

Laboratory stand for testing the mining process by milling or rotary drilling with single cutting tools or cutting drums



Technical description:

The stand is intended for the implementation of comprehensive laboratory tests related to the broadly understood rock mining process. The test stand enables the milling and drilling process with single tools or cutting bodies on an artificial or natural rock sample. On the stand, it is possible to test full-size cutting drums while ensuring real process parameters, and the implementation of these tests is carried out in a controlled manner, in laboratory conditions. Various tools can be tested at the stand, including conical picks and disc tools. During the tests, the parameters of the mining process, including the cutting forces and torque, are recorded. During the tests, it is possible to record dustiness. The stand is equipped with a set for determining the grain size distribution of the output.

Basic parameters:

drive power 250 kW,
rotating speed of the drum 0 - 120 rpm,
maximum diameter of the drum 2.2 m,
maximum width of the drum 1.0 m,
sample feed speed 0 - 9.9 m/min,
sample feed force 150 kN,
longitudinal sample stroke 2.5 m,
transverse sample stroke 1.3 m,
sample size 2.5 m x 2.5 m x 1.3 m,
sample weight approx. 18 Mg.

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More details: </equipment/stanowisko-laboratoryjne-do-badania-procesu-urabia/>

Access type: External

Type of accreditation / certificate: Not applicable

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Responsible body: Department of Machinery Engineering and Transport

Group / laboratory / team: Laboratory for testing rock mining processes

Last update date: Feb. 24, 2023, 9:43 a.m.

Year of commissioning: 2015

IDUB research areas:

(PRA 4) Technical solutions: from fundamental research, through modelling and design, to prototypes. The application of mathematical, information technology, and electronics tools to macro-, micro-, and nanoscale problems

Research capabilities:

Research on:

tools and drums durability
influence of the type of tools and the type of drum on cutting resistance, dustiness and grain size distribution,
impact of spraying system on the mining process using different types of tools,
cutting resistance of different types of rocks,
influence of the parameters of the mining process on the efficiency, durability and cutting resistance.

Measurement capabilities:

The stand is equipped with a measuring system and additional equipment that allows the measurement of:

longitudinal feed speed,
transverse feed speed,
the rotational speed of the drum,
cutting resistance torque,
forces in the longitudinal direction,
forces in the transverse direction,
dustination,
grain size distribution,
tool weight,
output weight.

Conditions for providing infrastructure:

According to individually agreed contracts.