

## Looking deeply into the fabric of insulation

The Danish stone wool insulation manufacturer, the ROCKWOOL Group, is always looking for new ways of understanding the 3D structure of its products. In fact, microstructure plays a determinant role for stone wool's insulation and mechanical properties, hereby affecting how it responds to different conditions of use and external factors.

A cooperation with the Imaging Industry Portal at DTU revealed the advantage of X-ray CT to study the fiber structure of insulation materials and paved the way for better design methods based on 3D-imaging.



### ROCKWOOL®

ROCKWOOL is the world's leading manufacturer of stone wool insulation. The company produces and supplies a full range of smart and sustainable insulation products for the construction industry based on innovative stone wool technology.

[www.rockwool.com](http://www.rockwool.com)

### Challenge

ROCKWOOL's insulation materials are made of a complex web of stone fibers, whose size, length and orientation are decisive for the materials' insulation value and mechanical properties.

For this reason it is important for the ROCKWOOL Group to understand how the fiber structure recovers from the compression it is submitted to when packed into rolls and moved.

### Collaboration

The analysis of fiber structures on standard X-ray equipment does not always give satisfying results. But the collaboration with the Imaging industry Portal delivered very good results thanks to a unique set of data acquired on a synchrotron in Switzerland (PSI) and an advanced algorithm especially developed for the project.

### Results

The 3D-pictures obtained through the collaboration allowed the ROCKWOOL group for the first time to categorize fibers according to size and orientation in a very precise way.



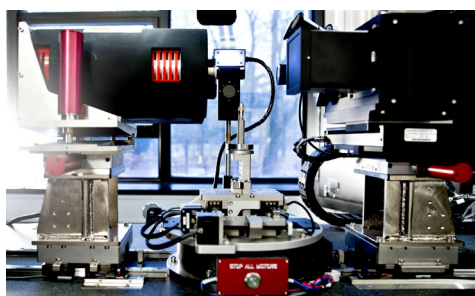
3D-rendering of the fiber structure of stone wool



Fibers categorized according to orientation

### Perspectives

The use of X-ray CT opened up for new and in-depth knowledge, which the ROCKWOOL Group could not have acquired with other methods. The collaboration with the Imaging Industry Portal is continuing and may lead to new material design methods based on the results.



### About the Imaging Industry Portal at DTU

The Imaging Industry Portal assists companies in using and implementing 3D Imaging in research, development and production. The portal offers research-based 3D Imaging service and provides companies with the latest equipment and the most advanced knowledge within 3D Imaging and data analysis.

The Imaging Industry Portal works as a gateway to ESS and MAX IV as well as other large scale facilities.

[www.imaging.dtu.dk/english/Industry-Portal](http://www.imaging.dtu.dk/english/Industry-Portal)