SUSTAINABILITY IN THE ADHESIVES AND SEALANTS INDUSTRY

"The ongoing substitution process will speed up"

It is a well-known fact that research and innovation can make an important contribution to the global challenges facing us, which include climate change, energy efficiency, conserving resources and protecting and maintaining human health in a globalised world. Adhesives technology plays an important role in this respect and its potential has by no means been fully exploited.

The "adhäsion" editorial team spoke to Dr. Jürgen Wegner, managing director of ChemQuest, the international consulting company, about the most important drivers of growth in the adhesives industry.

Dr. Wegner, the most recent forecasts from the leading economic research institutes indicate that the German economy has stabilised. On this basis, the analysts are even making the assumption that the recovery will strengthen in the second half of 2010. Can the adhesives and sealants industry breathe a sigh of relief?

I am one of those who believe the predictions made by the more pessimistic research organisations, which are continuing to forecast significant uncertainty and risk. I do not think that the German economy has broadly bottomed out. Of course, I also do not believe that this is true of the major buyers of adhesives and sealants. One example is the automotive industry, where the market for compact cars has benefited from the scrappage scheme, which was a "flash in the pan" solution, and is only now starting to feel the full impact of the crisis. Another customer is the transport industry, which is just as important for our sector and includes shipbuilding, train and tram manufacturing and truck and bus production. This is a significantly larger market for adhesives and sealants than the traditional car industry. It is likely to take years for the situation to return to the levels of 2007, if it does so at all. Another example is the construction industry, which is hoping with some justification to receive state subsidies from economic recovery and environmental programmes that are making a very slow start. However, at best it can only expect to see zero growth in 2010, following very weak performance last year. The wood processing industry and, in particular, furniture production is suffering from ongoing buying restraint among consumers and the collapse of exports and we cannot expect rapid change in this sector either. The electrical and electronics industries are in a similar situation and, therefore, I cannot identify any areas where our industry can find short-term growth among its traditional customers. Only in packaging are we expecting growth of 2 to 2.5% in 2010. Rates will be below average for metal packaging and above average for paper and film. In the small but specialised segment of medical adhesives we are expecting growth of as much as 5-6%. In order to open up substantial new areas of growth, we need to focus closely on renewable energy generation, energy efficiency and energy storage. We believe that there is huge potential for our products in these sectors, including solar energy and solar power generation, wind energy, building and facade insulation, new battery systems with high energy density and one day, of course, fuel cells.

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The corresponding primary industries are undergoing a painful consolidation process which will only be exacerbated by the demands for higher levels of efficiency in

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costs and materials, together with durability, and this will directly encourage the use of high-quality adhesives and sealants. Ambitious national and EU subsidy programmes will have an impact in these areas and the German adhesives industry is sure to benefit from this scenario.

Against this background, what do you believe is the future potential for adhesives technology compared with conventional joining systems?

The climate conference in Copenhagen may have been a failure in political terms, but sustainability, climate protection and resource conservation will undoubtedly continue to be the dominant themes over the decades to come. We will have to develop ways of measuring the environmental impact of everything we do, in order to make it visible and to give us an influence over it. Despite the complexity of the situation, we will have to offer individual consumers simple answers about how we can really put sustainability into practice, above and beyond penalty taxes. Looking at your question in more detail, I can see huge potential for adhesives technology when compared with other joining systems, simply because of the fact that all the past comparisons of the systems, which are admittedly incomplete, indicate that adhesives are the most resource-efficient solution with the lowest level of CO_2 emissions. If these findings are corroborated and if CO_2 emissions become a genuine cost factor in the EU from 2013, adhesives will be used almost automatically and will be the first choice in every area where they represent a valid technical alternative to welding, riveting, soldering or bolting. The substitution process, which is already underway, will speed up significantly. The Adhesive and Sealant Council, Inc. (the trade organisation for the North American adhesives and sealants industry) carried out a very comprehensive study in 2004 entitled "Build the Industry", which indicated that, from a purely technical perspective, adhesive solutions were available with suitable modifications to replace another 10% of all existing types of non-adhesive joints. The study also states that only around one tenth of all joining processes use adhesives by now and forecasts a doubling of the market for structural adhesives and sealants if its full potential is exploited.

I am convinced that the discussion about climate change and the environment, the need for immediate CO_2 transparency and the resulting costs will be almost as important in speeding up the future system substitution process as the many individual steps involved in the ongoing improvements in adhesive formulation and applications have been. We must al-

so not forget the significant progress made by further education and training on the subject of adhesives.

Are there any other risks not connected with developments in the economy?
Unfortunately, the German public and many professional users have a negative perception of adhesives and associate them with odours and with health and environmental problems. One example is the major advertising campaign for glueless click installation of laminate flooring that "at last needs no adhesives" or the painful discussion about emissions classes and the German Blue Angel eco-label in relation to adhesives for floor coverings. Something is very wrong when "glueless" is regarded as being innovative. There is still a serious glue-sniffing problem in second and third world countries and the across-the-board accusation from environmental organisations that "the" adhesives manufacturers are profiting from the suffering of street children remains hanging in the air. However absurd and indefensible a statement of this kind may be, it continues to be spread over the internet and, of course, causes harm to our industry. Unfortunately we are only seeing a permanent fall in the use of solvent-based adhesives in Europe, not throughout the world. There are risks but also opportunities involved for our industry in implementing the European model worldwide. We do not need to be reticent about environmental issues. On the contrary, we should make it clear that adhesives and sealants are helping to save far more resources and energy than is used in their production across all the added-value steps.
We should use case studies to demonstrate this multiplication effect in a way which is scientifically valid and indisputable. I think the industry associations have an obligation in this respect.

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How can adhesives and sealants manufacturers have a positive influence on their own business?
The industry must spend the necessary money to make these findings public and to communicate them to important opinion leaders and decision-makers. Adhesives and sealants as cross-sectoral technologies are what make sustainability possible in almost all areas and that must be our message. The impact of our products makes us significantly more sustainable and greener than many of us think we are.

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Are there "tools" available on the market which adhesives and sealants manufacturers can use to compare the environmental efficiency of their products?
Unfortunately we haven't got that far yet, but that is the route that we must take. Of course, we must look in detail at the energy and resource consumption in the production of our products right through to the users. However, we can only influence the application of our products in a few exceptional cases. Therefore, our environmental balance sheet generally comes to an end at the factory gate. Things only start to get exciting outside the gate, however, and we need practical examples, for example from the double-glazing sector and from the car and aircraft industries, in order to give our contribution its proper significance. Compared with their possible impact, I believe that the differences in the carbon footprint of individual adhesive systems are very slight and I suspect that products based on renewable raw materials will come off slightly better in a detailed environmental analysis than those based on crude oil or gas. Cement-based products, such as tile adhesives, will be in a much worse position, because the cement manufacturing process produces high levels of CO_2 emissions. However, I would like to say again that all of this is still peanuts when compared with the possible savings which, if they were to be added up, are probably 100 or 200 times greater. ■

The interviewer was Marlene Doobe

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