Reconstruction of main drive at stand No10, pinch devices of stand No10 and loop holder No5 mill 1700 HRM

Customer: JSC “Arcelor Mittal Temirtau”

Reconstruction object: electric drives equipment at mill 1700гп HRM-1

RECONSTRUCTION OBJECT SPECIFICATION

The machine comlex of stand No 10 at Hot Rolling Mill 1700 гп includes the following machinery:

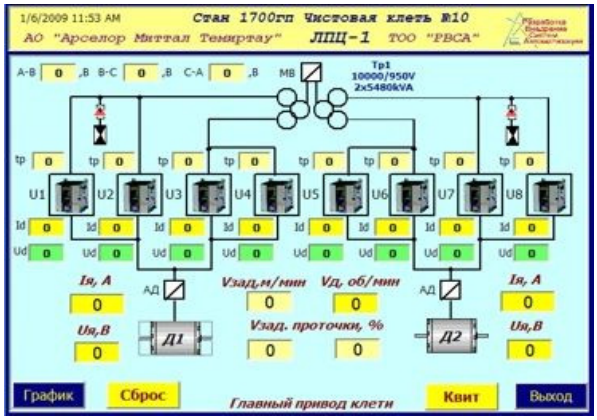
- the main drive of the stand
- pinch devices of the stand
- loop holder No5

Equipment reconstruction of electric drives at stand No10 was carried out because of big reducing of thyristor converters TEP (TBP) operating reliability, it leads to often breakdown, long-time delays and defective products.

Requirements to automation system

The main purpose of electric drive control system reconstruction was improving of the following operational rates:

- equipment reliability
- rapid action
- rolling technological parameter accuracy maintaining
- service availability
- reservation possibility;
- work monitoring



SOLUTION AND AUTOMATION SYSTEM CHARACTERISTICS

In May-April of 2005 it was reconstruction of drive control system at stands No6-9, pinch devices of stands No6-9, loop holders No1,2. Considering previous adjustment experience and two-year drive explotation at stand No6-9 it was selected thyristor converters Simoreg DC Master 6RA70 for electric drive control. In contrast

to previous stands where drives were ordered of cabinet-type, it was decided to assembly packaged cabinets at the plant directly. During cabinet assembly development it was considered remarks, appearing during operation of similar converters at stand No6-9.

For service convenience it was developed diagnostics and control system on the basis of operator's panel MP277. The panel is destined for displaying of drive electric equipment condition. Developed graphic OP structure allows a dispatcher to control working modes, to watch and react on all emergency and pre-emergency conditions of electric drives at stand. Also in diagnostics system it is carried out permanent archiving of parameters as follows:

- drive current (at each anchor)
- voltage (at each converter)
- thyristors temperature
- speed etc.

During main drive designing it was improved ventilation system, reducing dust ingress in the cabinets with power blocks till minimum. On each anchor it was installed frequency converter, operating rotation velocity of fans depending on thyristor temperature.

Main drive control system anticipates task receiving by means of analogue signals, also on the Profibus network from general speed modes control system of the mill. During main drive adjustment, with the help of special developed setup program, fast operation of the current regulator was increased more than twice, in contrast to previous stands (No6-9). It is positively affected the stand work i.e. during slab holding in the rolling process it is required accurate speed maintenance and high fast operation of the speed regulator.

The main drive exciter of the stand No 10, in contrast to previous ones (No6-9) was designed as a stand-along unit, i.e. emf regulator is assembled immediately in it. It very facilitates further reservation either the exciter or the main drive, also allowsit separate transfer on the spare equipment. The project anticipated unimportant reconstruction of available relay-contact control circuit, it was increased working reliability.

Project implementation period

Project implementation period is 9 months, commissioning is 2008.