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Low and high temperature testing capabilities of Laboratory for Materials and Structures Testing

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Laboratory for Materials and Structures Testing of IPPT PAN offers mechanical testing under dynamic and static force, including standard methods for measurements of tensile and compression strength, impact resistance, bending, fracture toughness, fatigue, creep, biaxial testing and SHPB. We are able to perform most of these tests in wide range of temperature from -273℃ to 1000℃ and strain rates from 10^-5 to 10^4. Apart from destructive methods we are using ultrasonic and eddy currents methods as well as digital image correlation, optical and scanning electron microscopy. In this presentation, some low and high-temperature testing capabilities of the Laboratory for Materials and Structures Testing will be presented. On the one hand, a novel method for high-temperature fatigue strength assessment of nickel superalloy turbine blades under cyclic bending load at a temperature of 950℃ will be discussed. On the other, initial results for low-temperature testing of aluminium alloys in static and dynamic ranges will be shown.