

MINUTES

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Prof. Massimo Poletto
Dept of Industrial Engineering
University of Salerno
Via Ponte don Melillo
Fisciano (SA) - ITALY
Tel.: +39 089 964 132
Fax: +39 089 964 057
Mob: +39 320 421 3289
mpoletto@unisa.it

Annual Meeting of the EFCE Working Party “Mechanics of Particulate Solids” 25.09.2011 in Berlin, Germany.

Abstract

The Annual meeting of the EFCE Working Party Mechanics of Particulate Solids (WPMPs) took place on September 25, 2011 in Berlin, Germany. The Meeting was held in conjunction with the 8th European Conference of Chemical Engineering 2011. The WPMPs ran a Technical and a Business session. Dr Harald Wilms, Zeppelin Silos & Systems GmbH introduced the meeting.

Mr Harald Heinrici, of Schwedes and Schulze Schuettguttechnik – Germany, member of the working party gave a presentation his present activity and those of his company.

Advances were presented on the current WP tasks as follows:

- 1) Validation of DEM Simulation: Prof. Poletto, with the help of slides prepared and sent by members active in the group, reported on the advancements of the PARDEM project (www.pardem.eu), funded for ~3.3 million EUR in the EU 7th Research Framework Programme, Marie Curie Initial Training Network, for the period 2009-2013. 13 PhD and 2 Post Doc positions are being trained. Results were reported on: the relationship between the microscopic and macroscopic stiffness, high shear mixing experiments, biaxial compression tests, the comparison between model and experiment of uniaxial compression tests, the modelling of sedimentation experiments, Edem Fluent simulation. Four Network Events were delivered so far other two are programmed for the coming year. Training and research milestones and deliverables are fully accomplished to date.
- 2) K/λ Testing: Prof Massimo Poletto presented the results of an experimental campaign carried out with the tester developed at the University of Salerno. The final objective of the experimental campaign was intended to find out a reproducible procedure which might be able to provide representative measures of the ratio of vertical to horizontal stresses. Differently from what reported last year, the experimental results reported this year regard the use of the instrument with cohesive compressible powders which require a two stage filling procedure.
- 3) Flow properties of biomasses: Prof. Álvaro Ramírez-Gómez presented activity carried by WP members in the last year. Dr Diego Barletta joined to the Renewable Heating & Cooling European Technology Platform (RHC) and considered important to be part of this bioenergy movement at an European level so he encouraged other WP members to join also. Prof Álvaro Ramírez-Gómez will present his candidacy to the steering committee. Activity was carried out in taking part to conferences in order to increase visibility of the group issues. The past conferences attended were the European Expert Forum on Biorefineries, in April 2011 in Budapest and the Annual Conference of the European Technology Platform on RHC, May 2011 in Budapest. A demonstration project Bio4Flow involving four partners was funded by Processum Biorefinery Initiative. The partners

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involved in Bio4Flow are the Swedish University of Agricultural Sciences (group leader), the University of Greenwich - Wolfson Centre for Bulk Solids Handling Technology, the University of Salerno with the Department of Industrial Engineering and the Technical University of Madrid with the BIPREE Research Group. The scientific purpose of the project is to reduce production down time in the biorefinery initial process stages and improve health and safety at work. BIO4FLOW was chosen as a “comet” project in the Star-COLIBRI project (Strategic Research Targets for 2020 – Collaboration Initiative on Biorefineries). As a “comet” project Bio4Flow was associated to the “star” project “Bio4Energy” that is one of the Swedish Government's strategic research efforts with a focus on bioenergy and the biorefining of lignocellulose.

- 4) An assessment on the Economic Powder Flowability Tester. Prof Massimo Poletto presented the results of a work commissioned by Dr Renee Boerefijn of Purac on the Economic Powder Flowability Tester (PFT) developed in cooperation by Wolfson Center of the University of Greenwich and Brookfield. The scope of the work was an assessment on the Brookfield Powder Flow Tester and in particular 1) to evaluate the ease of use for non specialized operators, 2) to compare the internal failure properties measured with the PFT and those measured with the Schulze Ring Shear Tester and 3) to compare the Wall friction properties measured with the PFT and those measured with the Jenike Shear Tester results.
- 5) Wall friction project. Dr Eddie McGee of Ajax presented on the results of the work carried out by the WP within the project aiming at assessing on the reproducibility of the wall friction measurements. In the last year the labs involved in the project carried out the wall friction measurements with similar specimens of silo walls and of a polymer free flowing powder, using their own instrumentation and following a previously established testing procedure. The WP decided to continue the work repeating the tests with a cohesive powder.

Dr Harald Wilms volunteered to assume the role of “press officers” for the WP Mechanics of particulate solids.

The next annual meeting will be held on Sunday September 9, 2012 in Friedrichshafen/Germany in conjunction with the 7th International Conference for Conveying and Handling of Particulate Solids - CHoPS 2012, 10-13 September 2012, www.chops2012.org.