Sevkabel Group and DOW ENDURANCE™ Compounds Join Forces to Support Lenenergo

**Project**

Lenenergo is one of the largest electric power distribution and network companies in Russia, with a mission to ensure a reliable, continuous, high-quality and clean power supply to consumers in Saint Petersburg and the Leningrad region as well as to meet the growing demand for electric power and capacity. This must be achieved while reducing the risks of contamination of the city and the water of the Neva River which flows through St. Petersburg on its way to the Gulf of Finland. This further reinforces the need for quality cables to optimize the investment in infrastructure.

Sevkabel Group, with support of the DOW ENDURANCE™ family of semiconductive and insulation materials from Dow Electrical & Telecommunications (Dow E&T), won the public tender to supply cables to this important and complex project.

**Challenge**

The key challenges facing Lenenergo were:

- Inadequate investment in the power grid from the late 1980s to the early 2000s
- An outdated and inadequate infrastructure with the risk of deteriorating reliability of supplies
- Critical facilities at risk - government agencies, military units, residential areas, and the major industrial enterprises spread across the territory
- Increased costs for regular ongoing repairs and updates to the grid
- A deterioration in the quality of the overall network and the service to consumers

The substructure of the St. Petersburg underground cable network posed a number of technical challenges. The depth of cable laid by horizontal directional drilling (HDD) can vary from 2 meters to 15 meters and more below surface level. The presence of a large number of water hazards at a depth of 10 meters made it difficult to envision this solution.
Solution
An in-depth study led to the development of a three-year program covering 2010 to 2014 to upgrade the 35-110 kV cable lines and reconstruct cable lines in St. Petersburg.

Priority was given to replacing the power grid equipment showing the greatest degree of wear. Together, Lenenergo and Sevkabel agreed on the laying of a new 110 kV cable using HDD under the Neva River, at a depth of 23 meters. Lenenergo deployed for the first time DOW ENDURANCE™ crosslinked polyethylene compound (XLPE) in the place of the usual oil-filled cable with paper-soaked insulation.

Given the undersoil in St. Petersburg is mobile, the 110 kV cable was encased in a concrete stall, helping to ensure that the cable is well protected from potential ground motion and mechanical damage.

Chief benefits of the solution are:
- DOW ENDURANCE™ materials can enable lower life-cycle cost cable solutions
- XLPE insulation enhances reliability of power supply
- Reduction in the volume of maintenance requests and time needed for repair work
- Predicted cable life of 40 years
- Reduction in the level of contamination of soil and groundwater following the dismantling of existing oil-filled cable
- 110 kV lines
- Less likelihood of man-made environmental disasters in the event of accidental spillage of electrical oil

Sevkabel, thanks to its manufacturing know-how and expertise, delivered high voltage (HV) cables, manufactured with DOW ENDURANCE™ HF DK-4201 SC, on time, enabling new customers, notably in the city center, to access the grid. Four cable lines were completed and commissioned in 2011, and work began immediately on 25 to 30 more 35 kV lines to further increase capacity. As of today, Sevkabel has delivered a total of 80 km of 110 kV cables to Lenenergo.

Project Summary
Customer: Lenenergo

Applications: Insulation/cable jacket materials for HV (110 kV) cables

Materials used: DOW ENDURANCE HF DK-4201 SC HV XLPE insulation
                DOW ENDURANCE HF DK-0587 BK S crosslinkable conductor shield and bonded insulation shield for HV cables

Functional requirements: Consistent performance and long-term reliability

About Dow Electrical & Telecommunications
Dow E&T, a business unit of The Dow Chemical Company (“Dow”), is a leading global provider of products, technology, solutions and knowledge that sets standards for reliability, longevity, efficiency, ease of installation and protection that the power and telecommunications industries can count on in the transmission, distribution and consumption of power, voice and data. Understanding that collaboration is essential to success, Dow E&T works together with cable makers, other industry suppliers, utilities, municipalities, testing institutes and other organizations around the world to help develop solutions and create mutual value that will sustain these industries for years to come. For more information, visit www.dowhvpower.com.