ELECTROMAGNETIC FLAW DETECTION IN CASING STRINGS

Description
New theoretical approaches allowed to develop a model of an electromagnetic flaw detector for petroleum well casing. A three-loop layout developed jointly by the Institute of Geophysics SB RAS and the Research-and-production Enterprise of Geophysical Equipment “Louch” provides turning off bipolar signals in transmitter loops and recording both total and differential fields as indicators of flaws and wall thickness changes.
A special software has been designed for preprocessing, visualisation, statistical data processing, and well log inversion, as well as a pilot version of inversion algorithms. The equipment has been metrologically tested.

Technical appraisal and economic benefits
• broad time range and high resolution provide high quality of recorded signals;
• high sensitivity (wall thickness measured to an error less than 0.5 mm).

Application areas
Well and oilfield geophysics:
• control of casing pipe connections and perforation zones;
• control of wear and flaws of casing strings.

Development stage
The model was successfully tested at petroleum wells, the property of the companies “Surgutneftegas” (Surgut) and “Russian Geophysical Company” (Nizhnevartovsk).

Patent situation
No patent.

Commercial offers
Production and vendor contracts (enterprise “Louch”), marketing agreement.
Estimated cost
15,000 US$.

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