



**GRANUTOOLS IMPROVES POWDER UNDERSTANDING BY DELIVERING LEADING EDGE PHYSICAL CHARACTERIZATION TOOLS.**

## PHYSICAL INSIGHTS

Combining decades of experience in scientific instrumentation with fundamental research on powders characterization, our tools are designed for accuracy, repeatability and operator independence with strict initialization protocols and high level of automation.

Therefore, the measurables lead to the physical understanding of powder mechanisms.

**Our tools have been developed to help you to answer the following questions:**

- ? What are the flow properties of your products? From nanostructured powders to granular materials.
- ? How will your powders work after processes, pre- and post-treatments? Like exposure to moisture or heat, effect of storage and mixing.
- ? How to optimize your formulation regarding the flowability? Considering the grain size distribution, chemical products, fill, and blend.
- ? Are your manufacturing processes under control? Are they affected by the quality of the precursors, raw products or process conditions?
- ? Are the flow properties of your granular materials, powders and nanostructured powders fluctuating over time? Since they are depending on storage, handling conditions, temperature, moisture or electrostatics.

## WORKFLOWS

We follow a general principle for powder flow measurement:

“The stress state and the flow field of the powder should be comparable in the measurement cell and in the process.”

Our instruments mimic processes at a different scale.

The complementary instruments are then combined into workflows to reproduce each step of the processes we want to characterize.

GRANUFLOW™



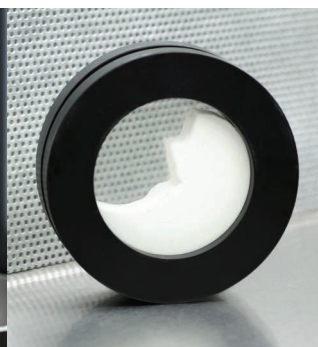
GRANUPACK™



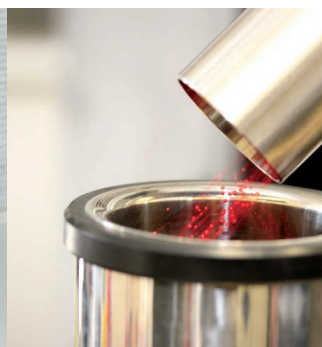
GRANUHEAP™



GRANUDRUM™

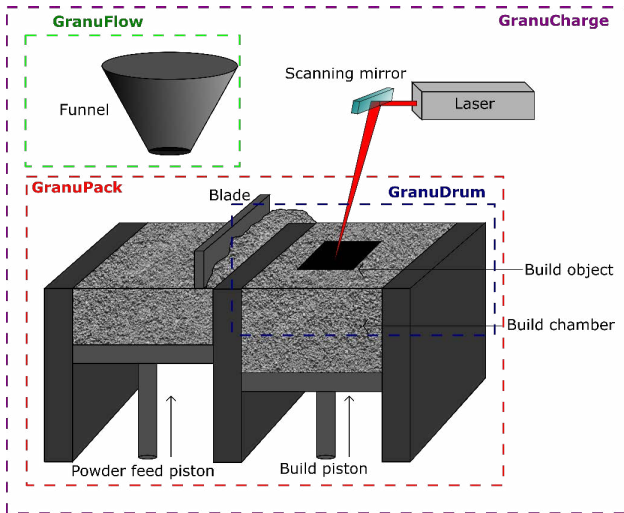


GRANUCHARGE™

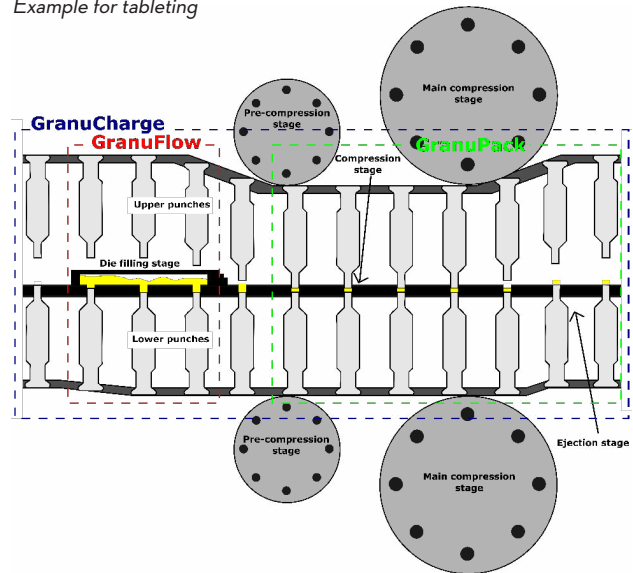


**ALL WE DO IS POWDER FLOW CHARACTERIZATION**

Example for additive manufacturing



Example for tableting



A similar approach can be used for many industrial processes. Please contact us to discuss your characterization requirements.

## SIMULATIONS

The combination of simple geometries and measurement precision make our instruments great candidates to calibrate numerical models with physical measurables. Particularly, we provide values for cohesion, friction coefficients and electrostatics.

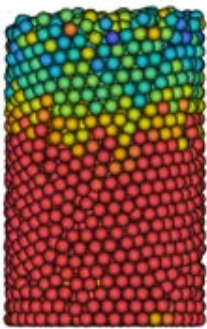


Figure 1

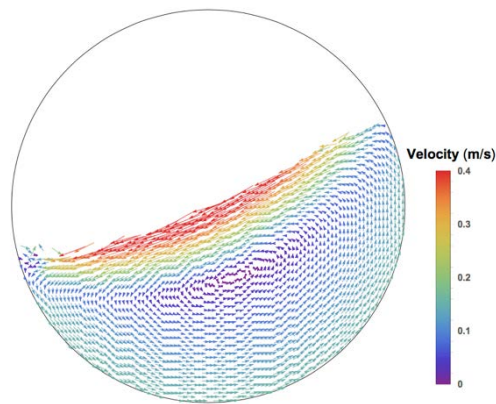


Figure 2

Figure 1: Packing simulation using GranuPack – courtesy of DCS computing.

Figure 2: GranuDrum simulation - courtesy of the Liège University.

## CUSTOMERS

GranuTools is a key supplier of technological leaders among the most demanding industries from Pharma to Aerospace. They all share stringent quality and innovation requirements. We offer very short turnaround for new products both software releases and hardware solutions compatible with the installed base.

GRANUTOOLS sprl

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