Diao Qingli

Human resources,
Weihai, China

BEKAERT IN 2004

Tire

Bekaert steel cord products are used to reinforce one in every four tires produced around the world. With its leading technology, its high-quality process control and its skill in selecting the right wire rod grades, Bekaert can offer steel cord products with ultra-high tensile strength. Higher tensile strength means that less steel needs to be used, enabling manufacturers to produce lighter tires without compromising safety and reliability

BEKAERT IN 2004

Record year

Despite the exceptional market conditions it faced in 2004, Bekaert succeeded in consolidating its market and technological leadership at the global level.

Extreme raw materials market conditions

2004 was a remarkable year in all respects for wire rod, which accounts for around 5% of world steel production. Bekaert is the largest independent user of wire rod, from which most of its products are made.

Bekaert is the largest independent user of wire rod, the main raw material used by the company.

Supplies from all over the world

Bekaert purchases 250 grades of wire rod from suppliers around the world for its production plants in the different continents. Its independence as a buyer proved to be advantageous in 2004. Most of Bekaert's suppliers produce wire rod by an integrated process, starting from iron ore and coke. Others produce it in 'mini-mills', where scrap steel of various kinds is melted down in electric furnaces.

Demand for steel has risen sharply, fuelled by the rapid economic growth in several regions, most notably China. World steel production, which remained at around 800 million tonnes for many years, increased abruptly in 2000 and peaked again in 2003–2004. This gave rise to imbalance, not so much in the steel market itself, but in the market for the raw materials used to produce it – chiefly scrap and coke and, to a lesser extent, iron ore. Whereas a temporary steel shortage can be relieved by building new steel production capacity, a shortage of raw materials poses structural problems because the supply of scrap is limited and, given current concerns regarding the effects of CO_2 on the environment, building new coking plants is no longer an easy option.

The worldwide steel shortage had major repercussions for Bekaert's operations and the company was confronted with unprecedented price rises in the course of the year. China's growing steel production capacity did little to ease the situation. Bekaert was able to overcome this extremely difficult position. Through efficient internal organisation and effective cooperation between the various functions, it was able to meet its customers' requirements in the different regions and to keep its plants around the world supplied with enough raw materials to maintain output. Customers were kept regularly informed of developments on the raw material markets and of the unavoidable price rises. Bekaert worked untiringly to supply them on time.

The result from operations was also affected by the effect of applying the inventory valuation rules in the context, of these significant price increases for raw material.

Consolidating market leadership

In pursuit of global market leadership in its various products, Bekaert works hard to achieve sustainable growth. Bekaert achieved strong organic growth in 2004 in all business segments and regions in which it operates. The emphasis last year was on building a balanced portfolio, rather than on new acquisitions.

Organic growth

Bekaert made significant progress towards structural improvement in its operating performance in 2004 in its various business segments. All over the world, business processes were further streamlined and production lines were rearranged to meet the changing demands of markets and customers more effectively. The company also invested in expanding production capacity, mostly in Europe and Asia.

Despite the difficulties in raw material markets, Bekaert was able to strengthen its position significantly in virtually all regions by optimising its internal organisation. Worldwide demand for steel cord products rose sharply. In China, growth slowed temporarily because the government's strict clampdown on overloaded trucks eased the pressure on the transport sector to switch from cross-ply to (steel-cord-reinforced) radial tires, but the market picked up a little by the end of the year. Bekaert has now expanded its sales organisation in China, focusing strongly on the needs of the various customer groups. Because the new Chinese production capacity is fully integrated into Bekaert's global steel cord production platform, exports from China helped meet the high level of demand in other parts of the world, which also contributed to the strong growth of the steel cord others activity platform.

One in every four tires incorporates Bekaert steel cord products.

Because of the dollar exchange rate, preference was given to importing wire products for the Asian market, which Bekaert does not produce in the region, from the dollar zone (the United States and Latin America), with less being imported from Western Europe.

Given the volatility of the raw material markets, Bekaert benefited more than ever in 2004 from effective international coordination of its purchasing function. Based on the findings of a study carried out in 2003, an action plan has been rolled out for optimising worldwide purchasing of other products. Following internationalisation of the sales and production functions, Bekaert is now working to internationalise the purchasing of common or equivalent products and services. Local and central buying departments exchange information on the supply situation in various areas on a systematic basis, so that advantage can be taken of opportunities for potential savings at a global level.

Buying advantage

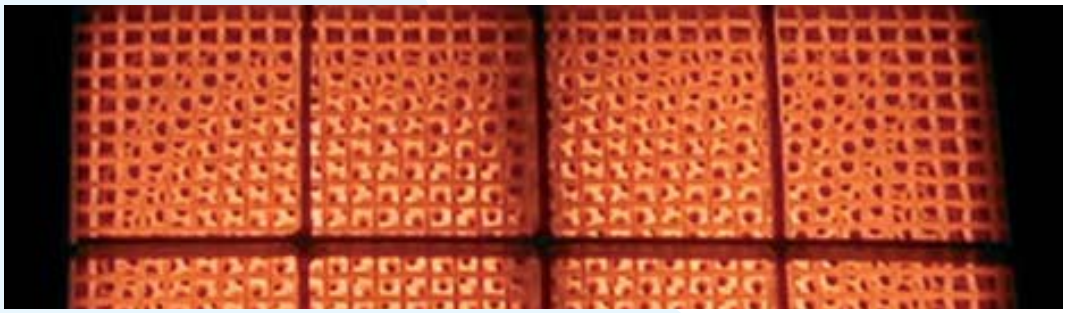
As an independent buyer, Bekaert was able in 2004 to source the most suitable grades of wire rod anywhere in the world. The company purchases over 250 different grades of wire rod, depending on the application. Bekaert's wire rod buying policy requires two sets of criteria to be met.

First, it imposes rigorous steel quality standards on its suppliers, and works closely with them to help achieve them. Bekaert's commitment to quality is exemplified by the prize awarded every two years to the wire rod supplier which has made the most significant progress in this area. The last recipient, at the end of 2003, was Baosteel in Shanghai (China). The second criterion relates to geographical diversification. Within the constraints of its quality requirements, Bekaert seeks to match procurement diversity to production diversity. As a global operation, Bekaert does this not only for logistical reasons, but also to minimise the effect of exchange-rate fluctuations and because buying locally helps to cement good long-term relationships with local suppliers.

In anticipation of significant growth in architectural window films in Europe, Bekaert has strengthened its organisation in this area, set up a new European distribution centre in Wervik (Belgium) and launched several new ranges, including the *Panorama* range of window films for the residential market in Belgium. A start has been made in Brazil on assembling a new distribution network and the organisation in Asia (and particularly China) has been expanded to address the rapidly growing market for window films, for both vehicles and buildings.

External growth and streamlined operations

Bekaert acquired the French company Solaronics Technologies, together with its subsidiaries Solaronics IRT and Solarelec, in January 2004. Solaronics specialises in solutions for drying coatings on paper, metal and wood, based on gas and electricity, and is world market leader in infrared drying processes for the paper industry. Solaronics' extensive service network adds customer value. At the time of the acquisition, the company was generating sales of € 20 million with a workforce of a hundred. The acquisition has strengthened Bekaert's combustion technologies activity platform by giving the company access to a global network serving a new market segment. There are plans to incorporate Bekaert's environment-friendly metal-fibre gas burners into the systems which Solaronics offers its customers, simultaneously enhancing Bekaert's offering with the addition of high-performance burner systems which are compatible with a range of gas qualities.



Bekaert is world market leader in infrared drying for the paper industry.

In early 2004, Bekaert increased its stake in Precision Surface Technology Pte Ltd, a Singapore company specialising in diamond-like coatings, chiefly for CD and DVD moulds, from 33.33% to 66.7%. At the end of September, a production facility for the application of these coatings was set up in Suzhou in China, a market with a large potential customer base, to meet the extremely short delivery times which are often demanded (24 hours is not unusual). For the same reason, Bekaert in the United States started applying diamond-like coatings in 2004 to components of racing cars taking part in the Nascar competition. Bekaert is planning to add several plants over the coming years.

In the interests of a more balanced portfolio, the composite profiles business was sold at the end of 2003 because securing global market leadership in this product would have diverted too many resources.

In early 2005, the European fencing division, Bekaert Fencing NV, was sold to Gilde. It had been an autonomous entity since 2003. An in-depth evaluation of the various options for the division's future conducted in 2004 had indicated that sustained successful growth could best be assured by Bekaert Fencing NV's becoming completely independent. The evaluation found that this division needed a different approach to markets and customers in Europe from that adopted by Bekaert's other divisions, due to its individual technological characteristics, the specific nature of its customer base and related marketing requirements and its particular distribution needs.

The European fencing division was sold in early 2005 to investment company Gilde.

Gilde, a leading European investment company, wished to continue the division's growth in industrial security fencing and other new products, focusing on specific projects and thereby consolidating its regional leadership. With the entry of this new shareholder, continuity is assured with no change to Bekaert Fencing NV's commitments to its employees, customers and suppliers.

Consolidating technological leadership

For Bekaert, innovation is a continuous process by which it seeks to better understand customer needs, even when these are not explicitly stated, and to meet them as fully as possible. Bekaert's research and development budget was significantly increased in 2004 and the central R&D team was augmented with the addition of a further fifteen highly qualified staff. Although a large share of Bekaert's innovation budget was earmarked for advanced materials and advanced coatings, substantial funding was also allocated to innovation in advanced wire products.

Innovations in 2004

One significant innovation last year was impregnated fine steel cord used for reinforcing the toothed polyurethane timing belts used in transmissions and in materials handling. Combining extended service life, excellent corrosion resistance and high precision, these new belts offer the added advantage that the equipment does not need readjustment after they have run in.

Impregnated fine cord is used to produce high-precision toothed polyurethane belts with superior corrosion resistance.

Another innovation is *Bezinal*® coating for industrial wire, which provides significantly better corrosion protection than traditional galvanising. In fact, *Bezinal*®-coated wire can be used as an alternative to more expensive stainless steel. *Bekipro*® fine galvanised wire, on which development effort was stepped up in 2004, is also a good substitute for stainless steel in some applications.

Coated industrial wires with high corrosion resistance have many applications in the automotive sector.

Bekaert made another breakthrough in steel cord products in 2004. Tire manufacturers are constantly striving, on environmental grounds, to make their products lighter, without compromising safety or reliability. Bekaert is working closely with a number of major customers on the development of steel cord with higher tensile strength, which can achieve the same performance with less weight. Through careful choice of wire rod grades and application of its unique expertise, Bekaert can now offer ultrahigh-tensile steel cord products.

In advanced coatings, Bekaert launched *Dylyn®Plus*, a new diamond-like coating with improved adhesion and even better wear resistance. The *Dylyn®Plus* technology allows series production and is therefore ideal for coating components used in the automotive sector. For the glass industry, Bekaert also introduced new high-density tin sputter targets, which offer higher quality, and the range of *ACV3 end blocks*, a new generation of basic components for sputter equipment.

In combustion technologies, Bekaert developed a new burner in 2004 which makes it possible to replace an entire range of burners with a single type, thus reducing the customer's overall costs. Because it employs metal-fibre technology, the burner can also be made smaller, which meshes perfectly with the growing demand for more compact boilers. Bekaert Solaronics also launched a newly developed design based on this technology.

In composites, Bekaert launched a new range of *Protec*® reverse-osmosis membrane pressure vessels, which are designed to achieve substantial savings in supply piping and installation and a lower total cost, thanks to lower operating and maintenance costs. A new pressure vessel with a diameter of 457.2 mm (18 inches) – a world first – was developed in partnership with a major customer.

Bekaert's activities in the field of innovation were further streamlined last year. A number of minor adjustments were made to the marketing road map, a product development guideline for the activity platforms, which was imposed rigorously. The road map was fully adopted by the 'virtual companies' which are responsible for the implementation and monitoring of the product development process. The virtual companies operate as new businesses which are managed by cross-functional teams working in accordance with clearly defined procedures, responsibilities and schedules. Bringing together people from different parts of the organisation – and often from different countries – fosters entrepreneurial spirit and motivates and stimulates the team members.

In 2004, one such virtual company developed a new window film offering maximum reflection of the sun's heat but allowing practically all of the light through. Encompassing the two activity platforms specialised films and industrial coatings, this company comprised marketing, research and production specialists in San Diego (USA), Deinze and Zulte (Belgium) and the technology centre.

Road map to systematic development

The marketing road map guarantees a systematic approach to the entire development process. Starting from the customer's requirement, it evaluates commercial and financial feasibility right from the start of the project and provides for the necessary feedback en route.

Coordinating the marketing road map used by the activity platforms and the innovation initiatives undertaken by the technology centre ensures careful project selection and faster and more efficient development.

As well as further systematising the development activities based on its two core competences, Bekaert has also focused its development effort more tightly, in order to raise the pace of innovation and improve the chances of success. Bekaert resolutely carried through a substantial reduction in the number of development projects in 2004, while simultaneously allocating greatly increased budgets to the projects which were retained, with closer focus and strict monitoring on an individual basis. Only projects which offered the customer significant and measurable value and which were commercially and financially sound were retained.

Human resources

Bekaert owes its strong position in so many areas to the efforts of its thousands of professional, highly trained and dedicated personnel. Every new customer relationship and every new development is underpinned by their technological expertise, their knowledge of markets and their desire to understand the customer's needs.

Strong customer relations

Bekaert personnel combine a determination to find solutions for the customer with a thorough technical grounding. Systematic support is provided in the form of techniques such as 'voice of the customer' and 'quality function deployment'. These techniques help them to identify the customer's needs and define the product or service parameters, so that they can work with the customer to find the ideal solution, resulting in a win-win situation.

In this respect, Bekaert departs from the traditional supplier/customer model, in which one salesperson talks to one buyer, creating a situation in which the best solution for both parties may not be found. A complete team of Bekaert specialists works closely with a team of the customer's specialists. Only this kind of approach, based on mutual trust and respect, can guarantee sustained added value for both parties.

Gateway to success

In the fencing systems market, a modular gate was launched in 2004 in France and Southern Europe. The new gate, which meets all quality standards, was developed in response to customer demand for extra-wide gates. To circumvent the problems in both production and logistics which a standard design would cause, a gate was developed consisting of individual, easily managed standard modules, joined with robust connectors, enabling the customer to assemble gates of any desired size.

Bekaert's performance in terms of closeness to the customer and customer service is measured at regular intervals in satisfaction surveys and in-depth interviews with customers. On the basis of the findings, specialised training programmes are provided for the staff.

Expanding sales network

With market and product knowledge being disseminated swiftly to the various regions via Bekaert's international sales network, successful product launches in one region can often trigger market research on the same products in other regions. As a result of the successful switch from galvanised spring wire to *Bezinal*®-coated wire in the European automotive sector, for example, the launch of these products in the United States has been brought forward. In 2004, the main areas in which the sales network was expanded were advanced materials and advanced coatings, in particular industrial coatings, window film and reverse-osmosis membrane pressure vessels.

Global personnel policy

Bekaert's ongoing process of internationalisation has major consequences for its personnel policy, which is based on strong local teams, close and efficient cooperation, appropriate training, high mobility and consistent business ethics. Bekaert's policy of employing as many people as possible from the region demonstrates its respect for and faith in the capabilities of local staff. This policy is greatly appreciated and helps to facilitate Bekaert's acceptance by local businesses and its integration into the local economy. Bekaert aims to create strong, competent local teams which are able to function effectively as part of a global network. Teams which can work well together are essential if Bekaert is to provide the best possible customer support. The exchange of knowledge and experience and close cooperation across business units and functions are key themes in Bekaert's technical and management training programmes. Across regional boundaries, managers

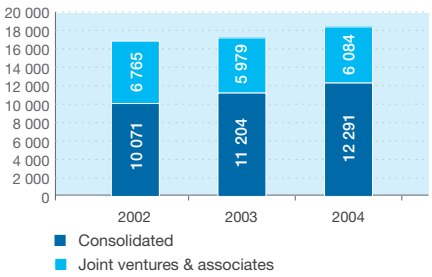
from the different countries come together to exchange information on best practices within a permanently learning organisation. Through formal and informal contacts, forums of this kind also promote team-building.

Top talent worldwide

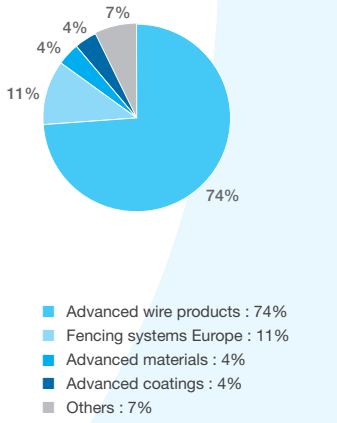
It is Bekaert's policy in all countries to position the company as an employer which is attractive to top talent. In 2004, a series of training programmes was organised, in rapidly-growing regions such as Central Europe and China, to give new managers an opportunity to familiarise themselves with such disciplines as strategic planning, organisation, technology, production, sales, coaching and problem-solving.

Bekaert actively fosters international mobility among its staff. The number of employee exchanges increased in 2004, which significantly expanded the transfer of knowledge. Managers from the United States, for example, were assigned to China to assist with the *Quantum*® range of automotive window film and a manager from Brazil was appointed general manager of the steel cord plant in Jiangyin (China). A substantial number of expatriates, from all continents, are engaged in supporting local management teams. Increased staff mobility in 2004 has prompted a comprehensive review of the various schemes applying to international transfers, on the basis of which Bekaert will be able to respond more flexibly to the growing demand for talented and internationally mobile staff.
The total number of employees increased, from 17 183 to 18 375. The number employed by the consolidated companies rose from 11 204 to 12 291 and the number employed by the joint ventures and associates increased slightly from 5 979 to 6 084.

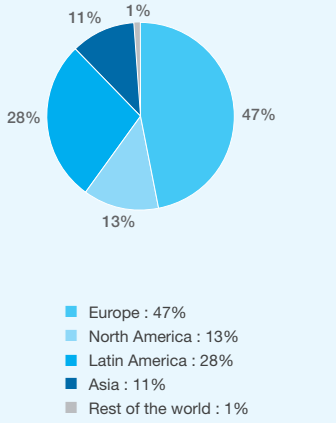
Evolution of personnel



Personnel by segment



Personnel by region



While continued expansion in China accounted for most of the growth, the workforce also expanded significantly in Slovakia, Turkey and the United States. The number employed in the advanced materials sector was also augmented by the acquisition of Solaronics in France. Since the sale of the European fencing division early 2005, the number of employees amounts to 16 400.

Ethics

To ensure consistency of business ethics worldwide, the main principles, guidelines and procedures are defined in two documents: the *Bekaert Code of Conduct* and the *Bekaert Guide to Business Control*.

In the area of internal audit, the emphasis was on proactive improvement of internal control and operational and integration audits. Attention was focused primarily on assurance regarding the security of information technology, procurement processes, inventory valuation and outward cash flows.

Research and development

Bekaert's strategic decision to centralise its research and development activities in Belgium is conducive to the achievement of the ambition of the European and Belgian governments to create a knowledge-based economy. Bekaert also participates in the Flanders Innovation Pact.

In 2004, Bekaert's research and development budget amounted to € 55 million. With its centralised R&D, Bekaert has opted for a broad technological base which greatly facilitates the identification and utilisation of synergy between the various technological competences. Having a single point of contact also ensures that research, development and innovation strategy is consistent both with corporate strategy and with the lower-level strategies of the business segments and activity platforms.
Bekaert's patent portfolio has grown by over 70% in the space of a decade. Close attention is paid to coordinating patent applications with the principal research and development projects undertaken by the technology centre and protecting Bekaert's industrial property.

The central R&D organisation is supplemented by local product development activities around the world. In early 2004, Bekaert set up a technical centre in Jiangyin (China), which works exclusively on product development in partnership with local steel cord customers. Bekaert has equipped the centre with state-of-the-art test facilities for polymer reinforcement of tires.

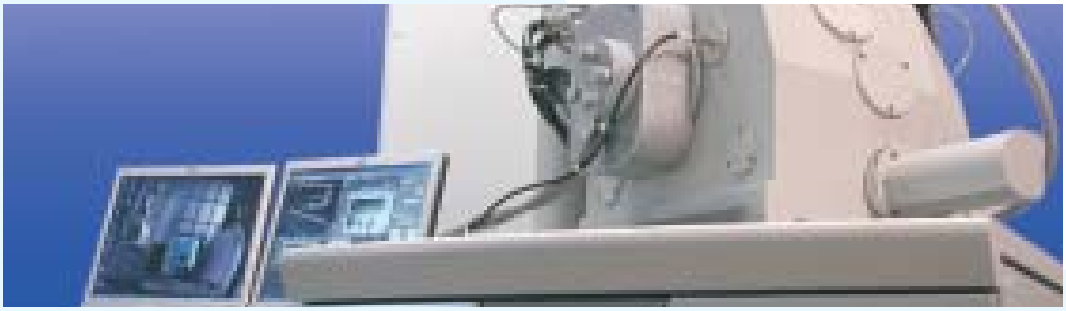
Innovation pact

The Flanders Innovation Pact is an agreement between private-sector companies and the government of Flanders. The government's target is to increase R&D-related investment to 3% of the gross regional product by 2010. The Innovation Pact has evolved from this quantitative target. A policy statement has been formulated by the Flemish Science Policy Council, of which Bekaert is a member via the Technology Policy Committee. Five important Bekaert research projects are supported by the Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT).

Bekaert relies on the active support of the various authorities, in terms of both adequate and efficient grants for R&D projects and equitable and competitive tax and parafiscal treatment of the researchers employed on them.

Top technologists and cutting-edge technology

Bekaert intends its technology centre in Deerlijk (Belgium) to retain its place at the top and strengthened the central R&D team of over 250 highly-qualified researchers in 2004. More than 10% of the team are specialists from other countries. An assignment to the technology centre is a regular waypoint on the career paths of Bekaert technologists around the world, ensuring that they all share the same technological grounding.



Bekaert invests continuously in research equipment, such as this dual-beam scanning electron microscope which was installed in the technology centre in 2004, the first in Europe.

As part of the ongoing programme of updating the research equipment, a dual-beam scanning electron microscope – the first in Europe – was installed in Deerlijk (Belgium). This new apparatus enables Bekaert to perform more accurate analyses of materials and is ideally suited to the study of complex coatings. A new glow-discharge optical-emission spectroscope, for chemical analysis and depth profiling of flat samples, was also installed. This unit is used to study thin coatings on metal or plastic substrates, for example measuring the depth profile of diamond-like coatings or sputtered coatings on window film.

Synergy makes Bekaert unique

With its central research and development, its wide range of technological competences and the diversity of its markets, Bekaert is able to utilise the synergies which exist between the various activity platforms and to grasp new opportunities.

Bekaert's extensive knowledge of coating technologies stems from its search for improved coatings for fencing wire and wire for industrial applications. Coatings are employed in virtually all applications in wire products and fencing systems, either for decoration, for improved corrosion protection or adhesion, for ease of processing or for a combination of these properties. As heavier demands were made on the products, heavier demands were also made on the coatings, and Bekaert moved into more advanced technologies such as vacuum coating. These in turn opened up new opportunities, both for new applications and for products in other activity platforms.

The interactions and technological synergies between advanced wire products, advanced materials and advanced coatings are substantial. Plastic coatings, which were first used on fencing products, were later applied to industrial wires and cables, for example. Silane coatings combined with galvanising impart new properties to wire products. Vacuum coatings are applied to wire for the textile sector because of their long service life, while thermal-sprayed wear-resistant hard coatings are used for wire-drawing machines. Thermal spraying is also used in the manufacture of rotatable sputter targets. The latter are supplied to the glass industry together with the necessary equipment for vacuum coating, a technology which has grown out of Bekaert's expertise in sputter technology. Sputtering in turn is used in the production of window film and electrically conductive film. The competences of Bekaert's engineering department, which were previously confined mainly to wire-drawing machines, are now also being deployed in the development and production of various burners and burner systems.

Engineering is key

Engineering plays a strategic role in Bekaert's drive for technological leadership, because it enables Bekaert to develop and build equipment for most of its core processes, which is a major advantage. Staff of the engineering department are regular members of R&D project teams working on advanced wire products, advanced materials and advanced coatings. In Belgium, they also participate actively in a number of research projects, in conjunction with the Flanders' Mechatronics Technology Centre, which seek to improve control of machines and processing lines.

One of Engineering's main tasks in 2004 was to provide support for capacity expansion projects at Bekaert plants in Brazil, Central Europe and Asia. To provide the best possible service, the engineering department stays close to its internal customers. Following the formation of a local engineering unit in Brazil, further units were set up in China and Slovakia in 2004 to support local production.

External contacts

Consistent with Bekaert's policy of 'open innovation', collaboration with external agencies on technological development was intensified and its network of technology-related external contacts was expanded in 2004.

By investing in new high-tech companies via venture capital initiatives, Bekaert participates in new developments which complement its own R&D activities. The total budget for these investments was increased to € 10 million in 2004. One of the research projects in which Bekaert invested last year was through Cymbet Corporation in the United States, which engages in advanced research in vacuum technology and which is currently working on the development of thin films in rechargeable micro-batteries for various electronic applications. This fits well with ongoing developments in Bekaert's advanced coatings business segment.

An open world of research

Bekaert has entered into numerous cooperation agreements with high-tech companies, research centres and universities, including MIT (*Massachusetts Institute of Technology*) in the United States, the *Fraunhofer Institute* and *Research Centre Jülich* in Germany, the *National Physical Laboratory* in the United Kingdom, *Cereco* (Ceramics and Refractories Technological Development Company) in Greece, EPL (*Ecole Polytechnique Fédérale de Lausanne*) in Switzerland and the *Flanders' Mechatronics Technology Centre* and *Flanders' DRIVE* in Belgium. Bekaert is also in contact or collaborates with most of the Belgian universities. Together with a large group of leading companies around the world, Bekaert is a member of the MIT ILP (*Industrial Liaison Program*), which gives it direct access to the MIT faculty, the MIT facilities and the MIT research library. One of Bekaert's young technologists was seconded temporarily to MIT as a visiting scientist in 2004.

Bekaert was more active in 2004 in acquiring licences on externally developed ideas which were relevant to its own activities. At the same time, Bekaert increasingly offered to other companies spin-offs from its own developments for which it had no immediate internal use. Bekaert currently has more than ten offers posted on Yet2.com, an international technology website.

Bekaert also maintains active contacts with Innovation Relay Centre (IRC), a Europe-wide network of technology intermediaries which is supported by the European Commission. The new innovation portal on the Bekaert intranet has a direct link to IRC, to facilitate consultation on and evaluation of the latest technological advances and requirements.

Quality as strength

Operational excellence is one of Bekaert's unique selling points and the company enjoys worldwide recognition of its efficiency and uniformly high quality standards. These are preconditions of both market leadership and technological leadership, which is why total quality management (TQM) is an integral part of all of Bekaert's processes.

The project undertaken in 2004 to streamline the entire process from order preparation and receipt, through delivery and after-sales service to logistics and accounting follow-up, was instrumental in raising staff awareness. In the course of this project, for which modification of the IT systems was one of the requirements, the operational units around the world subjected their TQM functions to an in-depth review, to identify areas where further improvements could be made and incorporate them into their plans for the year.

Quality Days

A number of Quality Days were organised in North America, Europe, Latin America and Asia last year, to promote the exchange of information on best practices relating to customer focus, quality management, process optimisation and waste reduction. Similar events were held for specific activities within the organisation, including the high-carbon wire and construction departments. Management pays regular visits to selected plants to evaluate and motivate their TQM functioning.

The various quality tools are documented in detail and disseminated throughout the organisation. Thorough training is provided for new employees, new plants and recent acquisitions, so that Bekaert can guarantee the same high quality standards all over the world.

Attention is increasingly focusing not only on the manipulation of product and process quality tools, but also on the behavioural and management aspects of the quality assurance process. Critical indicators of improvement in various areas have been reconsidered and revised to meet the needs of the global economy, giving priority to reducing delivery times and providing greater delivery flexibility. Bekaert has also integrated the TQM concepts and techniques with the Six Sigma approach and the Lean Manufacturing concept.

Key learning plants

Bekaert has continued to develop the concept of key learning plants: those which – as part of their mission – serve as examples and models of operational excellence, TQM, process expertise and general management for other plants.

In advanced wire products, good examples of key learning plants are Aalter (Belgium), Dyersburg (USA) and Jiangyin (China). At Industrias Chilenas de Alambre – Inchalam SA in Chile, which manufactures advanced wire products, a new product flow system has been introduced which enables Bekaert to serve its customers more efficiently and reduces working capital significantly. The plant is now a model for other plants working in similar circumstances.

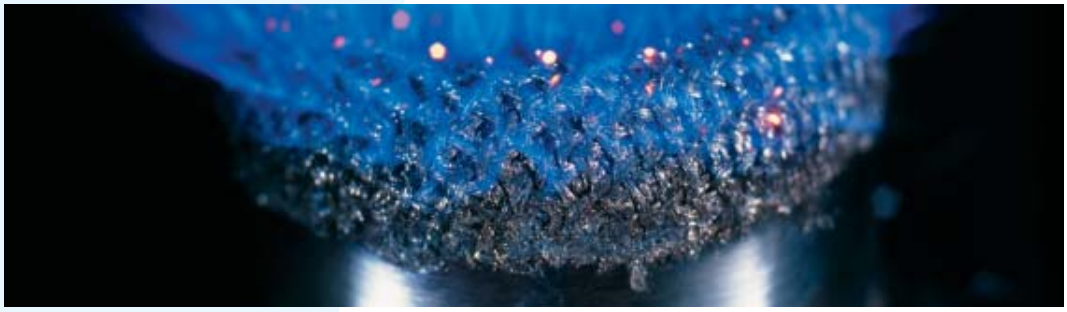
Health, safety and environment – twice

Health, safety and the environment are important issues for Bekaert at two levels: at product level and at production level.

... at product level

Bekaert develops and markets a number of products which specifically answer the need for greater safety and a cleaner environment.

Bekaert makes a significant contribution to environmental protection through its activities in combustion technologies. Bekaert's environment-friendly gas burners are used by most manufacturers of heating boilers for their condensing boilers. These metal-fibre burners provide clean combustion, producing fewer harmful gases such as NO_x. Premix burners for residential boilers offer a 10% efficiency improvement, reducing both gas consumption and CO_2 production and anticipating the increasingly strict legislation on greenhouse gas emissions. A recent change in UK law, for example, has greatly stimulated demand for condensing boilers incorporating Bekaert burners.



Metal-fibre burners achieve very clean combustion, with lower CO_2 emissions.

Measurements carried out on a traditional flare system used to burn off waste gas showed that it was discharging 400 tonnes of harmful gases into the atmosphere every hour. Using Bekaert's metal-fibre burners in flare systems reduces these emissions by a factor a thousand. These systems can also be used to burn off the natural gas released when working on main gas pipelines, which in many cases is still discharged into the atmosphere. Using the Bekaert flare system, up to 99.99% of the hydrocarbons released can be dealt with in an environment-friendly manner.

Membrane pressure vessels made of composite materials are used for reverse osmosis, a widely used process for converting seawater into water suitable for drinking and irrigation in an increasing number of regions where clean water is in short supply. The same process is also used to combat the escalating salinity of the groundwater in Florida. Similar pressure vessels are used to recycle waste water.

Window films reflect the sun's heat and keep temperatures inside buildings lower during the summer, thus saving the capital cost of an air-conditioning system or at least reducing energy and refrigerant consumption. Bekaert has software to calculate the savings made by installing window film. The University of Porto Alegre in Brazil found that, over a full year (summer and winter), an office building in the south of the country could save 31% of its air-conditioning capacity, which represents a 21% saving in electricity.

Window films provide protection against the sun's heat and harmful UV radiation.

One of the primary duties of the fencing sector is to strive for greater safety and security, through continuous improvement of and innovation in the fencing systems which protect people, animals or buildings. Gabions (wire baskets filled with stone) are used in flood defences and to reduce traffic noise. A recent innovation was the *Bekazur*® fencing system, introduced in 2004, which complies with the new French legislation (NF P90-306) on safety barriers around swimming pools.

Innovative fencing systems offer enhanced safety and security around swimming pools.

It all adds up

Bekaert is working with tire manufacturers to make vehicles lighter, because lighter vehicles use less fuel and hence produce smaller quantities of harmful exhaust gas. One approach is to reduce the weight of the steel used in tires by significantly improving its material properties. Steel cord products with higher tensile strength are contributing to this effort, as is an innovative windscreen wiper consisting of fewer components, which is lighter and offers improved aerodynamic performance.

Exhaust filters based on Bekaert metal-fibre technology, which remove 95% of the nanoparticulates, were fitted to forklift trucks for the first time in 2004.

Rotatable sputter targets and related equipment are used in the glass industry to apply coatings which improve the thermal insulation properties of glass and thus save energy.

Safety window films stop glass shards becoming hazardous projectiles which can cause injury or damage if the glass is blown out by explosion or storm.

... and at production process level

Consistent with its strategy of sustainable profitable growth, Bekaert seeks constantly to improve its health, safety and environmental performance.

As regards accident prevention and health and safety at work, Bekaert has set itself targets for reducing both accident frequency and accident severity. The figures continued to improve last year at its existing plants, but not at the new production units, and this aspect will receive special attention in 2005.

Learning from one another

The improvements at the existing production plants can be attributed largely to the exchange of information on best practices and benchmarking among the individual Bekaert plants.

The first intranet web board covering safety at work was set up in 2004. As well as raising general awareness of the importance of the environment and safety measures, a conference in Jiangyin (China) for the Bekaert plants in Asia addressed a number of other important issues, including corporate policy, environmental legislation in China and environment-friendly products and processes. Similar issues were discussed at round-table conferences on the environment in the United States and Europe.

Practical action

Action plans were drawn up in 2004 to reduce greenhouse gas emissions and make further energy savings through projects spread over a two-year period. Alternative processes were developed for chlorinated solvents to reduce emissions of volatile organic compounds, the major cause of soil and water pollution.

A number of actions were taken in preparation for new legislation. The required product information was compiled, so that Bekaert could make a proactive response to the new European Union directives on end-of-life vehicles, with a view to reducing waste, and the restriction of hazardous materials in the automotive, electrical and electronics sectors. Bekaert carried out an extensive study of the presence of banned or restricted substances.

As regards use of the best available technologies, the design document defining the best available surface coating technologies was revised and a pickling line was evaluated with reference to the best available metal processing technologies. A study was also carried out to make an initial assessment of the potential impact of REACH (Registration, Evaluation and Authorisation of CHemicals).

Bekaert made a breakthrough last year in its drive to achieve zero waste-water emissions, with the development of a recovery system for acid washers based on experience gained with pilot projects at two sites, the advanced wire products plants in Bohumín (Czech Republic) and Lanklaar (Belgium). Several plants were audited under the internal TEC (Total Environmental Care) system. An environmental management programme was launched to raise awareness at the plants in Latin America.

Notable achievements

Notable achievements in 2004 included:

- Approval of the energy plan for the Belgian companies.
- Commissioning of an incinerator for volatile organic compounds at the plant in Rome (USA).
- Several soil surveys in Europe, North America, Latin America and China in connection with due diligence investigations and the start of three projects in Belgium to clean up long-standing soil and groundwater pollution.
- Launch of several promising projects aiming to reduce energy consumption in various processes.
- Sustained reduction in the use of raw materials and consumables. The plant in Van Buren (USA), for example, halved its unit water consumption compared with 2002–2003.
- Certification of China Bekaert Steel Cord Company Limited in Jiangyin (China) as a 'Green Enterprise' (a certificate awarded to only nine of the 300 candidate companies), confirming the effectiveness of Bekaert's environmental management system.