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APPLICATION OF GEOPHYSICAL SENSORS OF QUARTZ GLASS IN CONTROL SYSTEMS OF BUILDING STRUCTURES AND LARGE MECHANISMS

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Abstract. A technology for manufacturing stable small-sized tiltmeters and short-base deformometers made of quartz glass was developed in Schmidt Institute of Physics of the Earth of the Russian Academy of Sciences (IPE RAS). Based on the technology sensors of various parameters have been designed and are currently used in hydropower, mining and civil engineering. The article presents several instruments with quartz glass sensors. The characteristics of these instruments are described and the multifunctional measuring complexes created on their basis are developed. They are the monitoring system for the bearing structures of the building structures “SMNK–STRAGE” and the complex for monitoring the macroroughness of the working surface of the thrust discs and the slope of the shaft of the hydroelectric power stations of the hydroelectric power station. It is shown that the application of the developed technology provides high accuracy and long-term stability of the parameters of tiltmeters and strain gauges used to monitor various building structures and geometric control of precise setting of large mechanisms.

Keywords: tiltmeter, inclinometer, deformometer, accelerometer, slitmeter, tilt angle measuring system, composite sensor, quartz systems, monitoring of engineering structures, geotechnical monitoring.

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