networks are:
- ANN are well suited to solving complex multifactorial problems that may not have a clear explanation within physical models;
- An increasing number of interpolation problems does not have a direct algorithmic solution, but a set of points for which the measured values are known;
- ANN can be used to solve similar problems and help to identify relationships that are geologically relevant.
- The use of ANN for the approximation of nonlinear dependencies is particularly attractive in the context of geophysical data analysis.

Forecasting of petrophysical quantities and restoration of geological and geophysical regularities is carried out in the interwell space. It is best to combine several types of neural networks for this.

For example, generalized regression neural network (GRNN) and multilayered neural network (MNN), which perform a complementary approximation (since the MNN allows us to construct a global approximation of an unknown function with some extrapolation, and the GRNN performs a local approximation with some boundaries).

ANN are an alternative to linear models based on the multiple linear regression method to solve petrophysical prediction problems based on seismic data and geophysical well exploration.

**Conclusions.** In the process of the second stage of research, the efficiency of applying the algorithm of estimation of significance with the help of a neural network is shown to solve the problem of choosing informative seismic attributes. It has been proven that this method can be effectively applied to reduce the number of seismic attributes without losing useful information.

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**DEVELOPMENT OF A DEVICE FOR ARC WELDING WITH CONTROLLED MECHANICAL TRANSFER USING A METAL-CERAMIC STRIP ELECTRODE**

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Mechanical methods of forced transfer of electrode metal during arc welding and surfacing are simple and practically do not require additional energy [1]. Depending on the design of the feeder, mechanical pulses can be transmitted to the wire electrode in various ways.
When using strip electrodes, in contrast to devices for a wire electrode, the pulsed feed is carried out solely by bending the strip and exposing it to an eccentric mechanism [2-4].

In this case, the strip electrode must have certain mechanical properties: elasticity and rigidity. The rigidity should not impede the necessary bending of the strip and allow the electrode to be supplied through the guides to the weld pool without additional devices, at the same time its elastic properties should ensure a return to the initial position.

Various combinations of strip widths and thicknesses can significantly affect the capabilities of the known devices for mechanically controlling the transfer of metal from the strip electrode. The same problems arise when using thin and metal-ceramic strips. The first are easily deformable, and the second are very brittle.

The purpose of this work is to develop a device that provides controlled mechanical transfer during electric arc surfacing in the conditions of using strip electrodes with reduced elastic properties.

The proposed device allows for the use of controlled mechanical transfer for brittle electrodes (Fig. 1). The device contains: rotating feed rollers 1, upper 2 and lower 3 guides, strip electrode 4, eccentrics 5 and 6 with radius r and eccentricity e, current lead 7.

Fig. 1. Scheme of a device for surfacing with a ceramic-metal strip electrode: a – the position of the strip electrode in one of the extreme positions; b – the position of the strip electrode, in which the end of the strip electrode takes a lower position with a decrease in the length of the arc; c - position of the return bend of the strip electrode by the second eccentric

After the eccentric begins to make rotational movements, the strip electrode assumes a position (Fig. 1, b), where the end of the strip electrode assumes a lower position with decreasing arc length.

In the case of a return bending of the strip electrode by a second eccentric (Fig. 1, c), the strip electrode will bend a distance e with the end moving back to the upper
position, which leads to the forced drop of the electrode metal drop from the end of the strip electrode.

When using the such scheme of the device, the conditions for elasticity of the strip electrode are met, however, the displacement amplitude $S(t) = 0.056$ mm of the end of the strip electrode is too small relative to the permissible $f(t) = 3.0$ mm. Therefore, with such parameters, the condition of one drop dropping from the end electrode of the strip electrode per one cam rotation is not satisfied.

Conclusions: To use controlled mechanical transfer for surfacing with a ceramic-metal strip electrode, it is necessary to develop a new design of feeding devices and optimize the technological parameters of surfacing, which will ensure process stability and high-quality formation of the weld.

Studies of the kinematical scheme of the developed device showed that its design can significantly limit the deformation of the tape electrode and provide a stable supply of ceramic-metal strip in a wide range of mode parameters.

References:


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FEATURES OF METAL CRYSTALLIZATION IN ARC SURFACE AND WELDING WITH A LONGITUDINAL MAGNETIC FIELD ACTION

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The structural components of the metal are ground, which leads to an increase in the service characteristics of the metal at submerged arc surfacing with arc by wire with the action of control magnetic fields [1-3]. However, the mechanism of