

A man wearing safety glasses and a lab coat is focused on his work in a laboratory. He is holding a small object, possibly a component or a sample, and examining it closely. The background shows various pieces of laboratory equipment, including what appears to be a microscope or a similar instrument. The overall scene conveys a sense of precision and scientific inquiry.

## Technology and innovation

Preserving and extending Bekaert's technological leadership in our core activities demands commitment to research. The figures for the past financial year conclusively demonstrate our commitment. The research and development budget increased from € 53 million in 2006 to € 57 million in 2007, representing 3% of consolidated sales and over 7% of consolidated added value: high figures for the metalworking industry.

The internationalization of our activities has led to greater diversification of our research & development (R&D) effort. The formation of the Bekaert Asia Research & Development Center was a milestone in that respect.



Mechanical laboratory at the Bekaert Technology Center



The Bekaert Technology Center in Deerlijk (Belgium)

## The power behind sustainable profitable growth

Our global market leadership in many applications enables us to allocate resources to the development of new products and processes. Our research and development effort is directed and implemented by the Bekaert Technology Center.

The Bekaert Technology Center simultaneously engages in continuous product improvement and seeks and develops new products and processes to extend and renew our portfolio, thereby contributing to the achievement of Bekaert's ultimate goal of sustainable profitable growth.

The Bekaert Technology Center is also responsible for protecting and extending Bekaert's intellectual property, in the form of our portfolio of patents, and for environmental, health and safety management.

### Market-driven research focusing on a limited number of projects

Our various production units and our sales organization play an active role in Bekaert's innovation process, by ensuring that our technological research is attuned to the needs of our customers.

The production units are responsible for short-term product and process improvement programs which

take a maximum of two years. The research is conducted in key learning plants and local research centers.

The Bekaert Technology Center, which runs about a dozen major and well-defined development projects at the same time, is responsible for medium-term (two-four years) and long-term (over four years) programs.

### Maximizing synergy

These development projects focus exclusively on our two core competences: advanced metal transformation and advanced materials and coatings. Our aim is to achieve maximum technological synergy between these core competences. For example, we apply advanced coatings to wire and steel cord to improve adhesion between steel and rubber or provide better corrosion protection.

### Internationalization of research and development

#### Research and development in China

The rapid growth of our business in China has necessitated some adjustment to our research and development policy. Local product development, close to the customers for our products, was essential. Because China has a great deal to offer in terms of R&D infrastructure and there is an ample supply of highly trained researchers, we decided to set up our own R&D center there.

In response to customer requests, we set up materials



Preparing for a bending test on steel fiber-reinforced concrete



Ground Breaking Ceremony of the Bekaert Asia R&D Center

analysis laboratories in 2006 and formed research and development partnerships with local universities. In 2007, the Bekaert Asia Research & Development Center was opened in Jiangyin (Jiangsu province, China). This research center is currently working on long-term projects managed from the Bekaert Technology Center in Belgium.

The massive growth of the Chinese market prompted us to rethink both our products and our processes. We came to the conclusion that, to maintain our competitiveness in China, it was essential to reduce asset costs. In pursuit of our strategy for sustainable profitable growth, it was also necessary to reduce our energy costs in China. Our plants in mature markets are now benefiting from these process innovations and we are working elsewhere to reduce asset and raw material costs, thus making Bekaert more competitive around the world.

To staff our R&D function in China, we are able to draw on a large pool of well-trained engineers. At our R&D center, they can develop into highly specialized and strongly motivated staff whom we can later deploy in Bekaert's production departments.

Bekaert's deep roots in the local R&D network and the training we provide for Chinese engineers in communication and project management facilitate cooperation with local universities and give us access to other technologies. The Bekaert Asia Research & Development Center cooperates closely with various other technology institutes in China.

## Added value through engineering

Bekaert has its own engineering department, which designs production lines and develops and maintains the various production facilities. Thanks to our in-house expertise and specialized knowledge of specific production needs, our machinery and equipment are state of the art and we are able to coordinate our working procedures perfectly with those of our customers.

Engineering had a busy year in 2007, helping with the rapid start-up of two new plants in China, expansion of our production capacity for stainless steel fibers for diesel particulate filters and profiled wire and the relocation of some of our production lines to other plants.

With our activities in China growing fast, our engineering department is also helping local capital equipment manufacturers to play a more significant role.



#### Research and development in Belgium

The Bekaert Technology Center in Deerlijk (Belgium) plays a key part in Bekaert's research and development effort and directs the research performed by the Bekaert Asia R&D Center. The Belgian technology center underwent extensive modernization and upgrading in 2007. In addition to materials laboratories for analyzing chemical composition and mechanical properties, it also includes prototype testing facilities so that less testing needs to be done at the production centers. In 2008, we are planning to build a pilot plant for wire products.

In 2008, there will be 100 staff working in research and development in China and the number in Deerlijk will increase from 285 to over 300, so Bekaert will be employing a total of over 400 people on technological development. Around a quarter of the engineers in Deerlijk are not Belgian.

The government plays a prominent role in encouraging investment in research and development in Belgium. The grants from the Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT) and the tax incentives for which Bekaert qualifies are essential if we are to keep our research and development organization in Belgium.

#### Looking over the fence for inspiration

Input from other companies, universities and knowledge centers enriches our innovation process. By joining forces, we can innovate faster, more effectively and with clearer market focus. This 'open

innovation' approach is another example of our *better together* philosophy.

Bekaert did not form any new partnerships with third parties in 2007, but our existing alliances in the field of research and development were extended or expanded.

For example, Bekaert is the first industrial partner of the Holst Open Innovation Centre, the open innovation institute near Eindhoven formed by TNO (Netherlands) and IMEC (Belgium), which is working on wireless autonomous sensor systems. Bekaert brings its expertise in film coatings to the problem of storing minute amounts of power in and creating electronic circuits on thin plastic films.

We have also formed a strategic R&D partnership with the Fraunhofer Institut (Germany), Tsinghua University (Beijing, China), the University of Cincinnati (United States), the Holst Open Innovation Centre (Netherlands) and SIRRIS, the Belgian technology industry research center (formerly WTCM). Bekaert sponsors a number of doctoral dissertations at the universities of Leuven and Gent.

Bekaert allocates about €4 million to corporate venturing, providing risk capital to other companies as a longer-term investment. We prefer to support young companies specializing in technologies that complement our own.



## Intellectual property

Bekaert made 39 initial filings or patent applications in 2007, a record for our company. Bekaert now has a portfolio of 363 inventions protected by 2 076 patents. The number of patents in China increased to 113 in 2007 and our organization in China submitted its first proposals for patent applications last year.

Because the internationalization of research and development will inevitably bring confidentiality risks,

we have put internal procedures in place to maintain security with respect to our production processes and intellectual property, backed up by systematic audits and a policy of maximum staff retention.

To encourage the creativity of our staff, Bekaert instituted the *Intellectual Property Award* in 2007.

## Technological research in the service of the environment

Environmental protection is a key element in Bekaert's R&D policy. Many developments and improvements in products and processes are the result of our quest for cleaner technologies and rational energy use.

- As stronger and lighter steel cord is developed, tires weigh less and fuel consumption improves. The latest technological innovation in this field, Bekaert's Ultra Tensile steel cord, was developed in Deerlijk (Belgium).
- Another major success is metal fibers for diesel particulate filters. This new medium achieves excellent filtration of the fine particulates that can cause respiratory damage. This product is being marketed in North America and Europe.
- Bekaert heating cord, made from extremely thin and strong plastic-coated wire, is an alternative approach to reducing emissions from truck diesel engines.
- The new polymer coatings applied to steel to improve its appearance and inhibit corrosion contain no heavy metals.
- We are investigating the possibility of applying water-based coatings to champagne cork wire in our production process, an environment-friendly alternative to solvent-based coatings.
- We have developed biodegradable polymer coatings for agricultural products, such as vineyard wire.