

# Rethinking products

## Burg Giebichenstein Halle plays a key role in the “smart<sup>3</sup>” innovation network

Which new materials will be appropriate for the industry and daily life of tomorrow? What can be achieved with intelligent materials of this kind? Over a hundred companies and research organisations are currently working in the “smart<sup>3</sup>” initiative – in the scope of which engineers, designers, material scientists, humanities experts, economists and social scientists are meeting and researching the use of materials of this category. Burg Giebichenstein University of Art and Design in Halle is also part of the initiative and is considering the potential users and design-related challenges and opportunities presented by these materials.

A cable that “remembers” its original form after it has been bent. Foils and solids that produce electrical current during their deformation or become complex three-dimensional structures. Liquids that solidify under the influence of magnetic fields. All are examples of “smart materials”. Enrico Wilde is fascinated by intelligent materials of this kind. The industrial designer is part of the project team which is focusing intensively on these “smart materials”. “We are facing a world of materials in which the integration of functions in applications is applying a paradigmatic change. As designers, this gives us the scope to rethink products in a completely new way. In combination with the correct sense of judgement for the end-user, they are leading to product innovations which promise unforeseen benefits in terms of their design and use,” he explains. Burg Giebichenstein has an international reputation for its confidence in trying new things, thinking outside of the box and creating designs for every area of work and life. This expertise is what led Burg Giebichenstein to join the “smart<sup>3</sup>” innovation network. The year 2013 saw more than 30 initial partners joining the network, all of whom share the knowledge that approximately 70 percent of all technical innovations in Germany are based on new materials. “This potential has to be put to use,” says Enrico Wilde. Support has been provided by the “Twenty20 – Partnership for Innovation”, a funding programme offered by the German Federal Ministry of Education and Research which aims to bring together scientific, technological and entrepreneurial skills, especially in the eastern federal states. The “smart<sup>3</sup>” research and development consortium, which was co-founded by Burg Giebichenstein, was awarded a funding grant, enabling it to continue with its research and development work until 2019.

“Finding a common basis of communication isn’t always easy, and it requires all partners to cultivate an interdisciplinary exchange so that everyone is ultimately able to benefit from the added value,” explains Wilde. All of the technologists, researchers, designers and entrepreneurs in the consortium, as well as the integrated institutes, institutions and companies, are focusing on the intelligent materials, but are looking at them from different angles. They share, however, one defined goal: “We want to push ahead with the paradigm change in the product,” explains the Burg Giebichenstein project worker. “With increasing functionality and component-related complexity, the products’ space requirements, energy consumption and susceptibility to breakdown also increase. With the “smart materials” it is possible for almost any variety of new functions to be integrated directly in the component, or in the material level.” The industrial designer is certain that this could enable many products to be improved. Thanks to process optimisations, micro-structures and new surface treatments, materials with which we are apparently familiar can become exciting new materials. “The basis for this is provided by consistent value added chains. If just one part of the chain is missing, no offer can make it to the market,” highlights Enrico Wilde. “The work of the research group is indispensable for enabling the world of industry to abandon old path dependencies, especially in eastern Germany, and to adapt accordingly.” This, he tells us, won’t be easy, though. The knowledge and experience required for the use of the intelligent materials is frequently lacking. For this reason, the goal of the consortium is clearly defined: the materials need to be put to use in order to create further acceptance for them. In this respect work is under way at Burg Giebichenstein for improving the communication surrounding the intelligent materials. “If nobody knows what’s possible, no innovation has a chance,” opines the project worker. Partners who previously worked on their own have been introduced to the interdisciplinary cooperation. For materials researchers, countless possibilities have been created surrounding the materials. The materials scientists are testing what is technologically feasible. The part played by the designers has often been lacking over the course of the previous development work, however. “That’s where we come in,” explains the degree-qualified designer. “We might not be technical specialists, but we work in a variety of fields and are able to link them together.” The Burg Giebichenstein team asks questions from new angles all the time, and therefore succeeds in creating innovations. Enrico Wilde explains: “If you always ask the same questions then you never succeed in making any progress. We want to bring materials into the application on a meaningful basis so that they offer the user long-term added value. That is why the key question we are asking ourselves is: what is applicable in human terms, or to the individual person?”

In order to make that which is possible and applicable to the individual person clearer, Burg Giebichenstein is also creating a communication platform. where the work of the consortium is presented and projects published, on the basis of which it is possible for tools to be transferred into the work process. For Burg Giebichenstein, the networking starts directly at the college of art itself. The project team organises workshops that focus on the knowledge and experience surrounding “smart materials” and discuss the opportunities and challenges. The results from the study projects at Burg Giebichenstein which have been completed at the University of Art and Design in the context of the link between research and teaching then become realistic. The “smart<sup>3</sup>home” study project focused on the home use of the intelligent materials in daily life, for instance. The students focused their design work on applications that rendered the “smart materials” usable and tangible in their private environment – therefore lending them a sense of attractiveness. Some of the student projects at Burg Giebichenstein have already found their way into specific research projects within the “smart<sup>3</sup>” consortium – such as the development of a pillow that slowly turns the head of an infant in order to prevent the development of unwanted deformations. In a current project, the research and development team at Burg Giebichenstein and various companies are looking into a smart application for bicycles. “This is just one scenario that we are focusing on,” explains the designer. The team is also looking for a range of applications where the system could go into use – and there are many possibilities. The ideas range from schoolbags that stand out to road users, to the rollator which keeps accessibility “in view”.

“Raising awareness for the possibilities offered by these materials is the most important thing that we can do,” says Enrico Wilde. “If we manage to secure the continued existence of our interdisciplinary cooperation in the field of “smart materials” over the funding period as a profitable form of value added for all parties, we will have achieved our goal.”

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