

The structure of the control system of quality of a well-bonded coupling fitting onto high-pressure gas-main pipelines is introduced in the article. The control system consists of information parameters measuring instrument, a calculating instrument for optimal preset parameters values and an analyzer which evaluates discrepancy between measured values and optimal ones and making a decision about the system actions relevant to the given discrepancy elimination. The effect of geometrical pipe parameters, a coupling construction, an under-coupling layer material strength parameters, technological parameters of an under-coupling layer forming on a pipeline strengthening has been analyzed. Furthermore, it has been described the requirements to getting control of a pipeline strengthening efficiency and given the system of interrelated equations for calculating optimal controlled parameters values. The proposed control method allows gaining a maximum pipeline strengthening efficiency using a molten metal for an under-coupling space filling. The represented experiment data have confirmed the increasing a pipeline strength by means of installing couplings proposed construction. A good agreement between experimentally derived data and results of theoretical measurements is shown. Also, the optimal technological parameters of an under-coupling layer forming have been defined and proposed.

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