



Brand-Rex makes waves at The European Gravitational Observatory

Brand-Rex, alongside its installation partner Cima Telematica, has recently provided a cutting edge network infrastructure solution for The European Gravitational Observatory, located near the historic town of Pisa in central Italy.

Surrounded by countryside, the unassuming EGO estate is home to a huge state-of-the-art interferometer known as VIRGO - two 3km long perpendicular arms used to detect and measure gravitational waves, the overall objective being to offer scientists some insight into the origin and evolution of the Universe.

In total, more than 40km of fire survival singlemode cable was installed on the EGO site, alongside Brand-Rex fibre cassettes, pigtails and patch cords.

Gravitational waves, first identified by Einstein in 1916, are small distortions or ripples in space time and are thought to be generated by massive cosmic events. Gravitational wave observatories are at the forefront of this particular branch of physics and are regularly upgraded in order to improve their sensitivity.

VIRGO was constructed as part of a French-Italian collaboration which now involves 19 laboratories and more than 250 scientists from across France, Italy, the Netherlands, Poland and Hungary. It is expected that the interferometer will eventually be capable of measuring strains that are smaller than the dimension of an atom with respect to the distance between the Earth and the Sun.

A Brand-Rex Cat6Plus copper system and Fibre Plus office backbone had previously been installed in the EGO control room and office so the organisation knew and trusted Brand-Rex solutions. On the back of substantial investment and with the international community eagerly awaiting the results, the team at the EGO were looking to run a series of tests that could not be interrupted for any reason - even in the event of a fire. For this reason they looked to Brand-Rex to provide a solution that would safeguard their data in the most extreme conditions imaginable.

After carrying out a full assessment and consulting with Brand-Rex, copper cabling experts Cima Telematica and fibre experts FO. Net recommended the use of the Brand-Rex fire survival singlemode cable - a robust solution that has been specifically designed for use in areas where critical data transmission must continue, even in the event of a fire in the building or structure. The cable consists of a gel filled loose tube, flame retardant tape, a high performance LSZH inner sheath, corrugated polymer coated steel tape, water blocking elements and a high performance LSZH outer sheath.

Independently tested to confirm compliance to IEC 60331-25, the speciality cable is one of the toughest available, capable of maintaining its structural integrity for 120 minutes in temperatures up to 950°C. If the worst should happen this would give the team at the EGO enough time to implement a disaster recovery plan and save all of the vital data garnered from the experiments.

The IEC 60331 Fire Test requires a minimum flame temperature is 750°C and with a recommended flame application time of 90 minutes, plus 15 minutes cooling time. While the specification only requires that the cable maintains circuit integrity, Brand-Rex has adopted a pass criteria of no more than a 1.5dB increase in attenuation under test conditions.

The fire survival cable has also been subjected to the BSEN 50200:2000 Class PH120 test which includes additional mechanical shock and water spray during the fire test period. This simulates a real life situation with fire containment systems in operation and potential impacts from building debris.

In total, more than 40km of fire survival singlemode cable was installed on the EGO site, alongside Brand-Rex fibre cassettes, pigtails and patch cords. The installation was carried out in two phases and was completed in less than 12 months - all according to plan and without any hold-ups. The new network infrastructure is expected to last for up to 10 years, depending on the moves, adds and changes that are actioned in that time.