

UniGear Digital to Siberian Coal Energy Company Vanino, Russia



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01 Vanino bulk terminal
in Russia. Photo
courtesy of SUEK.

Project at a glance

- Customer: Siberian Coal Energy Company (SUEK)
- Segment: Mining industry
- ABB products: UniGear ZS1 digital switchgear, Relion® 615 series protection relays, Vacuum circuit breaker VD4, Indoor current sensors KECA, Indoor voltage sensors KEVA, all mounted in an eHouse

Customer challenges

To guarantee continued operation at the bulk terminal, where coal is loaded onto the ship, the customer was looking for a secure and reliable power distribution solution to ensure minimized maintenance needs and downtime.

They sought a flexible switchgear installation, which would allow them to make fast load changes and also allow remote operation, as the installation was to be located far away from the control room. Strict space requirements were also applied as the maximum amount of switchgear panels that would fit in the reserved space had been identified.

The customer also needed a compact and robust eHouse construction that would withstand harsh weather conditions, such as strong and cold winds and salt water.

A reliable and compact eHouse with a high-performing digital switchgear solution to safeguard the distribution of power and ensure production uptime. The UniGear Digital switchgear solution is a perfect match for meeting strict requirements as it offers great flexibility, energy-efficiency and minimized maintenance needs.

ABB solution

To meet the requirements set, ABB offered an energy-efficient and compact eHouse with UniGear Digital. The UniGear Digital solution is built on the air-insulated medium-voltage switchgear ZS1, state-of-the-art sensor technology and Relion protection relays. The design of UniGear Digital is very robust, with fewer components, which significantly decrease the risk of malfunctions.

To ensure fast and reliable communication, the solution uses IEC 61850, the global standard for communication in substations, and GOOSE (Generic Object Oriented Substation Event) communication between the equipment. IEC 61850 communication is also used for remote monitoring and control of the substation from the main control room.

The UniGear ZS1 digital switchgear utilizes current and voltage sensors, which offer higher flexibility for easy load capacity alteration without any downtime, as the only required action is to set new values in the protection relays.

Sensor technology with the Relion relays are also used as informative energy meters. The sensors fulfil the combined requirements for accuracy class, covering both metering and protection classes in one.



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01 Front view of the UniGear Digital switchgear installed in the eHouse

02 An eHouse, a walk-in metal enclosure specifically built to protect critical electrical equipment in the power distribution network



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Customer benefits

- Minimized switchgear footprint, as with UniGear Digital the metering cubicle(s) can be omitted and spare panels can easily be configured for future applications
- A compact and robust switchgear design, and reduced time needed for commissioning and installation with sensor technology
- Higher measurement accuracy thanks to the sensors in the switchgear - to avoid saturation and ferroresonance phenomena from the instrument transformers
- The Relion protection and control relays are all-in-one devices. They act as statistical energy meters with informative measurements in parallel with their core function of offering power system protection
- Supply of a completely integrated and pre-tested eHouse that reduced energization and commissioning time on site

About the project

SUEK is one of the world's leading coal mining companies. It has a long history not only in Russia, but also internationally.

The Vanino terminal is located at the gulf of the Pacific Ocean. It is the key export gateway from Russia to Asia-Pacific markets.

The containerized substation, equipped with UniGear Digital, supplies power to the terminal's internal loading systems.

ABB teamed up with FEEC, the Far Eastern Electrotechnical Company, to deliver this solution in 2016.