

Minutes of the third project team meeting:

Participants:

Bayer MaterialScience AG:

Homann, Dr. Malte; Reichert, Dr. Peter

Centro Sviluppo Materiali S.p.A.:

Bufalini, Andrea

Salzgitter Mannesmann Forschung GmbH:

Flügge, Dr. Wilko; Hilgert, Dr. Oliver; Kaack, Dr. Michael; Orth, Dr. Thomas

Salzgitter Mannesmann Line Pipe GmbH:

Brauer, Dr. Holger

Sika Denmark A/S:

Andersen, Kenneth; Rasmussen, Lou V.

Sika Services AG:

Burchardt, Dr. Bernd

Stepanski Engineering:

Stepanski, Dr. Horst

LWF - University of Paderborn, coordinator:

Boeddeker, Tobias; Schmale, Hans Christian

Agenda:

TOP 1: Welcome and acceptance of the minutes of the last meeting

TOP 2: Research results of project partners

TOP 3: Tour of Salzgitter Mannesmann Line Pipe

TOP 4: Next steps

TOP 5: Coordination

TOP 6: Miscellaneous & end of the meeting

TOP 1: Welcome and acceptance of the minutes of the last meeting

Mr. Boeddeker welcomes the participants and introduces the agenda. The project partners from Bohlen & Doyen Sp. Z o. o. and the AGFW e.V. are excused absent.

The minutes of the meeting held on 24th January 2008 in Frankfurt were accepted by all partners without reservations.

Mr. Boeddeker declares that the optimisation of the joint design could not be performed without experiments. Therefore, this milestone is not reached, yet. The project team states, that the optimisation of the joint geometry will be done attended by strength tests of adhesively bonded pipes.

TOP 2: Research results of the project partners

Mr. Boeddeker presents the research results of the LWF. Fundamental adhesive tests using differential scanning calorimetry and dynamical mechanical analyses were performed using the adhesive PU156, which is new in the project. Dr. Stepanski and Dr. Burchardt declare that the DSC analyses should not be used to predict the mechanical behaviour of the adhesives and that PU-adhesives do not have a glass transition temperature. It was also stated that for calculation purposes the stiffness of the adhesives at higher temperatures should be used. To determine the maximum shear-stresses and maximum shear-strains of the adhesives, tests using a thick-tensile-specimen were performed. The project team decides that these tests should be finalised when the specially developed adhesive is available. Mr. Boeddeker presents the results of tests using tensile specimens according to DIN EN ISO 527. It was stated that for further calculation purposes the stresses and strains only in the elastic region of the adhesives should be used.

After presenting fundamental adhesives tests, Mr. Boeddeker explains a concept for pipe joining using adhesive bonding and shows the transfer of the concept into reality using small scaled pipes. Mr. Boeddeker proceeds in presenting the results of qualitative FE-simulations of the stress progress in the adhesive layer using different joint geometries.

Mr. Kaack presents his results in choosing a non destructive test system and the boundaries of this application. He points out that characteristic defects and their size have to be identified. It has to be evaluated which influence these defects have on the strength of the pipes. In the following, concerted detection of these defects can be started.

Mr. Hilgert presents the results of the preliminary strength tests performed with adhesively bonded pipes. It could be determined that an incomplete adhesive gap filling has great influences on the strength of adhesively bonded pipes.

Mr. Andersen presents different modifications of the adhesives PU156 to increase elongation and tensile strength. He shows the possibilities in modifying PU-adhesives.

Then, Mr. Bufalini describes the possibilities Centro Sviluppo Materiali S.p.A. has to perform full scale tests.

TOP 3: Tour of Salzgitter Mannesmann Line Pipe

Mr. Brauer shows the pipe production and coating process at the Salzgitter Mannesmann Line Pipe GmbH site in Hamm.

TOP 4: Next steps

Sika Denmark A/S will perform tests to correlate the Shore-hardness with the grade of curing.

Salzgitter Mannesmann Forschung GmbH and LWF will calculate the stresses in the adhesive layer in dependence of the loads occurring during pipe laying and operation. These loads are to be related to the strength of the proposed adhesives. After that, the pipe geometry or the adhesive have to be modified to resist the expected loads.

Salzgitter Mannesmann Forschung GmbH and Salzgitter Mannesmann Line Pipe GmbH will check the possibilities to produce sleeves with original diameters for real scale pipe joining.

Tests to check the strength of coatings, used as a pre-treatment, will be performed by Sika Denmark A/S.

The needed requirements for aging bonded pipes will be discussed by LWF and AGFW e.V.

Full scale tests to be performed will be discussed by Salzgitter Mannesmann Forschung GmbH, Centro Sviluppo Materiali S.p.A. and LWF.

LWF will perform further tests to optimise the joint geometry and the application method for pipe bonding.

Strength tests of adhesively bonded pipes under different loading conditions will be performed by Salzgitter Mannesmann Forschung GmbH and LWF. Salzgitter Mannesmann Forschung GmbH and LWF will perform tests, determining the influences of irregularities during the bonding process.

TOP 5: Coordination

Because of an inability to pay of Bohlen & Doyen Sp. Z o. o., Bohlen & Doyen Bauunternehmung GmbH from Germany wants to take over the part of its not longer existent subsidiary. The project team appreciates this solution and votes for the acceptance of Bohlen & Doyen Bauunternehmung GmbH as a member of the project team consentaneous.

Bayer MaterialScience AG is interested in working on the JoinTec project. The project team stated that cooperation with Bayer MaterialScience AG would be appreciated.

For preparing the next six-monthly report, Mr. Boeddeker requests the elaborated report modules, concerning the research results of the project partners until the 31st July 2008.

The next project team meeting will take place in Rome at Centro Sviluppo Materiali S.p.A. on the 2nd and 3rd of December 2008.

TOP 6: Miscellaneous & end of the meeting

Mr. Boeddeker thanks all participants on the meeting for their constructive work and the discussions.