

### Foreword

**Lipka Uwe**

ECP Gesellschaft für GFK-Systemlösungen mbH



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**It is a real pleasure for me to have the opportunity, as the representative of ECP, to write a few words to the readers of the EASIE Newsletter. ECP is one of the industrial partners of the EASIE project. I am ECP's Project Manager responsible for steel sandwich panels and am also responsible for the coordination of our contributions to EASIE.**

We are a medium-sized company manufacturing sandwich panels and are taking part in such a wide-ranging international research project for the first time. This is no coincidence. The administrative preparation and implementation of a project of this size requires considerable skills and know-how. Unfortunately, SMEs are often short of these attributes. Despite this very real difficulty, and given the fact that such businesses are, technologically, frequently very innovative, their participation in such research projects is highly desirable. At this point I would like to express our thanks particularly to the project partners who initiated and prepared the project and who are now responsible for its administration.

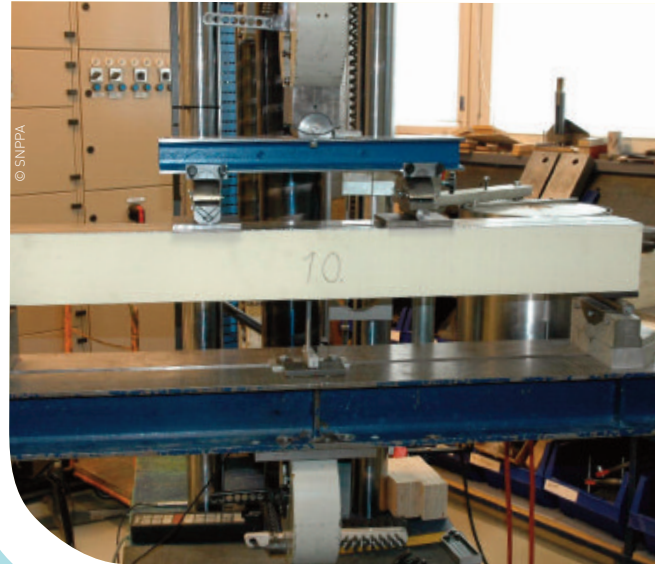
In spite of the experience gained in the manufacture and use of sandwich panels which now extends over very many years, their use in the construction industry is subject to a whole variety of restrictions. Standards and technical regulations still act as restraints to the technological and economic possibilities which these products offer. At the same time both designers and fabricators are unsure about the properties and uses of these products. As a manufacturer of sandwich panels with glass fibre reinforced surfaces which are particularly advantageous for selected uses, we are confronted with these problems on a daily basis. The use of sandwich panels above and beyond the scope of existing standards particularly demonstrates the vast range of possibilities inherent in these products. We are therefore very happy that EASIE is approaching the subject of sandwich panel construction in its full complexity. The number of areas where work is ongoing is ample evidence of this range.

In the meantime the project has been running for almost a year. Time enough to gather a multi-faceted range of impressions and experience. This was clearly a successful start. At the present time research work is under way in all WPs but it is still too early to present findings. ECP is deeply involved in WP 3. The first trials have shown here that sandwich panels possess enormous potential with regard to their possible contribution to the stiffening of a building and that, within certain limits, they can represent the complete load-bearing structure of a building. This last property will be demonstrated by means of a long-term trial on a demonstration structure. However, there are still some difficulties to be resolved in the detailing. But this is what makes all aspects of the work so fascinating.

Whenever we are working on matters of detail it is always important to keep the overall objective in mind - which is to present results at the end of the work which are of direct benefit for the further development and application of sandwich panels in all their aspects. We consider that this is an important objective for the project. EASIE is configured for the purpose of cooperation between its industrial partners and the combined scientific skills of the research institutions involved. Consequently, all the required conditions for this are now in place.

**The next six-monthly meeting in Helsinki in November 2009 gives us once again the opportunity for direct, face-to-face contact with all project partners. I look forward to the meeting and wish all concerned success in their work for the project.**

Lipka Uwe



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**WP<sub>1</sub>**

Improvement of thermal and structural behaviour in openings and joints

**WP<sub>2</sub>**

End user Focused Design Strategy

**WP<sub>3</sub>**

Use of sandwich technology to optimise the global resistance of buildings

**WP<sub>4</sub>**

Retrofitting, durability and maintenance

**WP<sub>5</sub>**

Holistic, elearning based education on sandwich construction

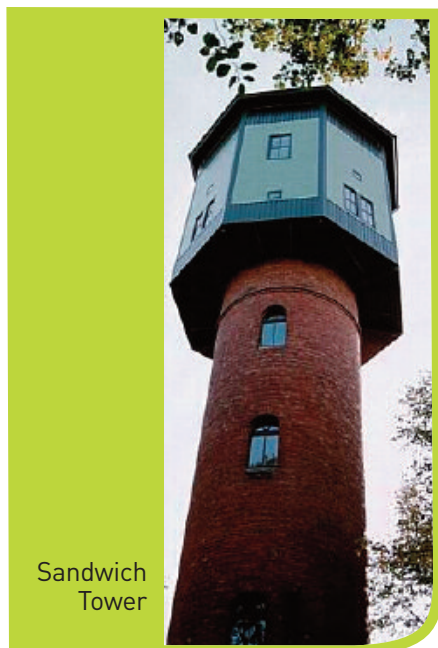
**WP<sub>6</sub>**

Training, skill development and dissemination

**WP<sub>7</sub>**

Management and Governance

# WP4 Retrofitting, Durability and Maintenance of sandwich panels by Paavo Hassinen



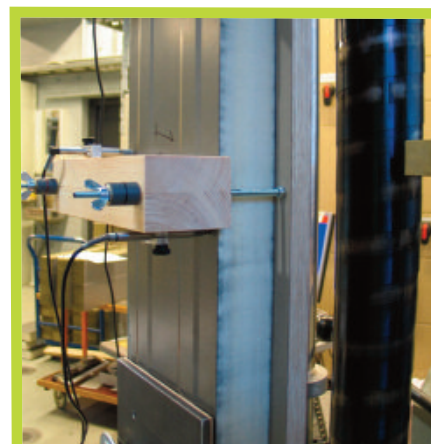
Sandwich Tower

**Durability is a common subject of the research work today due to the requirements to the length of the service life of building structures in practice. Sandwich panels are typically mounted to build up the external cladding and roofing of a building and thus, are exposed to hard mechanical and environmental loads having different intensities in different locations. Sandwich panels may reach the limits of their service life because of the impaired or outdated architectural appearance, of defects in the faces and core or because of the improper technical properties to the existing load cases.**

Investigations of the Work package 4 have the focus in the phases which become important after years in service under the exposure to natural ageing processes. Wrinkling and shear strength of the faces and the core are the most essential design parameters of the sandwich panels and they cause the most of the failure modes in practice. A part of the research work studies the remaining wrinkling and shear strength of the specimens and panels exposed to artificial ageing in laboratory conditions. The results will be compared to the resistances of panels having been

in real service in buildings and further, comparisons will be made to the results given by the methods of EN 14509 in order to identify needs of the developments. This part of the research work has the goal to determinate the length of the service life of the sandwich panels. Because of the different ageing processes in the cores made of plastic foam and mineral wool materials, questions to be answered in WP4 are spreaded rather wide.

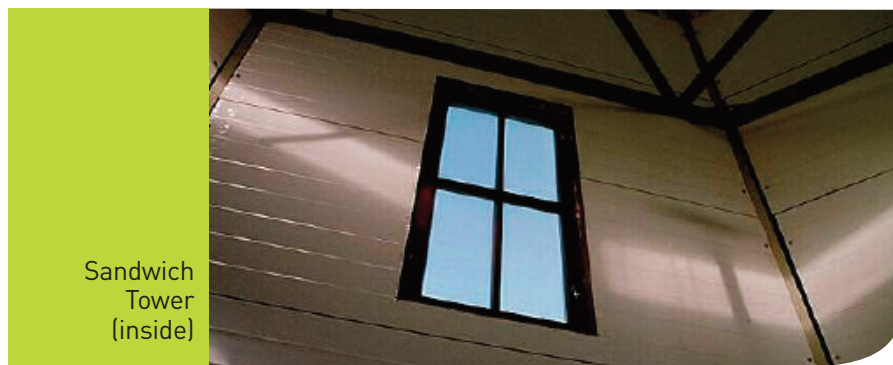
The second part of the work covers the subjects to improve the appearance as well as the technical properties of the existing wall and roof panels. The second part may be described by the term "new to old" which is the concept launched by RBM Europe BV, the leader of the WP4. Investigations are looking for the methods, tools and technique to return the mechanical resistance of the panels, which have defects or blistering failures in the skins and core. In this part, properties and effects of the additional coverings fixed to the external face of the sandwich panels are studied, also. Additional covering typically consists of trapezoidal sheets or of metal plates fixed directly or through purlin profiles to the skin. Important questions are the new loads caused by the additional covering and the distribution of the loads and temperatures through the structure. This part may call large attention in practice, because of the needs of the technical guidelines to the mounting of the coverings to the sandwich panel.



Wrinkling test

All the four research institutes, i.e., the universities in Darmstadt, Espoo, Karlsruhe and Mainz will give their expertise in the studies of the technical problems in WP4. Most of the industrial and association partners of EASIE give support by delivering specimens, collecting important background information and making technical development work in practice. WP4 hopes to be able at the end of the project to provide new information to authors of the new revisions of the European standards to sandwich panels as well as new solid technical information to the retrofitting work in practice.

WP4



Sandwich Tower (inside)

## Interview

**Eric Rustemeijer  
& Arjen Scheffer**  
RBM Europe BV,  
Netherlands



### Presentation of RBM Europe

RBM Europe is acting as part of the RBM Group and is active and specialised in cleaning, maintenance and repair of coated, aluminum and galvanized steel roofing and wall cladding panels and profiles.

For the purpose the company offers complete indoor and outdoor services including inspection and damage assessment, coating and repair of metal sandwich panels, aluminum frames and profiles, and refurbishment/mounting of roof and wall cladding.

The company is active across the West European market, dealing with various customer groups.

Eric Rustemeijer is acting as owner, managing director of the company, with overall responsibilities for management and commercial, technical and financial matters.

Arjen Scheffer is currently acting as senior management consultant providing strategic business development services to RBM Europe, amongst others related to the EASIE project.

### What's RBM's interest in the EASIE project ?

During the last years RBM's activities have developed more and more from repairing and maintenance operations into co-developing and innovation of new technical systems, this in cooperation with sandwich panel manufacturers and end users.

RBM's interest in the EASIE project is divers. First the project gives us a chance to cooperate with the best scientists and specialists in Europe to improve the existing and to be able to innovate at all; second EASIE makes it possible to upgrade existing activities and to raise the image of the repairing and retrofitting sector to a higher level.

Furthermore customers are getting more critical and requirements can only be met with modern professional standards.

The market is not only interested just in esthetical solutions anymore; in addition customers are looking for improvement of the structural capacities of the product not only from the origin of manufacturing, but also during the service lifecycle and after repairing. EASIE will give us a better platform to realize professional answers in a changing and more critical environment.

### How will RBM contribute to the success of the project ?

RBM as a partner will contribute to the practical aspects of the project in general, but especially with respect to Work Package 4 related to Retrofitting, durability and maintenance.

Sandwich panels used in walls and roofs of buildings are subject to defects and faults during the product service life. Some defects such as blisters find their origin already during the manufac-

turing process. To evaluate the safety of a panel, it is important to know more about the influence of the defects on the resistance of the panels, and further to study possible methods to re-establish the original characteristics and strengths of the panels.

In the EASIE project resistance of sandwich panels with natural and artificial defects will be studied. Artificial defects will be made in a laboratory environment, simulating smooth ball-shaped bumps and sharp pyramid-shaped crashes. According to the test results we will support in the process of defining guidelines on the matter, if any available.

In the WP 4 methods and tools will be developed and used to prepare the panels subjected to various defects.

RBM a.o. will take care of preparation of full-scale tests with wall panels in initial conditions, with artificial and natural defects and finally with panels having been prepared.

### New to old concept

According to practical experiences the mechanical properties and the resistance of the sandwich panels may be based on or can be re-established by "new to old" solutions. For the purpose WP 4 partners will support in practical tests in which the old structures will be covered by a special coating and/or partially or completely replaced by a new structure. The new structure will be a partial load bearing element or may take care of the load bearing functions of the structure completely.

RBM will support in the selection process of eventual solutions and the analysis in practice.

### Hopes and expectations

Finally we do hope cooperation between all parties involved in EASIE will result in improved products, practical solutions and improvements for the sector in general, and more specific for the market and the customers. That is what we are working for.



## Event

# Helsinki, November 2009, the European Center of sandwich panel and profiles sheets manufacturers

Helsinki next month will welcome 2 main events in the life of sandwich panel and profiled sheet manufacturers:

EASIE Management Committee n°3, which is meant to check the good advancement of the project, the main results and the program of the next six months. This meeting is only opened to the project partners. The outcome of this meeting will be presented in the next e-letter in January.

The EPPF, EPAQ and Panama International congress will follow with a wide range of presentations on sandwich and profile technology: sustainability, seismic performance, new sandwich panel technologies, design and optimization of products. A presentation on the first results of EASIE work packages will also be given. A special program will also be given on top management topics training, in order to help SME's to push up their management teams.

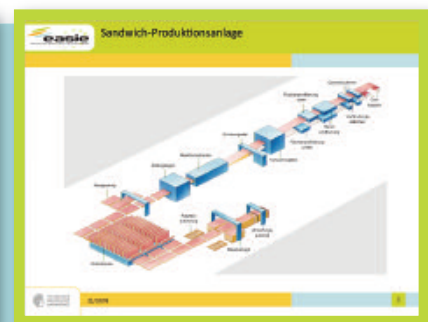
This annual event usually gathers more than 100 hundred participants: join them and take this only opportunity to meet partners, suppliers or clients all at once!

You can register directly on [www.epaq.eu](http://www.epaq.eu) or [www.panama-international.com](http://www.panama-international.com)

Thursday, 12 <sup>th</sup> of November	
10.00-12.30	EPAQ General Assembly   Room "Aurora Hall"
12.30-13.30	Buffet "Finlandia Restaurant and Foyer Piazza"
	Congress   Room "Terrace Hall"
13.30-14.15	Environmental issues for steel profiles and sandwich panels Chris Hamans (Chairman of CEPMC Environment Working Group)
14.15-15.00	Seismic issues - The joint project of the Tevrik Seno Arda High school building Prof. Dr Nesrin Yardimci (President of ECCS and TUJCSA)
15.00-15.30	Coffee Break
15.30-16.15	Seismic Performance of Sheet Metal Deck Thomas Engleder (HILTI)
16.15-17.00	New Metallic Coatings - ZnMg Michael Lamprecht (ISOCAB France)
17.00-17.15	Coffee Break
17.15-19.15	Manager's Club Helping managers see their business more clearly worldwide
20.00	Cocktail and dinner
Friday, 13 <sup>th</sup> of November	
	Congress   Room "Terrace Hall"
09.00-09.45	Sustainable Building Alliance - Common metrics for key issues Bruno Mesureur (CSTB)
09.45-10.30	Optimization of Sandwich Panels Aneta Kurpiela (TU Darmstadt)
10.30-11.00	Coffee Break
11.00-11.45	Curved Panels Engelbert Ritsch, Prof. Dr. Klaus Bemer (Italpanelli)
11.45-12.30	Openings in Sandwich Panels - Interims Report from EASIE-Project Lars Haselius (LHH Consulting)
12.30	End of the congress
12.30-13.30	Buffet "Finlandia Restaurant and Foyer Piazza"
13.30-15.30	PANAMA Int. General Assembly   Room "Aurora Hall"
15.45-17.45	epf Planary Assembly   Room "Aino"
FINLANDIA HALL, Mannerheimintie 13 a, FI-00100 Helsinki, Finland Registrations: Registration fee: 195,00 Euro For registration and detailed congress information, please visit the websites: <a href="http://www.epaq.eu">www.epaq.eu</a> , <a href="http://www.epf.com">www.epf.com</a> , <a href="http://www.panama-international.com">www.panama-international.com</a>	

## EASIE first workshop in Turkey

The first workshop on the sandwich panel technology will take place in Istanbul on April 2010. It will be for the partners the opportunity to present the sandwich panel technology with the most updated datas and technics on the subject. A full programme is on preparation with the best European experts on the different fields. 10 of them will be in Istanbul to explain what sandwich panels are, how they can be used. Invitations will be sent by the beginning of 2010.



# Schedule

**November 11<sup>th</sup>**

**WP<sub>7</sub>**

Sixth monthly review meeting in Helsinki

**November 12<sup>th</sup> & 13<sup>th</sup>**

**WP<sub>7</sub>**

EPPF/EPAQ and PANAMA INTERNATIONAL  
annual congress in Helsinki

**November 19<sup>th</sup>**

**WP<sub>1</sub>**

in Darmstad

**April 22<sup>th</sup> 2010**

**WP<sub>1</sub>**

First EASIE workshop in Istanbul

For more information : [www.easie.eu](http://www.easie.eu)