Case Study
Wick High School

Customer	Wick High School
Location	Wick, Scotland
Requirements	A future proof installation to support the IT infrastructure of the new community campus and its additional facilities.
Equipment	Excel Category 6 Dca-rated cabling with complementary mounting hardware, Excel OM1 Loose Tube Cabling and pigtails, Excel Environ 42U Communications (CR), 42U Equipment (ER) Racks fitted with plinths, housing a variety of Excel Power Distribution Units, Vertical Cable Management and 24-way Multimode Fibre Patch Panels and Category 6 48-port Patch Panels.

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An Overview

The old building of Wicks High School was built in 1910, and after 107 years, the Wick Community Campus would facilitate the new Wick High School building, Pulteneytown Academy Primary School, and South Primary School as part of Scotland's 'Schools for the Future' Programme, receiving more than £17 million from the Scottish Government. The project at Wick Community Campus centred around creating a future-proof and innovative learning environment for pupils of all ages to learn in for many years to come. The school's IT systems needed a complete overhaul, and the cabling infrastructure was installed to support this expansion and the wider requirements demanded by the new school and its high-tech facilities, including 80 Smart Screens and a fully functional IPTV system for clear digital signage.

Preparation work for the £48.5 million community campus in Wick began in July 2014 with the first turf cut at the site of the new facility, performed by the Deputy First Minister, who commented, "I'm delighted to be in Wick to mark this important milestone for this new school campus and I am confident it will be a fantastic addition to the local community when it is completed.".

The campus replaces the previous Wick High School and consolidates several existing primary schools, a nursery, sports facilities, a community library and swimming pool into one integrated community facility. The design is focused on a 120-meter long circulation internal street, which runs the length of the building, with a wing arrangement where teaching accommodation is separated based on departments and their individual requirements. The street and courtyard area are utilised as additional breakout space, dining and performance space, allowing pupils to benefit from semi-sheltered play space. Although physically separated, the swimming pool, gym and library are fully integrated into the overall campus.

Photo courtesy of Donald MacLaren, Morrison Construction.

Sourcing a Partner

The main contractor for the project was Morrison Construction, who appointed GA Barnie Group as the M & E Contractor, with whom Excel Cabling Partner – Future Communications – have previously collaborated on a variety of projects across a spectrum of vertical markets.

Future Communications specialist in data, fibre optic, voice and audio/visual installations. The company was founded in 2010, and are now the largest independent Communications company in the North of Scotland. The client focused team have been responsible for the installation of some of the largest network infrastructures throughout the country, giving them the expertise required to satisfy the requirements of the 17,500 sqm campus project in Wick.

Over the past eight years, Future Communications have nurtured partnerships with top players within the technology industry, not least by becoming an accredited Excel Cabling Partner, which allows them to offer a comprehensive 25-Year Warranty as well as keeping up to date with the latest technological and industry trends in regular training and partner events. These benefits of the Excel Partner status mean that the team at Future Communications comprise of a talented, skilled workforce with the knowledge to apply innovative solutions that cater to clients' specific, complex and diverse IT needs. Having worked with the Excel product portfolio for several years, the team's comprehensive knowledge was key to Excel being selected for the Wick Community Campus project, and their specialisms and capabilities with the range ultimately lead to them being appointed to complete the installation with the right products to fulfil the project requirements.

The Right Product

Given the prominence of the Wick Community Campus project within the local community and the scale of the site, it was integral to the proposal that the right products were selected for the installation. The products needed to encompass the latest technological trends to cater for the primary and high school environments and extra-curricular requirements. The overall solution needed to be futureproof, with an ability to support a range of smart equipment and wireless access points, with a view to supporting a technologically innovative community building.

First and foremost, the cabling infrastructure needed to mirror the community's pride in the project; it needed to meet high-quality performance expectations with high-speed connectivity as well as fit in aesthetically with the new, modern surroundings. It was vital that a technically proven cabling infrastructure solution was chosen for the foundation of the school's IT network at the new premises. With the campus supporting such a wide range of facilities and learning environments, it was inevitable that the number of people using the network dictated that a reliable and consistent product be installed.

The decision to choose products from the Excel range was taken based on the brand's reputation coupled with Future Communications' prior experience with the product range. These factors gave the M & E contractors the confidence that the project would be carried out smoothly and to the high standards expected by the school and its occupants.

The product portfolio from Excel constitutes an end-to-end solution where performance and ease of installation are pre-requisites. With an emphasis on compatibility and standards compliance from cable to cabinet, reliability and product availability, Excel is the complete trusted solution.

Excel products are also verified by a range of independent third parties. Excel has invested in such test and verification programmes for over 15 years. Third party verifications are an independent tick in the box; as well as testing the component and channel the manufacturing facilities are visited for spot checks to ensure the consistent quality in the manufacturing process, so those involved with the Wick Community Campus project could rest assured that the products that were being installed were of the highest quality and durability, and well-suited for the new building.

Photo courtesy of Donald MacLaren, Morrison Construction.

Design and Installation

The cabling infrastructure solution was designed with the school and the wider community in mind. With the project taking place just as the revisions to the Construction Products Regulation (CPR) were coming into play, the structured cabling proposal took the important changes regarding technical standards into consideration to ensure the campus was compliant to British CPR requirements. This was a particularly integral consideration for this project. In the event of a fire at the school or surrounding facilities, it was important for the students' parents and members of the community using the public facilities to know that the cabling installed within the building was compliant to the latest technological standards. What's more, Future Communications ensured that the new infrastructure was fully documented, tested and warrantied in accordance with regulatory requirements, creating a far more manageable process for the school's IT department.

Excel Category 6 U/UTP Dca-rated cabling was designed to exceed the TIA/EIA 568-B.2-1, EN50173-1 and ISO/ IEC 11801 Category 6 specifications. Each cable consists of 8 colour coded polyethylene insulated conductors. These are twisted together to form 4 pairs with varying lay lengths. These pairs are then formed around a central 'X' shaped polyethylene filler, which assists in maintaining and enhancing the cable and supporting optimum crosstalk performance. The Category 6 cable is designed for optimal support of High-Speed data protocols delivering 1 Gbps performance to the workstation. Designed to be quick and easy to install the cable requires no specialist installation tools and is supplied in reelex packaging for fast, snag free installation.

Photo courtesy of Donald MacLaren, Morrison Construction.

The cabling was terminated into Excel 48-port unscreened patch panel frames, designed to meet or exceed the latest ISO and TIA requirements for 6 compliance. Each panel is provided with a pre-printed self-adhesive labelling sheet numbered 1-96 for fast and easy on-site labelling. However, the panels also feature a screen printed labelling field positioned above each individual port, so Wick Campus' IT department could label the fields themselves to indicate each port's connectivity location, to support future maintenance of the system. The panels also feature a rear cable management tray which is attached quickly and easily to the panel without the need for fixings, making cable routing from the panel easier to manage within the racks and reducing stress on the cables. Throughout the Wick Community Campus, the cabling was terminated into unscreened keystone jacks, which were installed into curved-plated single and double gang faceplates. The ergonomic bevelled edge complimented the aesthetics of the modern new building.

The backbone of the solution was constructed of Excel OM1 62.5/125µm loose tube optical fibre cables, compliant to CPR Euroclass Dca, s2, d0, a1, which have been designed specifically for internal and external applications. These compact, lightweight cables are extremely flexible and are quick and easy to install. The cables are constructed around a gel filled (non-dripping and silicon free) tube containing up to 24 colour-coded 250µm primary coated fibres. This tube is covered with swellable (for the longitudinal water tightness) yarns as strength members. The print legend on the cable now includes information regarding the CPR DOP number, Test and Classification of the cable for traceability. This is particularly important for the school's IT department, who will be pivotal to the success of the infrastructure solution and its maintenance.

The use of fibre gives some significant benefits when completing a project such as this. The fibre was deployed to link the racks together, negating any issues with runs that would have been over length for a traditional copper link. Fibre optics allow for large amounts of bandwidth to be transmitted, making it the ideal choice for the backbone when linking the racks together. This high-grade fibre optic cable offers the ultimate in future proofing the core and backbone of the solution, with the cable offering performance levels of 1000GBASE-SX over 275 metres. The fibre cabling was terminated into 24-way multimode fibre optic patch panels, designed as a sliding "tray-style" housing for splicing the Excel OM1 pigtails within the racks. The panel features ball-bearing runners for smooth operation of the drawer, as well as dust caps for each port to keep dust, dirt and contamination away from the fibre to prevent premature degradation of the fibre cabling.

The copper and fibre cabling and patch panels were housed within Excel Environ 42U Communications (CR) Racks. These racks are a versatile range of 800mm wide racks with features suitable for a wide range of applications within the data, security, audio visual and telecommunications markets. At Wick Community Campus, the racks were fitted with Environ plinths to increase the overall height of the CR rack by approximately 100mm and allows for easy cable access into the base. The plinth is manufactured with removable sides to further aid access for cabling and levelling purposes. Following the handover of the project, this will be especially important for the school's IT team, who will be responsible for maintaining the infrastructure. Making this as easy as possible will help to ensure effective upkeep of the system. The racks housed a range of Excel power distribution units and cable management systems to create a complete end-to-end solution.

Photo courtesy of Donald MacLaren, Morrison Construction.

The Result

After almost three years, the £48.5 million high-tech campus is home to Wick High School, prim ary schools, a nursery and state-of-the-art facilities including a gymnasium, a community library and a swimming pool.

Following the completion of the project after the Easter 2017 holidays, students and staff arrived at the school to see their new building after a two-day "moving in" period at the end of the Easter holiday. A procession of 400 people including students and staff, led by two bagpipers, marked the opening of the building. There was a great buzz of excitement from everyone as the first bell neared with pupils making their way to the front entrance to be greeted by staff.

Fiona Grant, Head Teacher of Wick High School added: "For well over a century Wick High School served the local community of East Caithness in its premises on West Banks Avenue. Now, our staff and pupils look forward with great excitement and enthusiasm to the next chapter of our school's rich history as we move to our state-of-the-art building."

Speaking of the finished project, Michael Padzinski, Chief Executive of hub North Scotland, said: "We are delighted that the students and teaching staff have an excellent environment to learn and develop in. We have worked closely with The Highland Council, Morrison Construction and key stakeholders to create a world class, modern learning Campus that will be at the heart of the community for years to come."

At a ceremony in London the Wick project claimed gold in the 'best education project' category - ahead of nominations from as far afield as the Philippines, Poland and France. Closer to home, Levenmouth High School was the other Scottish contender on the shortlist – a tremendous endorsement for the team responsible for delivering the Wick Community Campus for local residents. It is a true reflection on the quality of the project, which leaves the school bristling with new technology, including equipment for senior students to take advantage of smart learning techniques in each classroom. Wick High School now has an IT infrastructure solution that allows the school to fully support their students with the use of wide range of electronic devices they need to assist with their learning and to enrich their time at school. The new campus will without a doubt be a real focal point for the area, serving generations of pupils and individuals for years to come.

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