CHARACTERISTICS OF GRANULAR BIOMASS DETERMINED IN VANE SHEAR TESTER

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The needs for quick determination:
- Moisture content
- Density
- Increase in strenght cousing problems

Valuation of biomass,

STANOWISKO

PROJECT

Mechanical characteristics useful for design and process control of granular biomass used in firing and co-firing were determined. New vane shear tester was constructed for determination of shear characteristics of consolidated samples of granular biomass. Measurements were conducted in 40 cm in diameter and 40 cm high cylindrical chamber. Axially, near the bottom of the chamber rotating vane tool 8 cm high and 12 cm wide was located having four blades. The normal pressure was exerted by pneumatic system with rubber air spring and the yoke. The rotating vane impeller was assumed to shear only the material in the immediate vicinity of the blades. The torque of the vane, the yield strength and relaxation characteristics were determined. Experiments were performed on materials of moisture content ranging from 10% to 60% at consolidation pressure from 5 to 30 kPa. The material characteristics were found dependant of material, moisture content and consolidation pressure.
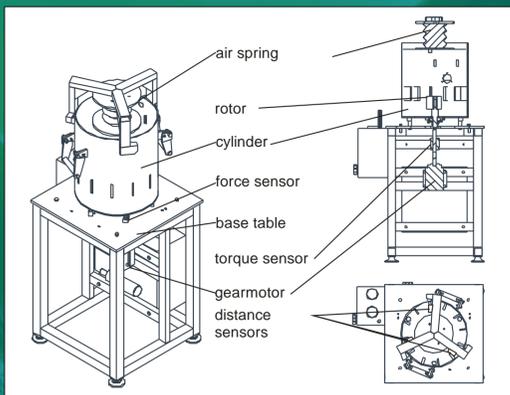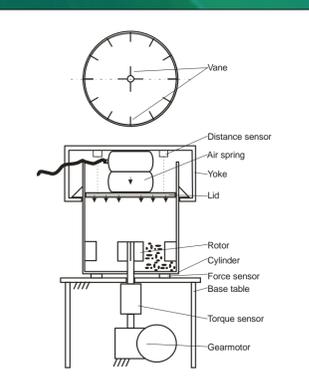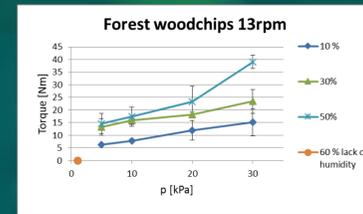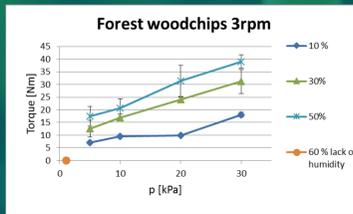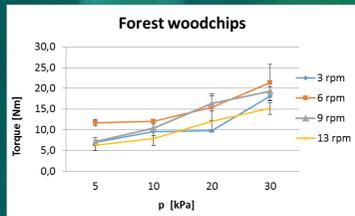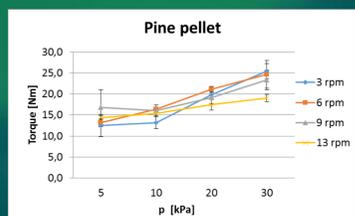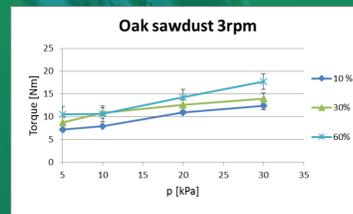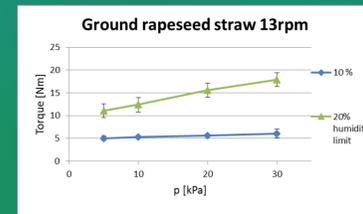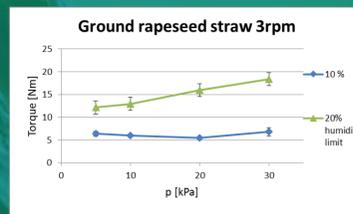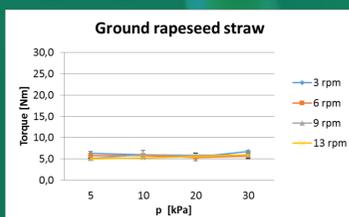
RESULTS
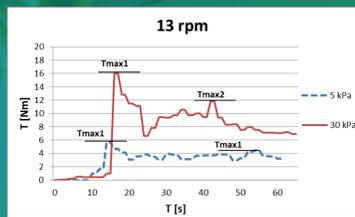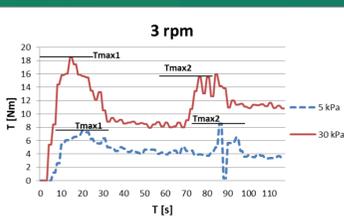
Typical experimental curves obtainef for forest woodchips
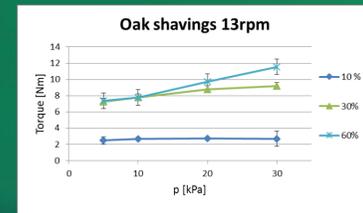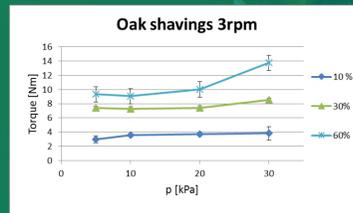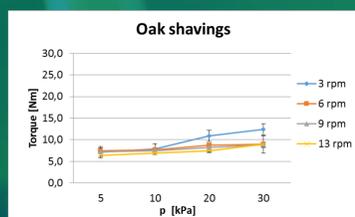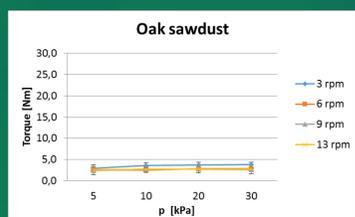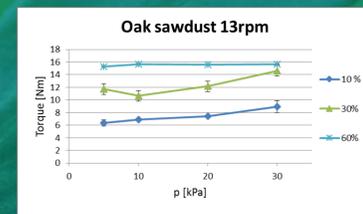
The influence of compaction pressure and rotation speed

The influence of moisture content

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