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Development ASU Electrothermal Line

At the end of the last century a large amount of foreign-made cars appeared in the Ukrainian market, leaving behind those produced in Ukraine. To compete successfully, our car industry had to improve the quality of domestically produced cars and, above all, increase the reliability of engines. As a result, the requirements to engine components increased.

Due to high technical requirements to the car parts quality, the percentage of metal products that do not satisfy these requirements grew up. The biggest number of defects appear in the final stages of technological operation, especially during heat treatment. To determine the reasons of this phenomenon it is necessary to investigate heat treatment technological process in details.

This process comprises hardening , washing, drying and abatement. In order to provide high quality of products, accurate technological observance is required. Heating time and temperature must be precisely maintained, as well as careful monitoring of the conditions of the heat treatment equipment. However, most systems used today cannot provide such accuracy . Furthermore, human factor also influences the quality of the products because an operator controlling the process can become inattentive as a result of long and monotonous work.

Other problems arising are the need in quick malfunction repair of the equipment during the operation process and long-term readjustment of the equipment in the case of making changes during the processing. Nevertheless, most of the problems mentioned above can be solved with the application of ACS (Automated Control Systems).

These systems can ensure qualitative continuous observance of the heat treatment process eliminating the operator from the direct control of the process. Most operations are controlled and performed by automatic devices . Modern automation systems are mainly constructed on the basis of industrial controllers . This is due to their high reliability, and the ability to provide visualization of the technical process, which in its turn allows you to carefully control the production , quickly detect and repair faults that occur during the operation. Thus, automation system based on a programmable logic controller can solve the problem of maintaining the stability of the technological process parameters , reduce the role of a human factor in the process of heat treatment , decrease the time required for repairing malfunctions occurring during the system operation.