DIN SPEC 4885
Springboard to the global market

CASE STUDY

DIN SPEC 4885
CASE STUDY

New ideas often fail because they have no access to the market even if experts see them as being efficient and progressive. It is often difficult for potential customers to recognize and appreciate the benefits without objective benchmarks. And so, new developments often do not receive the necessary attention on the marketplace. DIN Specifications are excellent instruments for quickly and easily accessing the market – and for staying visible. An excellent example of this is DIN SPEC 4885.

> DIN SPEC 4885 makes it possible for customers to compare test results obtained using our system, leaving no doubt. This gives them the assurance they need. For us, one of the great advantages of a DIN SPEC is that we can now refer to a published technical rule, which enormously increases the acceptance of and awareness in our test method."
>
> **Malte Zur**

In December 2011 two young engineers who had worked together at the German Federal Institute for Materials Research and Testing (BAM) founded their own company, Grasse Zur Composite Testing. Malte Zur and Fabian Grasse dedicated themselves to the marketing of a new method for testing fibre-reinforced plastics (FRPs). Their new method focuses on the quasi-static and dynamic testing of FRPs and introduces an innovative test apparatus, the "shear frame".

Limits of the previously used method

Because FRPs are capable of resisting shear stress, very high forces are needed to test their behaviour under stress. To obtain valid results, the test specimen cannot be too large or too small. Ricardo Basan, working at the BAM, had addressed this problem in his doctoral dissertation, in which he compared the current standard method (as laid down in DIN EN ISO 14129 and ASTM D 4255, ASTM D 7078, ASTM D 5379) with the new "shear frame" method. His study clearly demonstrated that the shear frame produces the most meaningful results. The new method was then validated at the BAM. It was shown that the scatter of results for this method is relatively small and that it is suitable even at higher shear strains. The limitations of the standard test system do not apply to the shear frame. The document that describes the new shear frame test method, DIN SPEC 4885, does not contradict the current standards, but rather describes an alternative method for determining the mechanical properties of fibre-reinforced plastics. In fact, the limitations of the method specified in DIN EN ISO 14129 are described that standard itself: "... there is concern over its [the method's] use for the ultimate shear strength for high shear-elongation materials ...".

The market demanded a better test method

These limitations were a concern to the plastics industry. For example, the technical association Carbon Composites e. V. (CCeV) carried out a survey asking its members which standards they felt needed revision and in which areas there is an urgent need for standardization. One of the most frequently mentioned topic was the need for a new shear test method that is more precise and produces less scattering, even at high shear strains. CCeV informed DIN of its results. Other companies had also contacted DIN independently, asking about suitable standards for testing at high shear forces. It was the BMW Group that brought DIN's attention to a new, relatively unknown method.

The development of DIN SPEC 4885

One of DIN's main goals is to make it easier for small and medium size enterprises (SMEs) to participate in standardization, as they often do not have enough resources for this. And so members of DIN's staff approached Grasse Zur in June 2013, offering to help them develop a specification dealing with their innovative shear frame. The young engineers eagerly took up this offer. It was clear to them that a normative document on this vali-

- → Easier market access
- → Short development times
- → Promotes innovation transfer
- → Work with selected partners
- → Widely accepted
- → Prestige for authors
- → Can be turned into national, European or international standards

DIN SPEC 4885
CASE STUDY

dated test method was urgently needed. Concrete plans for drawing up a DIN SPEC were set by their second meeting. But now suitable partners had to be found to help work on the document. On 12 July 2013 CCeV announced that they would support the initiation of the project and wanted to participate. The conditions for the project were optimal: Basan's dissertation had already shown that the method is scientifically valid, and Grasse Zur had already placed the test on the market. The necessary organizational and financial details were quickly settled and the project's kick-off meeting took place on 25 September 2013. After just one web conference and a final meeting on 07 November 2013, DIN SPEC 4885 was ready for publication after only 6 weeks' preparation.

> "The short, uncomplicated DIN SPEC development process makes standardization more attractive for small new businesses. With DIN SPEC it is also possible to transfer a subject for which there is a definite need into a specification, thus making it quickly available to all market participants".
>
> **Dr Fabian Grasse**

DIN, a driver of innovation: Fast, prestigious, market-oriented

The rapid development of DIN SPEC 4885 was possible because DIN had already addressed the parameters (acceptance within the sector, acquisition of project partners, consistency with the German Standards collection) and Grasse Zur had submitted to DIN a well-thought-out draft manuscript. The draft could then be discussed and worked on as early as the kick-off meeting. Of course, a DIN SPEC is not the same thing as a formally developed full-consensus standard. It is, however, a technical rule that has been professionally drawn up under the auspices of DIN, a brand respected and trusted throughout the world. Fabian Grasse has nothing but praise for DIN's organizational support: "DIN gave us outstanding support. The entire DIN SPEC process was highly professional from beginning to end and DIN's staff managed it with a high level of commitment. The speed with which the process was carried out is evidence of this". But project management services at DIN go beyond the development process. DIN's experts also make sure the content of DIN SPECs have a high level of quality.

Grasse Zur's path to the global market

Fabian Grasse and Malte Zur had the global market in mind throughout the development of their test method. The method laid down in DIN SPEC 4885 is especially interesting for the automotive industry because the test lends itself easily to large-series production and the test results are significant due to the low scatter of results. For example, the BMW Group uses the DIN SPEC 4885 method in their development of FRP structural components, which are used, for example, in the interiors of the fully electric BMW i3 and the BMW i8 plug-in hybrid sports car. BASF also uses the method for the development and testing of high-performance FRPs used in lightweight vehicles. Being bi-lingual (English and German) DIN SPEC 4885 will help quickly disseminate use of the shear frame throughout the world. Immediately upon its publication the document received international attention. Grasse Zur was even presented with the DIN Innovation Prize at the 2014 Hanover Fair. And there are plans to develop the DIN SPEC into a European or International Standard, with DIN's help.

Germany's enormous economic potential lies in its engineering sector: Here German engineers seek out and identify major challenges and come up with new solutions. The DIN SPEC is an excellent tool for exploiting this potential.

www.din.de/go/spec

DIN German Institute for Standardization · Am DIN-Platz · Burggrafenstraße 6 · 10787 Berlin · Germany
Phone: +49 30 2601-2303 or -2325 · Fax: +49 30 2601-42303 or -42325 · E-mail: spec@din.de