

EmPOW(D)ER your KNOWLEDGE

A new way of optimizing processes
in the field of powders technology

Academic partners:



UNIVERSITÉ
DE LORRAINE



UNIVERSITÉ DU
LUXEMBOURG



UNIVERSITÄT
DES
SAARLANDES



LIÈGE
université



TECHNISCHE UNIVERSITÄT
KAISERSLAUTERN

Industrial partners:

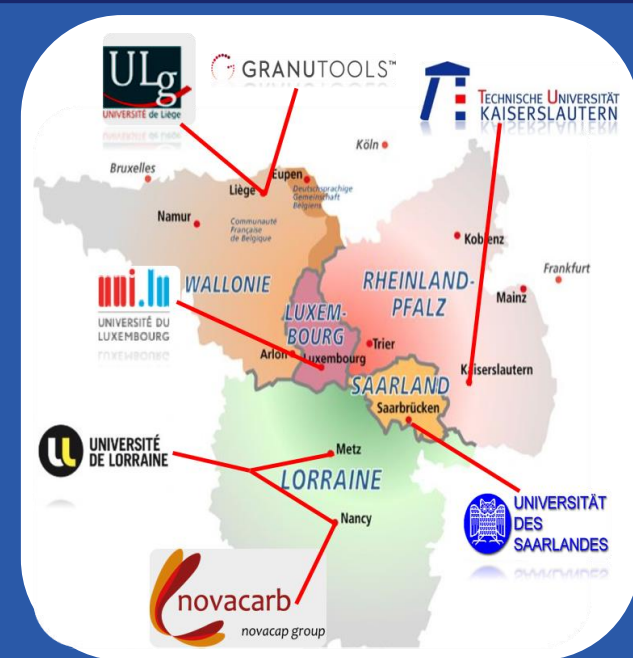


POWDERREG is based on a rich combination of cross-disciplinary scientific and technological skills within the several universities of the Greater Region (Lorraine, Saarland, Liège, Luxembourg and Kaiserslautern) and is joining forces with industrial partners (NovaCarb, Granutools) to create a new sector of excellence which will ensure quality in fundamental and applied research and innovations.

PowderReg proposes its skills and technical resources to the companies and industrials of the Greater Region to develop new ways of optimizing processes in the field of powder technology.

Financial support:

This project is funded by the European program Interreg VA within the priority axis 4 "Strengthen the competitiveness and the attractiveness of the Grande Région / Großregion.



Please feel free to contact us to obtain further information on the project.

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Website:

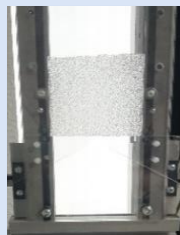
www.powderreg.com

What is PowderReg?

PowderReg is a collaborative research project aimed at understanding and mastering the flowability of powders during their **supply, transport, processing and storage**. This project will help to boost the competitiveness and attractiveness of the Greater Region. It is part of a plan to optimize processes applicable to industrially relevant powders within the highly developed sectors of **agrifood, chemicals, pharmaceuticals, construction and cosmetics**.



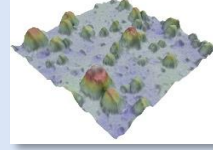
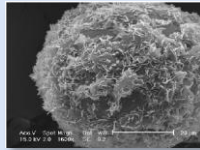
These sectors are continually looking for the latest technological advances made through fundamental and applied research in order to increase their ability to innovate in the production and processing of high-added value products. In this context, the main objective of PowderReg is to establish an experimental platform (a demonstrator) and develop digital tools to be used by universities and industries of the Greater Region.



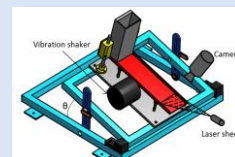
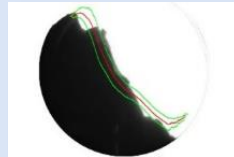
An integrated approach: from formulation to processing.

The PowderReg project will provide tools and skills to face the various contexts and situations relating to the **supply, transport and manufacturing** of powder formulations having various industrial relevance.

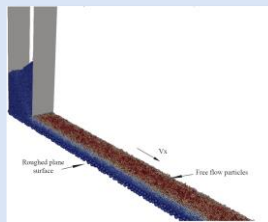
- **Powder formulation:** morphology, mechanical and physico-chemical properties, rheology.



- **Transport, processing and supply:** influence of air humidity, temperature and mechanical vibrations on powder rheology.



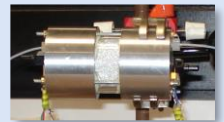
- **Numerical simulation:** prediction of powder flow behavior in various industrial configurations.



- **Training:** technical and scientific trainings for engineers, technicians, students,...

Main experimental and numerical facilities.

- **Powder characteristics:** bulk density, texture and morphology analyzers, light scattering, particles size distribution, scanning electron microscopy, electric charge,...
- **Powder formulation:** wet granulation (fluidized bed and high shear granulation), coatings, cold spraying,...
- **Powder mechanics:** FT4 rheometers, ring shear cell, atomic force microscopy, nano-indentation, vibrational rheometry, tube rheometer,...
- **Powder process:** conveyor, vibrated inclined plane, hopper, direct and vibrated compactors, rotating drum, etc.



- **Fluid flow:** Computational Fluid Dynamics, Lattice-Boltzmann method, Immersed boundaries/level-set methods.
- **Multiphase flow:** CFD-DEM coupling, LBM-DEM coupling.
- **Particles and bulk solids:** Discrete Element Method, Finite Element Method, Contact Mechanics.

