

Study Committee B1

Insulated cables

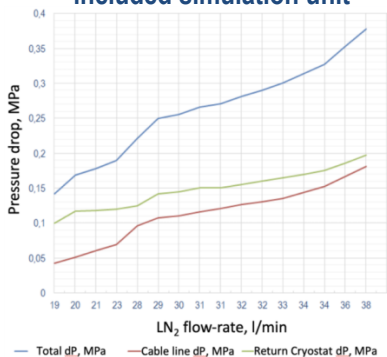
10359_2022

Development, Adjustment and Implementation of the HTS Transmission Cable Line (2.4 Km) in St. Petersburg

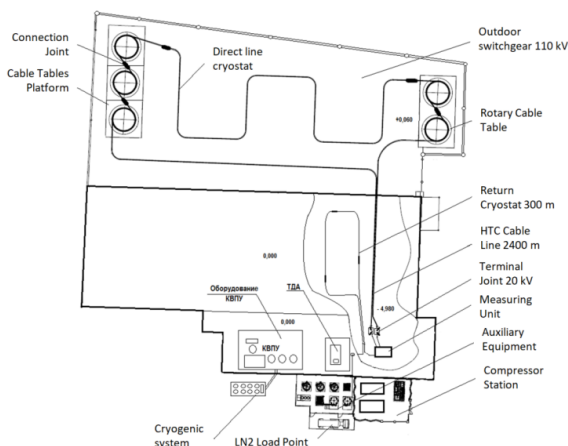
Victor SYTNIKOV, Andrey KASHCHEEV*, Mikhail DUBININ, Alexander MATINYAN

R&D Center @ FGC UES, Russian Federation

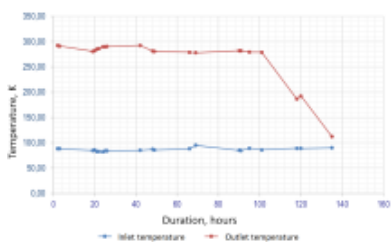
Pressure drop with the included simulation unit



Full line assembly layout



HTS DC cable line cooling with gaseous nitrogen



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**Development, Adjustment and Implementation of the HTS
Transmission Cable Line (2.4 Km) in St. Petersburg**

Key results of thorough upgrade of cryogenic system

Helium-nitrogen heat
exchangers thermal
power

+20%

Helium compressor
stations
performance

+10%

Cryo-system
cooling capacity

+30%

Cooldown time

14 ^{days} → **6** ^{days}

Nitrogen demand for
cooling down

-50%

- ✓ Repair kits for cryostats
- ✓ Complete automation of cryo-system
- ✓ Comprehensive boundary tests of HTS cable line full assembly
- ✓ Integrated means of thermal deformations compensation



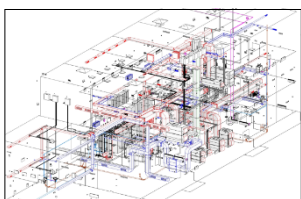
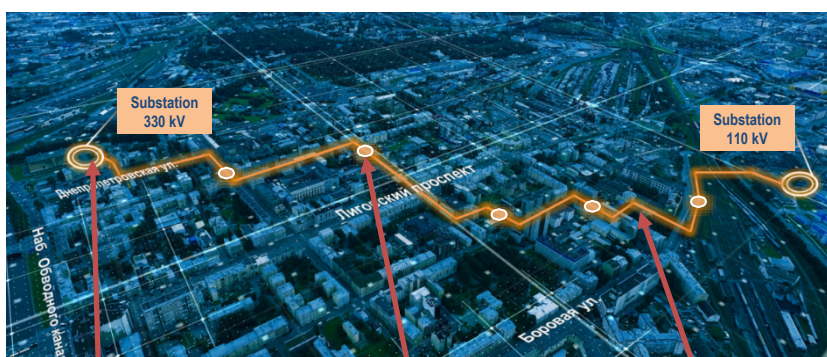
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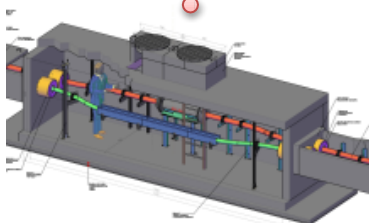
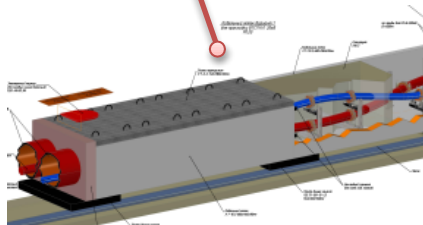
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Development, Adjustment and Implementation of the HTS Transmission Cable Line (2.4 Km) in St. Petersburg

Ongoing construction works and implementation of HTS cable line



Main technological equipment building



Connection joint well



HTS Cable laying