured cabling installation which passes this test may now be registered as ‘certified’ and a resulting certificate issued.”

Testing process

The installation is required to pass what is known as channel testing. Integrators utilise a specified measuring instrument in order to generate test results, which are exported for recording individual cable characteristics for reference at a later stage.

“In testing channel performance, the instrumentation indicates how the permanent link and network will perform,” Hemphill explains. “A data channel refers to an end-to-end connection from a data switch to a socket outlet in an office, or edge device such as CCTV camera or perhaps a television screen in a hotel room, whereas the permanent link is the main section of cable running from a patch panel to consolidation point en-route to an edge device. The main parameters that are tested include attenuation (in DBs), near end crosstalk (NEXT), cable length, cable resistance, signal speed and insertion loss.”

So to round things off, there are four steps to achieving quality, consistency and sustainability, resulting in a ‘certified’ structured cabling installation:

1. Selecting a category of cabling that meets designers specifications eg. CAT6a
2. Supplier/manufacturer who conforms to IEEE standards
3. Above supplier/manufacturer offers significant warrantee and certification of whole passive installation
4. Integrator who is certified by same supplier/manufacturer

And only then, can we talk about what active kit to let loose on our certified cableway network!

-ends-

Electrical Engineering Solutions (EES) company profile

Electrical Engineering Solutions (EES) is an ISO 9000, professional services company, offering engineering, project management and business management services in all sectors of industry throughout Africa and other emerging markets.

It is a leader in project managing the provision of Information Technology (IT) solutions to the built environment. Integral to its business is intelligent infrastructure, the implementation of which entails the convergence of IT and Building Automation Systems (BAS).

A benefit of intelligent infrastructure is that it facilitates energy management, thus contributing to the urgent global objective to establish a green environment. EES is a member company of the Green Building Council of South Africa.

The firm is proud to have played a significant role in the 2010 World Cup in the special systems design of five infrastructure projects: Cape Town Stadium, Nelson Mandela Bay Stadium in Port Elizabeth, Cape Town International Airport, King Shaka International Airport (KSIA) north of Durban and the Gautrain Sandton Station.

Based in Cape Town since 2001, the firm also has specialist experience in communication networks and related IT, security systems and 11kV and 400V electrical systems that support intelligent infrastructure.

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