
STEAM-TURBINE, GAS-TURBINE, AND COMBINED-CYCLE PLANTS AND THEIR AUXILIARY EQUIPMENT

The Experience of Implementing and Using the Windchill Product Lifecycle Management System at the Energy Machine Building Enterprise

A. Yu. Kultyshev^{a, b}, A. A. Blagodarev^a, A. V. Gladkii^c, and D. N. Shanturov^a

^a ZAO Ural Turbine Works, ul. Frontovikh Brigad 18, Yekaterinburg, 620017 Russia

^b Ural Federal University, ul. Mira 19, Yekaterinburg, 620002 Russia

^c ZAO EP Audit, pr. Obukhovskoi Oborony 120, lit. I, St. Petersburg, 192012 Russia

Abstract—The experience of developing, implementing, and adapting the Windchill v.10 product lifecycle management (PLM) system intended for the automation of the control processes by the engineering data for the entire lifecycle of the hardware at the ZAO Ural Turbine Works (UTW) is described.

Keywords: PLM system, design and manufacturing production preparation, design and manufacturing representation of the hardware's structure, steam-turbine installation

DOI: 10.1134/S0040601513080065

In order to optimize planning and control processes by the production of the main and auxiliary equipment of gas-turbine and steam-turbine installations, the Ural Turbine Works (UTW) accepted the decision to form a unique corporative actual database of produced wares [1] as well as to introduce the modern automation methods of control processes by the engineering data and to adapt them to the existing production [2]. The formation of a unique corporative database had become the main target of the project “The Introduction of the Control System by the Engineering Data Based on the Solutions of the RTS Company at the UTW” with the participation of the ZAO EP Audit. To implement the project, the managing committee and the working group were formed in autumn 2011, and the required specifications and the time schedule of the project were developed. To attain the stated target, the following problem should be solved [3]:

- (i) to form the infrastructure;
- (ii) to optimize the development and design processes;
- (iii) to control the hardware compositions;
- (iv) to automate the procedures of coordination and confirmation;
- (v) to automate the introducing processes of the variations;
- (vi) to automate the processes of the manufacturing preparation of the production.

PROBLEM 1. THE FORMATION OF THE INFRASTRUCTURE

To implement any project of the all-factory data control system, large-scale inventory and modernization of the existing infrastructure are required. The actual database, which is accessible only for some of the enterprise services, is useless. The lack of personal computers and the partial covering of the enterprise by the corporative net annul the effect of implementing the data control systems. The IT infrastructure is a foundation of the implementation project.

When realizing the project, the working places of designers and technologists were equipped with modern computers. Each engineering service has a plotter in its disposal now. The corporative net envelopes all divisions of the enterprise involving the shops.

The archive service was also equipped by modern copying equipment, which makes it possible to provide printing, scanning, and binding large documentation volumes.

PROBLEM 2. OPTIMIZATION OF THE DEVELOPMENT AND DESIGN PROCESSES

For the period from the end of 2011 to the beginning of 2012, the optimized processes of the production design and engineering preparation were described at the UTW. All the developed processes were fixed in the corresponding regulating documents. The following processes were enveloped:

the main process of the organization of the production;