

Electrical drive of tower accumulator carriage of electrolyte tinning line 1200/III

Customer: Karaganda Metallurgical Plant JSC “ARCELOR MITTALTEMIRTAU”

Continuous work of electrolyte tinning line provides 2 tower accumulators of inlet and outlet areas. Electric drives of accumulator carriages are the same. The tower accumulator of inlet area is meant for strip reservoir making, which provides continuous work of middle (technological) aggregate part at constant speed during uncoiler change and strip welding. The accumulator provides strip tension between pulling S-rolls at site. The tower accumulator of outlet area is identical to inlet accumulator and it is meant for strip reservoir making, which is necessary for continuous work of technological aggregate part at constant speed during coiler change. The accumulator provides strip tension between pulling S-rolls at site. Accumulator tension value is set by the operator from pulpits.



Requirements to control system

- Task calculation on the motor current on the basis on preset tension.
- The choice of strip tension measure withing 0...0.135 t and supporting of the preset tension value in all working modules aren't worse 10%;
- Task calculation of anchor current for compensation of integration moment in dynamic modes and compensation of mechanism and motor mechanical losses.
- Reducing of motor excitation current on the preset value during motor stop;
- Strip break control;
- Rotating speed regulationin modes “front charging”, “back charging”;

SOLUTION AND AUTOMATION SYSTEM CHARACTERISTICS

The converter of the firm «SIEMENS» SIMOREG DC MASTER 6RA70 is used as controlled electric drive of tower accumulator carriage. It is complete thyristor electric drive, corresponding to device of the cabinet design facility, non-reversible service, consisting of thyristor converters modules with microprocessor control and ancillary equipment: switching equipment, fuzes, reactors, automatic circuit breakers, contactors, interposing relays. Tension installation is formed in the controller SIMATIC S7 and is transferred in the drive by the network «PROFIBUS-DP». Tension value is set in the controller by operator from the pulpit by the buttons “More/Less” and it is displayed on the operator’s panel, where real tension value is displayed too. System provides low tension, which is called “parking” and excitation current reducing during impulse blocking. Strip reservoir value in the accumulator and carriage conveying speed are displayed on the operator’s panel. In lock mode additional oscillating signal is supplied to the drive for current flow prevention on the standing anchor. The main feed-back for the speed regulator is organized by EMF.

To control electric equipment work of the drives by operating staff, an industrial computer is installed in the Power Control Room, on the basis of it, sysrtem of preventive alarm signalling and diagnostics of electric drives current status is realized by means WinCC.



Project implementation period

Project implementation period is 5 months, commissioning is November, 2007

