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(Equipment supply for the project "Arrangement of Valanginian deposits of Samburgskoye field for the period of test operation. Installation of LNG processing equipment).

Design organization: PAO Yuzhniigiprogaz, Donetsk

Contract signing date: September 2011

Delivery expectancy: 31.12.2011

Actual delivery: December, 2011

Scope of supply:

- Industrial packaged transformer substation 2PTS-1600C-6/0.4-U3 for gas and condensate processing unit.
- Industrial packaged transformer substations PTS-400N-6/0.4-U3, modular 2PTS-1600S-6/0.4 kV with emergency power supply, industrial modular 2PTS-1250S- 6/0.4 kV, industrial modular 2PTS- 1600S-6/0.4 kV for GPU.
- MCCs with withdrawable units.
- Automated capacitor units (ACU) for transformer substation.
- ATS panels.
- MCC panels with soft start panel.
- Step-up transformers enclosure.
- Hinged power panels, lighting panels, power distribution panels, panels with circuit breaker and switch, control boxes 5111, panels with plug in circuit breaker and fuses and lighting control panels 9601.

Equipment information:

The Institute has developed a project based on the technical information of CHETA LLC for low-voltage packaged devices of modular design with withdrawable units. The necessity of using the withdrawable units was caused by the importance of the Customer's facility and inadmissibility of long-term shutdown of the technological process. The design of the panels allows rapid replacement of the working unit with a spare one without disconnecting the section and dismantling the devices, power circuits and control circuits. When designing the equipment for OJSC Arktikgaz complex technical issues were solved with the direct participation of the specialists of CHETA LLC in different directions (LV SWG, RPA, ACSTP). As a result, solutions optimal in terms of costs and fully satisfying the Customer with respect to technology were approved.

Packaged transformer substations of CHETA LLC design were equipped with circuit breakers of General Electric with electronic releases that allow trip-setting adjustment. Power supply of control circuits was carried out with an operating current of 220V from guaranteed power supply system being a part of PTS. The substations were manufactured according to design documentation both in modular buildings and without them (built-in). The undoubted advantage of modular substations produced by CHETA LLC was their maximum factory readiness and modular design. All the electrical equipment was installed in its stationary place, passed adjustment and testing at the enterprise. Only modules and interconnection terminals were connected at site, which significantly shortened the time and costs for installation and commissioning works at the facility. LVDBs were of MV4000 design manufactured by CHETA LLC with withdrawable units that meet modern operational requirements for safety of service, compactness and reliability of operation. The compact arrangement of modules in withdrawable design panels, as well as the combination of the functions of power distribution and load management in one switchboard made it possible to reduce the size of panels in comparison with the dimensions of the LVDBs with fixed units. The frame of panels was made of galvanized steel profile. All metal structures inside the frame were also made of galvanized steel. Power connections were realized by a copper bus, the places of contact connections were covered with a special conductive lubricant, which increases the contact area and reduces the electrical resistance. The ATS was implemented by industrial controller S7-300. There were three modes of operation of the circuit: manual, automatic and remote. In addition to the switching algorithm during the transfer and reset to the initial state, Siemens S300 controller also collected and transferred to the upper-level information about the status of HV incomer panels, LV incomers, bus-tie and feeder circuit breakers, as well as the network parameters at the inputs and information about emergency events.

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Siemens controller permitted to perform the following functions:

- provision of ATS operation logic and DPP control;
- circuit breakers monitoring;
- electric power quality and quantity control at inputs and output lines;
- events and network parameters archive recording;
- messages, equipment status, network parameters visualization at the build-in graphic operator terminal.

Essential advantages of our solution are the following:

- flexibility (changeability) of PTS ATS control algorithm;
- installation works scope reduction due to excluding multi-wired cables for connection between ACS and LVDB (except for signals in emergency shutdown device and blockings);
- design and commissioning scope reduction;
- creation of events and parameters archives with possibility to transfer archive contents to ACS;
- avoiding the possibility of high voltage supply to the low-voltage inputs of ACS controller when performing scheduled or repair works on the switchboard.

Start-up operations:

Less than a year has passed between delivery of main equipment and putting into operation. It was due to the fact that the supply of MCC panels and packaged transformer substations was made at a high technical level with all necessary adjustments and tests at the manufacturing plant. Supervision and commissioning works were carried out by our specialists in the shortest possible time period. Short term of manufacturing and delivery of ordered equipment, commissioning of the facility into operation (less than a year from the date of delivery) were stipulated by the following:

- drop shipment of components from renowned European companies;
- availability of skilled experts in the field of designing and engineering of an electric equipment, experts of relay protection, APCS and medium voltage in staff;
- manufacturing of products of maximum factory readiness, significantly reducing the time

for installation and commissioning works and the costs relating to them.

The Customer and the contractor organization didn't have any claims relating to the quality of products in the process of performing works.

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In total the following was supplied:

Equipment for the objects: "Arrangement of Valanginian deposits of the Samburskoye field for the period of test operation", "Arrangement of the oil fringes of the Samburskoye field", "Arrangement of the Yaro-Yakhinskoye oil and gas condensate field", "Arrangement of the Achimov deposits of the Urengoykoye field of the Sambursky licensed area" (modular 2PTS-1600 kVA with emergency power supply, industrial modular 2PTS-1250 kVA, industrial 2PTS-400 kVA, industrial 2PTS- 1600 kVA, 6 kV SWG, step-up transformers module, ACU, MCC panels, LVDBs).

Feedback:

"We express our gratitude for the quality products supplied by your company to OJSC Arktikgaz for Samburskoye oil and gas condensate field. We invite you to visit us with presentation of your high-voltage and low-voltage equipment of transformer substations and automated process control systems";

Chief engineer of OJSC Arktikgaz - O.V. Osipovich

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