

Major Henkel R&D sites around the world



As part of our research and development strategy, we have further developed our “open innovation” approach involving greater collaboration with and integration of university teams, research institutes, suppliers and customers in our innovation processes. In order to ensure the market relevance of our developments, we have stepped up the inclusion of major customers in our R&D processes. The following examples illustrate the success we have achieved through this approach:

- For a new generation of defoamers that we use throughout the world in all our powder detergents, we conferred on the company Dow Corning our 2011 “Best Innovation Contributor” award. The patented technology permits particularly efficient control of the foaming properties as a decisive quality feature for the wash process, and also reduces the raw material input by up to 80 percent.
- We also conferred our “Best Sustainability Contributor Award” for the first time in 2011, recognizing partners in the supply chain that have been particularly supportive of our “Factor 3” sustainability objective, which involves tripling our resource efficiency (details of our 2030 sustainability strategy can be found on [AR](#) page 48). The award went to BASF for its contribution in the development of the new machine-dishwashing tablets Somat 10 with their immediate-active formula. Somat 10 tabs

dissolve twice as fast as the predecessor product and are therefore able to develop their powerful cleaning performance in all dishwashing programs, even at low temperatures.

- In the hair styling field, our close cooperation with one of our main suppliers reached the level of technology transfer in product innovation. With the formulation developed through this alliance, we are now marketing a new generation of hair sprays which, in addition to impressive hold, also add exceptional luster to the hair.
- Together with the University of Pennsylvania in the USA, our adhesive researchers have developed new acrylate-based block copolymers with a high performance profile. These offer flexible adaptability to the requirements profile of each application. The technology has led to the successful development of an initial range of sealants for the automotive industry offering outstanding oil resistance. The new polymers also form the basis for a new generation of hotmelt contact adhesives.

Worldwide, growth and quality of life need to be decoupled from resource consumption and emissions. Our contribution as a company is to develop innovative products and processes that consume less resource while still offering the same or better performance. It is therefore both our duty and our desire to ensure that all products contribute

to sustainable development in at least one of our six defined focal areas. These are systematically integrated within our innovation process. Hence, our researchers have to demonstrate the specific benefits that their project brings with respect to product performance and added value for our customers, resource efficiency and social progress. We therefore concentrate our R&D effort on innovations that combine product performance and quality with responsibility toward people and the environment. Life cycle analyses and our many years of experience in the field of sustainable development help us, right from the start of the product development process, to determine where in the various product categories the main environmental impact occurs and where appropriate improvement measures might be applied.

Our scientists have made key contributions to both sustainability and our performance in many fields. The following examples provide a selection of major research work that they have carried out:

Laundry & Home Care

- Development of a new, modified protease through the optimization of enzyme/stain interaction as a means of improving the washing performance of liquid detergents, particularly at low wash temperatures starting at just 20 degrees Celsius.
- Development of highly concentrated liquid laundry detergents in soluble, pre-dosed capsules which guarantee, with just half the usual dose, maximum performance per wash, while at the same time conserving resources – particularly with respect to packaging material.
- Development of a new generation of glass cleaners using surfactants manufactured entirely from renewable raw materials.

Cosmetics/Toiletries

- Use of treatment oils in a hair colorant offering noticeably improved care properties, and innovative hair care products for rebuilding the hair structure and reducing split ends.

- Development of a body wash generation which, in addition to the usual cleaning action, also offers an optimized formula for extensive protection against body odor and a freshness feel that lasts up to 18 hours.
- Formulation for hair gels with extreme hold on the basis of innovative polymer technology; also the development of styling powder products for the Branded Consumer Goods business.

Adhesive Technologies

- Global market launch of a new generation of polyolefin-based hotmelt adhesives for hygiene products, offering significantly reduced consumption per application and a low energy requirement.
- New underfill materials for innovative applications in mobile electronic devices, fulfilling the requirements of advancing miniaturization in both the devices themselves and their components.
- Development of the first gap-filling instant adhesive in the form of Loctite 3090. This patent-pending, gel-like two-component adhesive hardens after three to five minutes, is suitable for almost all materials, and offers ideal performance even under difficult conditions, e.g. involving uneven, porous surfaces, repairs with missing parts, or overhead applications.

Each year we select a number of outstanding developments for our Fritz Henkel Award for Innovation. In 2011, this accolade went to three interdisciplinary project teams in recognition of their efforts in the realization and commercialization of the following concepts:

- Innovative **WC rim block Bref “Power Aktiv”** – known in Germany as “Kraft-Aktiv” under the WC Frisch brand – offers patent-pending technology for all-round WC freshness. This is the first WC rim block with four functions to combat dirt and odor. The combination of actives comprises an anti-limescale formulation, a cleaning foam, a dirt repellent and a freshness intensifier. With four active pearls, each flush

Fritz Henkel Awards for Innovation 2011



www.bref.it



www.wcfrisch.de



www.glisskur.schwarzkopf.de



www.henkel.com/aquence-autophoretic-12623.htm

results in the WC undergoing a thorough clean and freshness boost. Available in three different fragrances, the innovation has convinced people in over 30 countries in Western and Eastern Europe of its powerful freshness effect.

- **Gliss Kur Ultimate Repair** repairs extremely damaged hair with triple-concentrated human-identical keratin components. The innovative technology of the new treatment series, developed in cooperation with our partners from industry, university teams and research institutes, is based on biomimetic reconstruction of the natural lipid protective layer of the hair fiber, combined with human-identical keratin components that also repair deep areas of damage within the hair. The formula with triple-concentrated liquid hair components provides the hair with resilience and renewed luster. Also included in this hair care range is the innovative treatment product Gliss Kur Oil Elixir: Based on innovative oil evaporation technology, it imparts to the hair full-bodied gloss and suppleness without making it over-heavy.
- **Aquence Co-Cure 900 Series** is a coating that provides environmentally sound corrosion protection for metal substrates, combining the two operations of pre-treatment and coating.

Unlike conventional surface treatment methods, waterborne Aquence technology inhibits corrosion through the action of a unique chemical process. Aquence Co-Cure also significantly reduces the number of operations required prior to painting. The patented Aquence process consumes less energy, generates lower carbon dioxide emissions, causes less waste and thus also sustainably reduces the capital outlay and process costs of our customers.

We currently hold some 8,000 patents as protection for our technologies around the world. We also have more than 5,000 patent applications pending, and own approximately 2,000 registered designs safeguarding our intellectual property.

Further information on our research and development activities can be found on our website:

www.henkel.com/innovation