

11 production sites: 1 Quality Management system

A unique first for DSM Composite Resins

Introducing a single Quality Management System across each of our eleven production sites has been a unique achievement in the composite resins sector. In the spirit of Total Quality Management (TQM), the new system is certified according to the International Standard ISO 9001:2000. Compliance with this standard is particularly important for 1st and 2nd tier suppliers to the automotive industry. Substantial investment and organisational

commitment has resulted in a single Quality Management system, founded on the shared best practices operated from each location.

'Our organizational structures now reflect our international position', said Dimitri de Vreeze, Business Director Structural Resins, 'which is especially important in our business as structural resins are very logistically demanding in terms of their production, storage and transportation complexities.'



Carbon Fiber Composites are now available for volume applications

Atlac based CF-SMC for semi structural and structural parts

Our new vinyl ester based carbon fibre SMC (CF-SMC) is ideal for non Class A, semi-structural and structural automotive parts.

The optimized material gives excellent mouldability, very low weight and high mechanical properties by combining Atlac XP 810 vinyl ester base resin with split heavy tow (48 k) carbon fibre reinforcement. The CF-SMC exhibits good flow properties and uniform distribution

of fibres, even with an inlay of 15% of the press form area. Closing speed and curing time are comparable to those of standard SMC. Moulded CF-SMC with 50 wt% carbon fibres has a specific weight of 1,5. Mechanical properties (see table on back page) and specific weight of the moulded CF-SMC parts are significantly better than those of the glass fibre reinforced equivalent.

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New Automotive Industry Newsletter

Welcome to the first issue of Global Solutions Automotive, the new customer newsletter from DSM Composite Resins, dedicated to the interests of compounders, moulders and automotive OEMs. It includes the latest information on new applications, products and industry news - supporting our marketing orientation by focusing on core segments.

DSM Composite Resins is Europe's largest producer of specialty SMC/BMC resins and low profile additives (over 30 products). We are active throughout the whole value chain, from co-developing new products with compounders, to tackling industry issues such as waste disposal and emission reduction.

Dimitri de Vreeze
Business Director, DSM Composite Resins, Structural Resins Europe

Some of the major programs in which the Competence Center Closed Moulds is actively working:

Technological leadership

DSM Composite Resins has a well-established leadership position in the key technologies required by the automotive sector (e.g. Class A) and we intend to build on this competitive advantage by continuing to innovate new solutions.

Quality and consistency improvement

To get a better understanding of factors that can lead to inconsistencies in the molding process, the Center has also developed analysis tools for predicting thickening behavior and for studying rheology in general.

Carbon Fibre SMC, weight reduction & high mechanical properties for structural parts

Weight optimization and cost optimization are, of course, essential requirements for the automotive industry. Several development programs are therefore focusing on low-weighting through design optimization and by developing SMC/BMC formulations based on vinyl ester and carbon fibre.

Emission reduction for compliance with automotive standards

An area of growing importance, especially for vehicles exported to the US, is in meeting the VOC emissions of finished vehicle parts now required under US legislation. The Competence Center Closed Moulds is therefore working together with supply chain partners to tackle these compliance issues.

For more information visit:

www.dsmcompositeresins.com



Project Leader team (Left to Right): Peter Hilzendegen, Erik Reuther, Dale Gerth, Andreas Horbach, Bert Handels

DSM Competence Center Closed Moulds: Partner to the Automotive supply chain

As one of the most important growth areas in the composites sector, it is essential for SMC/BMC to receive the highly focused development and application support that it deserves. This is why, as a global market leader in resins for SMC/BMC, we established the Competence Center for Closed Moulds. The Center in Ludwigshafen - strategically sited in the heart of the German auto industry - is staffed by a dedicated team; comprising academics, engineers, technicians and specialists in material science, organic chemistry and polymer chemistry.

State of the art facilities include equipment for resin development, laboratory synthesis, a pilot plant for batch production, and analysis and testing facilities for resin and also for SMC and BMC. For compound evaluation and testing, there are two SMC machines - including one for carbon fibre, a compression press, and equipment for sophisticated surface profile analysis. For advanced technical services the Center can also call upon the skills and special analysis capabilities of other facilities within the group such as DSM Research groups.

Egbert van Gorp, R&D Director DSM Composite Resins, summarised the main activities: "the majority of the development work carried out at the Competence Center is focused on the automotive and transportation segment. Our goal is to improve our position and to develop new opportunities - if possible via a resin or a resin system. By addressing the challenges in the chain we hope to 'grow the cake' by increasing acceptance and enlarging the market for UP resins within the automotive industry. We also work on customer specific projects, provide production support to improve quality, and work on innovative projects in cooperation with universities. As you can imagine there is never a dull moment!"



SMC line

OEMs endorse waste management concept

To meet the challenges of waste management, key suppliers, together with the GPRMC and other trade bodies, are introducing the European Composite Recycling Concept (ECRC). This will help to fund the high investment needed to generate new recycling, re-use and end-of-life solutions. The FRP value chain will contribute towards the development of a sustainable solution for end-of-life composite waste. In return for

their financial support, participating partners will be entitled to display a 'green label on their products.

DSM Composite Resins, as one of the principal initiators of the ECRC, is fully committed to making the programme a success - especially as it is totally in line with DSM's core commitment to sustainability in all of its products and activities.

This initiative is particularly relevant to the automotive industry where OEM reactions have been very positive:

"We are pleased to see the composites industry taking a lead in developing a recycling and waste management concept for end-of-life materials. All members in the automotive value chain should assume their role and contribute towards making this a reality."

Bruno Stark, Head of the Design for Environment division (DfE) of Mercedes Car Group at DaimlerChrysler

"The European Composite Recycling Concept is an excellent initiative and one that the automotive industry has long waited for. There are financing and recycling challenges to resolve before we see a clear model of how this concept will work in practice, but we are very positive about the prospect of an international industry approach to resolving this important issue"

Pierre Valersteinas, manager of Renault's Recycling Engineering Division

For more information: visit www.gprmc.be or contact Fons Harbers (fons.harbers@dsm.com)



The new Renault Grand Espace. Photo: Renault

Old disposal routes will disappear

New EU waste directives on landfill and incineration will put mounting pressure on traditional disposal routes. Landfill of composite waste will be forbidden by the end of 2004 by most EU Member states, and incineration will have limits imposed on the level of energy content. As a consequence, the FRP industry has to move away from traditional waste management practices as currently applied.

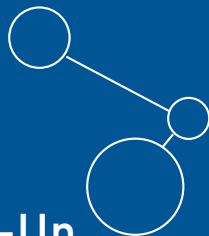
Landfill and incineration have always been the simplest and preferred disposal methods accounting for 98% of FRP waste: while alternative disposal routes such as reuse in cement and asphalt or mechanical recycling, account for the remain-

ing 2%. Although the feasibility of mechanical recycling on an industrial scale is proven, low utilization levels are currently making such ventures uneconomical. Therefore, an imbalance remains between the collectable waste and the potential end-markets for recyclate.

It is vital that integral concepts are developed to effectively reuse the FRP recyclate. Only through the development of new, sustainable, environmentally friendly and economically viable concepts for the recycling and reuse of composite materials, the future of composites in key market segments will be secured. This is the challenge being addressed through the 'European Composite Recycling Concept.'



Companies such as Ercom have validated the concept of mechanical composite recycling



Moulded panel made from Atlac based CF-SMC

Mechanical Properties CF-SMC

Tensile modulus	30	Gpa
Tensile strength	220	Mpa
Elongation at break	0.8	%

Atlac based CF-SMC:

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Carbon fibre composites combine low weight with high mechanical properties, especially flexural modulus (stiffness). The significant weight reduction by using a CF-SMC vehicle part, also allows lower weighting in connecting and supporting components and fixings. When designing parts, it is important to know the flexural or tensile stresses that the part will encounter. In practice, parts generally undergo a combination of loadings: assuming a 50% tensile and 50% flexural contribution, means that the wall thickness of a CF-SMC part can be reduced by an additional 38%. So, based on stiffness, a weight reduction of about 55% should be possible if CF-SMC is used instead of standard SMC.

First results achieved in cooperation with DaimlerChrysler indicate that the CF-SMC based on Atlac XP810 is able to deliver the substantial weight savings compared to standard

state-of-the-art materials; as well as providing the performance properties necessary for higher volume series production. If carbon fibre prices continue to fall, then there is a real possibility that carbon fibre composites will become more viable for high series automotive applications.

Resin manufacturers decide not to exhibit at JEC 2004

As you may have recently read in the trade press, DSM Composite Resins, and other UP resin manufacturers represented by the APME/CEFIC uPES group, have taken the decision to exhibit every second year at the JEC Composites show in Paris. This means that we, together with other major players in the resin supply sector, will next participate in 2005. Although JEC is an excellent showcase, expenditure has to be prioritized in difficult trading times. Composites is also a relatively mature industry where developments are evolutionary rather than revolutionary, so it is not essential for us to exhibit every year.

EVENTS

AUTOTEC CONGRESS	27-30 January, Germany	www.autotec-aktuell.de
EUROPEAN ALLIANCE FOR SMC: 4TH AUTOMOTIVE SEMINAR	10-11 February 2004, Germany	smc-alliance@t-online.de
INTERNATIONAL CONFERENCE, PLASTICS IN AUTOMOTIVE ENGINEERING	24-25 March, Germany	www.vdi.de
JEC COMPOSITES SHOW	30 March - 1 April, France	www.globalcomposites.com
DEVELOPMENTS IN BODY ENGINEERING CONGRESS	4-5 May, Germany	www.vdi.de
AUTO CHINA 2004	9-16 June, China	www.adsale.com.hk

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