



ENEX, RUSSIA

Key Facts

Company: JSC ENEX

Website: www.scpe.ru/ru

Description: ENEX is an engineering company consisting of nine subdivisions that provide a full range of design and construction services for power plants. In particular, one of the subdivisions, Rostovteploelectroproekt, performs design for thermal power plants, heat boiler stations with electrical and thermal networks within them, as well as creates design for processing units within civil construction projects.

Industry: Thermal power

Country: Russia

Products Used:

- Intergraph Smart® P&ID
- Intergraph Smart Instrumentation
- Intergraph Smart Electrical
- SmartPlant® Foundation
- Intergraph Smart 3D

Key Benefits:

- Highly functioning design software
- Intelligence of technologies

ENEX: OPTIMIZING POWER PLANT DESIGN WITH THE USE OF HEXAGON PPM TECHNOLOGIES

Benefits and challenges of implementing SmartPlant® Enterprise solutions by thermal power engineering company

IDENTIFYING GOALS

In 2010, Rostovteploelectroproekt, one of ENEX's design subdivisions, purchased SmartPlant Enterprise solutions suite for design of the following units:

- Novocherkasskaya hydroelectric power station, power unit No. 9 with circulating fluidized bed boiler installation (nominal power 330MW)
- Steam-turbine compartment with the capacity of 24 MW within a hydrocracking system at Rosneft Achinsk Refinery

OVERCOMING CHALLENGES

Interoperability and efficiency is fundamental for thorough and accurate power unit design. Rostovteploelectroproekt chose Hexagon PPM solutions for the project to ensure the quality and consistency of design and data. The SmartPlant® technology used consisted of three functional groups:

- 2D modules to create logical discipline based models (Intergraph Smart® P&ID, Intergraph Smart Instrumentation, Intergraph Smart Electrical)
- 3D module to create a complex 3D plant model (Intergraph Smart 3D)
- Central repository, integration, data management module (SmartPlant Foundation).

First task was to create 2D models for piping and instrumentation. For this, ENEX used Smart P&ID. Implementation did not cause any practical difficulties, since Smart P&ID's workspace is portraying one of the types of the output documentation.



After six months this solution was fully configured and was functioning in accordance with industry and company standards, taking its place among the instruments used for design documentation delivery. Ninety-five percent of what needed to be done in terms of P&ID diagrams and supporting specifications could be done in this solution.

The next project phase included creation of a 3D plant model, and the challenges during this phase included the absence of vendor and materials databases, and the complexity of the configuration of the documents outputs without corresponding software knowledge. Also, a human factor was present – specialists were not willing to automate their work. This solution enabled instrument design in both engineering as well as operations. Hexagon PPM solutions made it possible to create a logical automatized model of control and instrumentation equipment.

The final objective ENEX wanted to achieve was to create an electrical power supply model of the plant. For this Intergraph Smart Electrical (ISE) was implemented, a solution that enables the creation of an electrical power supply model of the plant.

REALIZING RESULTS

Intergraph Smart 3D was brought on board to create an intelligent, parameterized 3D model of the plant in a single workspace. When implementing Smart 3D, the project team were impressed by the great potential of the solution. A lot of time was spent on software adaptation. A set of catalogues on several disciplines to enable completion of a detailed design were set up, and in parallel with the catalogues, work delivery templates were created. The information needed to be defined and structured accordingly in order to be able to accurately display it on the schema, drawing, or in the table.

The functionality of the structure module in Smart 3D is more designed to deliver metal structure documentation. In order to deliver documentation on steel structure details and reinforced concrete structures, it was decided to use Smart 3D due to its ease of implementation and use. Hexagon PPM solutions were chosen over competitor offerings due to the value associated with purchasing Hexagon PPM solutions and licenses. 3D models are used at all units mentioned above.

The units have been imported from another software:

- Siemens gas-turbine module for Rosneft Tuapsinskiy oil refinery
- Compartment of the boiler with circulating fluidized bed installation based on Foster Wheeler technology at Novocherkasskaya hydroelectric power station
- Steam turbo-generator with corresponding pipes and equipment arrangement, produced by Siemens for Achinsk refinery

All models have been recompiled into off plot facilities in the Smart 3D format and put into the corresponding database with project data to be later used in projects.

From all the SmartPlant Foundation functionalities, Rostovteploelectroproekt mainly used the SmartPlant integration function. This enabled the company to:

- Implement automatic tracking of change among all the disciplines
- Generate tasks to all related disciplines
- Tracking and coordination the tasks among all the design team members

MOVING FORWARD

ENEX experienced how the implementation and experience of using SmartPlant Enterprise software for plant design improved the quality of design, reduced the design time, and significantly enhanced the design results both from technical and business perspectives. ENEX is confident in the extensive intelligence of SmartPlant Enterprise software, and in the high value of the technology.

ABOUT HEXAGON

Hexagon is a global leader in digital solutions that create Autonomous Connected Ecosystems (ACE). Our industry-specific solutions create smart digital realities that improve productivity and quality across manufacturing, infrastructure, safety and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.