1.8.3. VIBRODIAGNOSTIC SERVICING OF GAS PUMPING UNITS IN COMPRESSOR STATIONS OF GAS MAIN PIPELINES AT THE LEVEL OF GAS TRANSPORTATION COMPANY

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Currently, gas pumping units (GPU) of about 200 sizes – centrifugal superchargers driven by industrial, aviation, vessel gas-turbine engines (GTE) and electric motors – are operated at compressor stations of the Open Joint-Stock Company "Gazprom". Most of them have long operating time. Their servicing is based on the technology of scheduled-preventive maintenance.

Specificity of GTE operation is related with their design features and, namely: absence of rigid links between operating shafts resulting in their asynchronous rotation. Features of GPU operation provide the necessity of relatively wide-range variation of their power and capacity due to the daily and seasonal non-uniformity of gas consumption. In these conditions, vibration state of units can vary with no changes in technical state.

Most of the vibrodiagnostic systems offered at the market do not allow these factors to be taken into account. Besides, in order to implement in them diagnostic and forecasting procedures, participation of qualified specialists – diagnosticians at the places of equipment operation or periodic transmission of large volumes of data into diagnostic centers is required.

Above presented features determined the necessity to develop specially adapted software and hardware for vibrodiagnostic maintenance of GPU driven by GTE. They ensure automation of vibrosignals processing, evaluation and forecasting by multiple criteria the GPU vibration state in general and individual unit diagnostics with increased interference immunity and, hence, trustworthiness of recorded data.

Used methods of data storage and processing allows approximately 80% of current vibrodiagnostic tasks to be resolved at the place of equipment operation. Moreover, if necessary, required volume of initial data (including remaining 20%), including supposed options for solution of current task on evaluation and diagnostics (under user's wish) of the equipment state, can be transmitted into the center for specialists-diagnosticians in order to resolve the set task.

Paper presents features of construction and functioning of the vibrodiagnostic system for GPU testing, which operates efficiently at the level of gas transportation company and provides modern technology of repair and technical maintenance of gas transportation equipment in accordance with actual technical state (Predictive Maintenance).