

# INNOVATIVE CENTRIFUGAL SCREENER FOR BULK MATERIALS

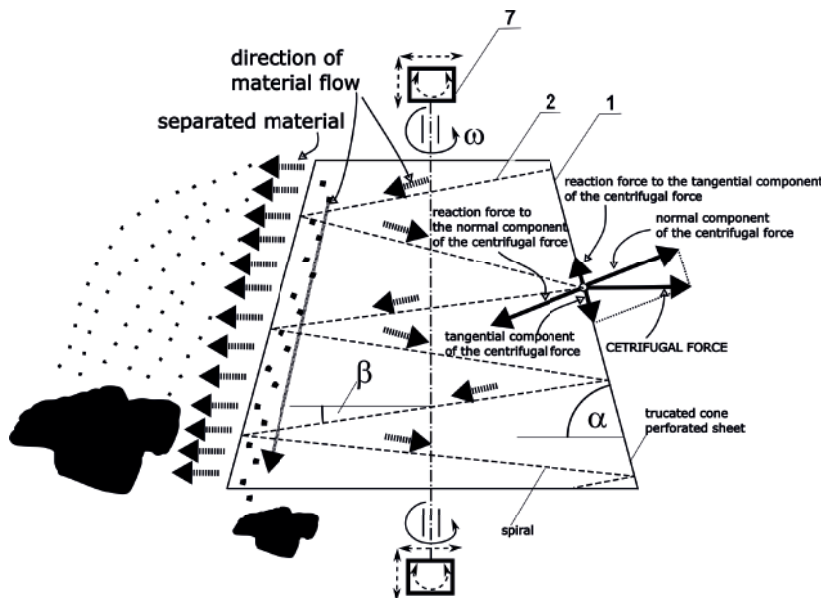
The offer is an invention for the separation and screening of bulk materials. The invention has been submitted for patent protection under the PCT procedure - application number PCT/PL2023/050070. The invention is jointly owned by the Wroclaw University of Science and Technology (WUST) and Four Point Sp. z o. o.

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## TECHNICAL DETAILS

The main subject of the invention is:

- A) a centrifugal separator rotor intended for screening bulk materials, granulates of various densities and gradations, such as minerals, sand, grains, capsules, pellets, regolith, etc.,
- B) a method for screening bulk materials (selection of parameters).

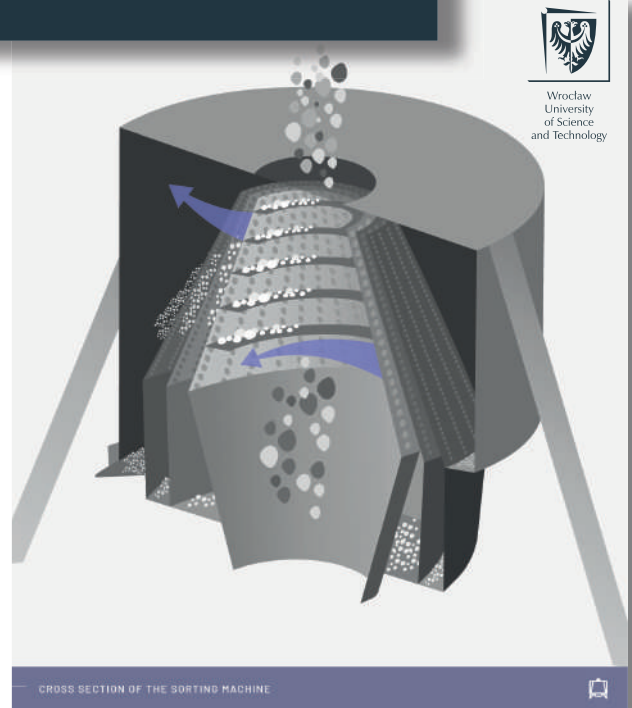


In Fig. 1. shows a schematic of the invention: (1) a perforated rotor shell in the shape of a truncated cone, (2) a spiral raceway forcing the spiral movement of the screened material, (3) an electric motor driving the separator.

The material is sieved on a vibrating rotor. The screened material moves along a spiral path (which increases screening efficiency and quality). Screening checks are obtained, among others: by changing the angle of inclination of the raceway ( $\beta$ ) and the angle of inclination of the conical side of the rotor ( $\alpha$ ).

The invention is in the concept phase. The 3D structural design was made and the operation of the invention was modeled. Work is currently underway to verify it for screening lunar regolith.

IP STATUS	COMMERCIALISATION FORM	LEVEL OF IMPLEMENTATION READINESS
<input checked="" type="checkbox"/> Patent application <input type="checkbox"/> Patent <input checked="" type="checkbox"/> Know-how <input type="checkbox"/> Other	<input checked="" type="checkbox"/> Sale <input checked="" type="checkbox"/> Implementation contract <input checked="" type="checkbox"/> Granting a license <input type="checkbox"/> Spin off <input checked="" type="checkbox"/> Other contract	<input checked="" type="checkbox"/> A concept and a theoretical model <input type="checkbox"/> An experimental validation of the concept <input type="checkbox"/> Initial technology / demonstrator <input type="checkbox"/> Tests in the laboratory conditions <input type="checkbox"/> Tests in real conditions <input type="checkbox"/> Final technology / prototype <input type="checkbox"/> A technology verified in the operational conditions



## APPLICATIONS/MARKETS

The solution is intended for use in the chemical, food, agricultural, mining and rock processing industries - as a screening machine.

Moreover, one of the potential applications of the invention is the space industry - as a regolith sieve.

## INNOVATION

The invention enables:

- screening/separation without the need to use transfer media, e.g. water, air, gravity. It should be emphasized that raw material deposits are getting worse and worse, and are even running out. That enables the application in extraterrestrial and water shortage areas.
- control of the material flow speed along the rotation axis;
- sieving in the rotor, which enables a spiral movement of the material being screened, which consequently significantly increases the screening efficiency - the grains remain in contact with the sieve longer (as opposed to the conventions of centrifugal separators);
- controlling the screening speed;
- control of the movement of the screened material in all three directions.