



DESCRIPTION OF THE REALIZED SOLUTION
“RECONSTRUCTUION OF THE BLAST FURNACE #1
AT “ALCHEVSK IRON AND STEEL WORKS” PJSC.
NEW BLAST FURNACE CENTRAL CONTROL ROOM.
RECONSTRUCTION OF BLAST FURNACE #1 COOLING SYSTEM”



Fig.1. “ALCHEVSK IRON & STEEL WORKS” PJSC

In 2003 ALCHEVSK IRON & STEEL WORKS PJSC (AISW) started the large-scale production cycle reconstruction campaign in order to achieve world-class quality of produced goods and efficiency. Since then there have been implemented lots of projects including the new BOF shop construction, Blast Furnace #1 reconstruction, BF PCI shop construction, and others.

In 2013 AISW management took the decision to upgrade the BF1 cooling system. The BF1 cooling system reconstruction was based on implementation of new cooling plates designed by Danieli Corus. The reconstruction process consisted of the following stages:

- 1) disassembling and demounting of equipment related to the old cooling system;
- 2) installation of new cooling plates and related piping;
- 3) installation of instrumentation into the new cooling plates and pipes;
- 4) extension of the existing control system aimed to integrate new equipment and instrumentation;
- 5) construction of a pumping facility to meet the requirements of the new cooling system;
- 6) BF central controls room reconstruction.

Azov Controls LLC was responsible for the following work scope:

1. DEMOUNTING OF EQUIPMENT IN BF CENTRAL CONTROL ROOM AND IN “CONTROLLERS” ROOM.

1.1 Demounting of existing shields, consoles, cabinets.

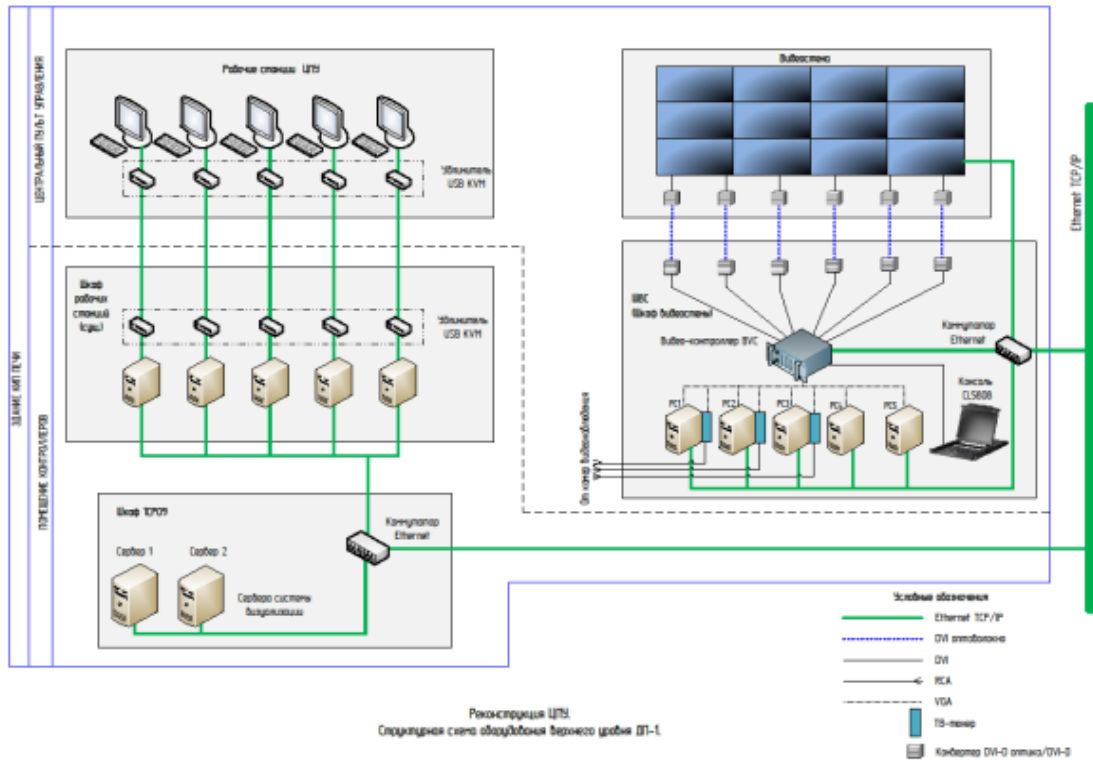


Fig.2. Structural scheme of BF1 upper level equipment

2. DESIGN WORKS

- 2.1 Development of integrated BF control and coordination center concept based on installation of a video-wall. The purpose of implementation of a video-wall was to provide BF operators with an adjustable powerful tool, which would contain a full set of BF plant process data from various sources (a range of PLCs that belong to separate subsystems, infrared cameras, video cameras, etc.).
- 2.2 Design documentation related to the reconstruction of BF central control room including control consoles, a video-wall, lighting, fire alarm system, air conditioning, etc.
- 2.3 Design documentation related to the new equipment control system. Adjustment introduced to the old control system design documentation aimed to ensure compatibility and mark the components to be unmounted.
- 2.4 Software development aimed at creation of appropriate tools in SCADA instead of similar tools located on the control panels, which are supposed to be removed according to the reconstruction specification requirements;

3. MANUFACTURING AND SUPPLY OF EQUIPMENT.

- 3.1 Assembling and supply of control consoles.
- 3.2 Video-wall including 12 LED LCD panels (diagonal of a single panel is 55"), overall size is 4,800 x 2,000 mm.
- 3.3 Cabinet for video-wall equipment consisting of five PCs, one video processing server, service video console and UPS.
- 3.4 Split-systems (McQuay M5CK).
- 3.5 SCADA system Factory Talk View Site Edition.



- 3.6 RSLogix 5000 controller software.
- 3.7 RSLinx Enterprise communication pack produced by Rockwell Automation.
- 3.8 Furniture set.
- 3.9 Fire alarm equipment.



Fig.3. BF Central Control Room

4. INSTALLATION WORKS.

- 4.1 Installation of a video-wall, cabinet with equipment for video-wall and control console.
- 4.2 Reinstallation of current bell-less top control system regarding the adjustment of the existing project.
- 4.3 Installation of air-conditioning equipment.
- 4.4 Installation of fire alarm equipment.
- 4.5 Installation of lighting, emergency lightning equipment in accordance with safety regulations.

5. RENOVATION AND CONSTRUCTION WORKS.

- 5.1 Walls trimming.
- 5.2 Covering the floor with stoneware tiles.
- 5.3 Covering the floor near the operator console with quartz-vinyl tiles.



Fig.4. Central Control Console before reconstruction



Fig.5. Central Control Console after reconstruction

- 6. INSTALLATION OF EQUIPMENT RELATED TO THE NEW BF1 COOLING SYSTEM.**
 - 6.1 Installation of additional electrical equipment in the existing control cabinets;
 - 6.2 Installation of new control cabinets;
 - 6.3 Installation of instrumentation equipment, cabling.