

# FIVES-LILLE

GROUP

Automotive

Aluminium

Steel

Glass

Cement

Energy

Sugar



**2005** OVERVIEW  
2006 EDITION

# FIVES-LILLE

GROUP

→ Sales\*: **€914 million**

→ Sales from activities abroad\*: **76%**

→ Shareholder's equity\*: **€134 million**

→ Number of employees: **4,582**

|    |                                  |
|----|----------------------------------|
| 01 | Profile                          |
| 02 | Chairman's message               |
| 04 | Corporate governance             |
| 08 | 2005 Consolidated key data       |
| 10 | 2005 Highlights                  |
| 12 | Fives-Lille throughout the world |
| 14 | Sustainable development          |

|    |            |
|----|------------|
| 20 | Automotive |
| 24 | Aluminium  |
| 28 | Steel      |
| 32 | Glass      |
| 34 | Cement     |
| 40 | Energy     |
| 42 | Sugar      |
| 44 | Addresses  |



\* Excluding Cinetic Landis Grinding Group, which was first consolidated in December 2005.

# The FIVES-LILLE Group companies

|                |   |  |  |   |
|----------------|---|--|--|---|
| AUTOMOTIVE     | <p>Cinetic Machining<br/>           Cinetic Giustina Grinding S.r.l.<br/>           Cinetic Landis Grinding Corp.<br/>           Cinetic Landis Grinding Ltd.<br/>           Cinetic Linking<br/>           Cinetic Automation Corp.<br/>           Cinetic DyAG Controls</p>   | <p>Cinetic Assembly<br/>           Cinetic Conveying Ibérica S.A.U.<br/>           Cinetic Filling<br/>           Cinetic Transittique</p>                               | <p>Cinetic Service<br/>           Cinetic Service UK<br/>           Cinetic Service Slovakia</p> |    |
| ALUMINIUM      | <p>Solios Carbone<br/>           Solios Environnement SA<br/>           Solios Environnement Inc.<br/>           Solios Environment Corp.<br/>           Solios Thermal Ltd.<br/>           Solios Services AL A' Ali<br/>           Solios Services (Fives-Lille China)<br/>           Solios Services Southern Africa</p> |  |  |    |
| STEEL          | <p>Stein Hurtey<br/>           Stein Hurtey Inc.<br/>           Stein Hurtey MECC<br/>           Stein Hurtey Bilbao<br/>           Shipp</p>   | <p>DMS<br/>           DMS Industries</p>   | <p>Celes</p>   |   |
| GLASS          | <p>Stein Hurtey<br/>           Belgium Glass Equipement SA<br/>           BH-F (Engineering) Ltd.<br/>           Penelectro<br/>           Stein Hurtey MECC</p>  | <p>Celes</p>   |  |  |
| CEMENT         | <p>FCB Ciment</p>   | <p>Pillard E.G.C.I.<br/>           Pillard España<br/>           Pillard Feuerungen GmbH<br/>           Pillard (Tianjin) Intl Trading Co.</p>                           | <p>Solios Environnement</p>  |  |
| ENERGY / SUGAR | <p>Nordon Industries<br/>           Nordon Cryogénie<br/>           Cryomec AG</p>  | <p>Pillard E.G.C.I.<br/>           Pillard España<br/>           Pillard Feuerungen GmbH<br/>           Pillard (Tianjin) Intl Trading Co.<br/><br/>           Celes</p> | <p>Fives Cail Group</p>  |  |

Key data as at 31.12.2005\*

**Cinetic is a partner for leading car makers, equipment manufacturers and integrators as well as for the aeronautics and logistics industries.** It is specialised in the design, manufacturing and installation of integrated machining, powertrain assembly, final assembly and handling equipment and systems.

**€219 million**

→ Sales\*\*

**€195.6 million**

→ Order intake\*\*

**1,866** → Number of employees

**AUTOMOTIVE**

**Solios is developing its expertise in three key sectors for the aluminium industry:**

- anode production, bath processing and carbon butt processing,
- mastering environmental constraints regarding electrolysis pots, baking furnaces and green anode plants,
- aluminium melting, casting and treatment.

**€90 million**

→ Sales

**€73.1 million**

→ Order intake

**262** → Number of employees

**ALUMINIUM**

**DMS** designs and supplies mechanical equipment and steel production lines: reversible cold-rolling mills, "Skin-Pass" rolling mills, steel strip treatment lines and welded tube lines.

**Stein Heurtey** designs and supplies thermal equipment: reheat furnaces, heat treatment furnaces, furnaces for annealing and galvanising lines, complete galvanising Mini-lines®, etc.

**Celes** is an induction heating equipment designer.

**€213.3 million**

→ Sales

**€330.7 million**

→ Order intake

**782** → Number of employees

**STEEL**

**Stein Heurtey and its subsidiaries** design and supply thermal equipment for the flat glass, hollow glassware and float glass industries.

**€57.7 million**

→ Sales

**€30.3 million**

→ Order intake

**151** → Number of employees

**GLASS**

**FCB Ciment** designs and supplies process equipment and turnkey plants for the cement industry.

**Pillard**, for its part, designs and manufactures combustion equipment for the whole mineral processing industry.

**Solios Environnement** designs and supplies dust collection equipment for kilns, coolers and grinders.

**€188.9 million**

→ Sales

**€128.4 million**

→ Order intake

**442** → Number of employees

**CEMENT**

**Nordon Industries, Nordon Cryogénie and Pillard** all operate in the energy market and design piping systems, aluminium heat exchangers, cryogenic pumps and combustion systems for the production of electrical and thermal energy.

**Fives Cail Group** designs and supplies process equipment and turnkey assemblies for the sugar and ethanol industries.

**€146.1 million**

→ Sales

**€195.8 million**

→ Order intake

**1,026** → Number of employees

**ENERGY  
AND SUGAR**

\* Excluding Compagnie de Fives-Lille and without eliminating reciprocal accounts between divisions.

\*\* Excluding Cinetic Landis Grinding Group, which was first consolidated in December 2005.

# Fives-Lille Group: Industrial engineering on the international scale

With solidly established bases in Europe, the Americas and Asia, Fives-Lille is now a global industrial engineering group well-known for its capacity for innovation and technological expertise.

Now refocused on high added value businesses, Fives-Lille designs, manufactures and sells capital equipment mainly for the automotive, steel, aluminium, cement and glass industries as well as for the sugar and energy sectors.

The Fives-Lille product range covers the whole spectrum from stand-alone equipment to complete production lines, workshops and turnkey plants. Whether a micro-project or a macro-project, the Group is capable of providing the appropriate solution, within the agreed deadlines, for each of its customers and assisting them in their development projects.

The quality of its services, and the relationship of trust built up with its customers, explain its leading position in each of its business divisions.



**Frédéric Sanchez**, Chairman of the Executive Board of Compagnie de Fives-Lille

# Y

ear 2005 ended with an event that gave a new momentum to the Group's development: the acquisition from the US company Unova of the assets of the Landis Group, the leading supplier of crankshaft and camshaft orbital grinding machines with a nearly 40% share of the world market.

With sales of around €120 million in 2005, Landis rebalances our geographic coverage by strengthening our position significantly in North America. It also considerably increases our recurrent earnings base and consolidates our position in emerging markets and fast-growing markets such as China and India.

This acquisition was made possible by the steady improvement in our performance. The Group once again recorded strong growth at sales, operating and financial levels. At the end of 2005, for the first time ever, our order book exceeded €800 million. With 11% growth in order intake, a 4% increase in sales and 7% growth in operating profit, and a very sound financial structure, the Group has proved its capacity to achieve sustainable growth year after year.

“Year after year, the Fives-Lille Group has shown its capacity to achieve sustainable growth.”



Fives-Lille is now a global player in all its main markets, renowned for its innovative and environmentally-friendly technologies and for its capacity to successfully carry out complex industrial projects anywhere in the world.

The construction and commissioning in 2005, in record time, of the Tula cement plant in Mexico for Lafarge, the Manama aluminium smelter for Alba in Bahrain, an annealing and pickling line for hot-rolled coils at Taiyuan in China for Tisco and the PSA's final vehicle assembly line at Trnava in Slovakia are just some examples of our Group's areas of expertise, and of its leading edge in terms of innovation, technology and sustainable development.

Our activities will continue to expand in 2006 thanks to a large order book, robust trends in our markets, an appropriate strategic positioning and the strength of our decentralised organisation structure coupled with a rigorous system of internal control.

By cultivating the principles that underpin the successes of the past few years, the Group will continue to create value for its employees, its customers and its shareholders.

By strengthening each business division through innovation, acquisitions and geographic expansion, we shall consolidate earnings growth and our world leadership positions.

By fostering professional and cultural diversity, we shall strengthen our business model and growth prospects.

I firmly believe that our Group has undergone in-depth changes over the past few years and that it has developed genuine potential for organic growth. It now has the size, financial strength, organisation and skilled staff to meet future challenges and remain on its present path of controlled expansion.

# Corporate Governance

Compagnie de Fives-Lille is a joint-stock company with an Executive Board and a Supervisory Board. Over the last few years, its governance bodies have set up various committees to assist them in the decision-making process.



**Frédéric Sanchez**, Chairman of the Executive Board  
**Lucile Ribot, Martin Duverne**, members of the Executive Board

## The Executive Board

The Executive Board, which consists of three members appointed for a period of six years, is responsible for the management of the company. It has the broadest powers to act in all circumstances in the company's name within the limits of the corporate purpose and the powers attributed expressly to the Supervisory Board and to shareholders' General Meetings.

With regard to the Supervisory Board, the Executive Board:

- presents a quarterly report on the Group's performance, together with a revised budget for the current year and, at each year end, an initial budget for the following year;

- within the three months following the year end, makes up the annual company and consolidated financial statements and provides them to the Supervisory Board;
- provides the Supervisory Board with the management report that will be presented to the Annual Ordinary General Meeting;
- reports on any specific issues that could be of major importance for the Group.

The Executive Board meets as often as the company's interests require.

## The Supervisory Board

Currently comprising seven members, the Supervisory Board exercises permanent control over the Executive Board's management of the company. It meets at least four times a year to review the quarterly report presented to it by the Executive Board. It verifies and checks the documents concerning the company and consolidated financial statements presented to it by the Executive Board within the three months following the end of the financial year.

Throughout the year, it performs the checks and controls it considers appropriate and may request any documents it deems useful in the accomplishment of its role.

The members of the Supervisory Board are:

- Jacques Lefèvre, Chairman;
- Guillaume Jacqueau, First Deputy Chairman;
- Gonzague Le Barbier de Blignières, member;
- Dominique Gaillard, member;
- Thomas Grob, member;
- Arnaud Leenhardt, member;
- Grégoire Chatillon, member as permanent representative of Barclays Private Equity France SAS.

## The Executive Committee

To assist with its decisions, the Executive Board has instituted an Executive Committee comprising the members of the Executive Board and the main operating managers of the Group.

As a body for the consideration and exchange of information, the Executive Committee meets to review specific issues and assist the Executive Board in reaching decisions concerning matters falling within its powers. In particular, the Executive Committee deliberates on matters of common interest and questions of coordination between the Group's various entities.

The Executive Committee met six times in 2005 to discuss topics including:

- career management and remuneration policy within the Group;
- development of the Group's international sales force and strengthening of its Fives-Lille China execution structure set up in China in 2004;
- issues of research and development, industrial property and the appropriateness to set up a Group's Innovation Department.

## Composition of the Executive Committee and main posts held by its members:

### AUTOMOTIVE DIVISION:

- **Jean-Camille Uring**, 56 years old.  
- Deputy CEO of Cinetic Industries;  
- Chairman and CEO of Celes.
- **Jean-Claude Salas**, 56 years old.  
- Chairman and CEO of Cinetic Assembly.

### ALUMINIUM DIVISION:

- **Philippe Ramet**, 58 years old.  
- Chairman and CEO of Solios Environnement and of Solios Carbone.

### STEEL/GLASS DIVISION:

- **Jean Ledoux**, 60 years old.  
- CEO of F.L. Metal;  
- Chairman of the Boards of Directors of DMS and DMS Industries.
- **Daniel Brunelli-Brondex**, 45 years old.  
- CEO of Stein Heurtey.
- **Jean-Paul Sauteraud**, 54 years old.  
- Assistant General manager of Stein Heurtey.



Jean-Camille Uring



Jean-Claude Salas



Philippe Ramet



Jean Ledoux



Daniel Brunelli-Brondex



Jean-Paul Sauteraud



Alain Cordonnier



Michel Dancette



Jean-Claude Pillard



James Roget

## CEMENT DIVISION:

- **Alain Cordonnier**, 46 years old.  
- CEO of FCB Ciment.
- **Jean-Claude Pillard**, 61 years old.  
- Chairman and CEO of EGCI Pillard.

## ENERGY DIVISION:

- **James Roget**, 57 years old.  
- CEO of Nordon Industries.

## SUGAR DIVISION:

- **Michel Dancette**, 53 years old.  
- Chairman and CEO of Fives Cail.

## The Accounts Committee

The role of the Accounts Committee is to provide information to the Supervisory Board. Its members are:

- Jacques Lefèvre, Chairman;
- Guillaume Jacqueau, member;
- Thomas Grob, member.

The Chairman of the Executive Board, the Chief Financial Officer, the Financial Control Director and/or the Director of Accounting for the Group as well as the company's Statutory Auditors may also attend meetings of this Committee.

Its role is primarily to:

- examine and assess the financial documents issued by Compagnie de Fives-Lille in connection with the preparation of annual and semi-annual company and consolidated financial statements;
- advise the Supervisory Board on possible changes to the accounting principles and policies in force;
- examine the manner in which internal and external controls are performed in respect of the company's consolidated financial statements.

The Accounts Committee meets at least twice a year.

## The Remuneration Committee

The Remuneration Committee is responsible for making proposals to the Supervisory Board concerning appointments to the Executive Board, the possible renewal of Executive Board members' terms of office together with the amount of their remuneration. This committee is composed of the following members of the Supervisory Board:

- Guillaume Jacqueau, Chairman;
- Jacques Lefèvre, member.

## An internal control system aimed at controlling risks

The internal control procedures applied within the Group are intended:

- first, to ensure that management actions and the conduct of transactions, as well as the behaviour of personnel, are fully consistent with the framework defined by the applicable laws and regulations, the orientations given by the corporate governance bodies, and the values, standards and internal rules;
- second, to ensure that accounting, financial and management information provided to the corporate governance bodies provides an accurate reflection of the activities and position of the entity which is concerned.

The internal control system thus defined is intended to provide reasonable assurance that risks will be controlled and that the objectives set will be achieved.

Concerning the prevention and control of risks inherent in the Group's activities and the conduct of its personnel, the structure of the Fives-Lille Group is based on:

- the quality, personal involvement and accountability of the management teams in each Group company;
- coordination by business division;
- the implementation, within the context of a concerted effort by the various Group companies, of a "Directives and Recommendations Manual". This constitutes the preferred means of controlling risks and also provides the basis for internal limitations set by the Boards of Directors of Group companies on the powers of their Chief Executive Officers and Chief Operating Officers.

In particular, each proposal to materially commit the company concerned is subject to an in-depth review intended to avoid exposure to risks that may have a material effect on the financial outcome of a proposed contract or an adverse impact on the business or reputation of the company in a given business sector or geographical region.

Similarly, each material contract in progress is subject to a detailed review at least once every three months by the main managers of each Group company with the purpose of carrying out a detailed assessment of contract progress, reviewing the technical, financial and contractual issues involved, and taking any relevant decisions.

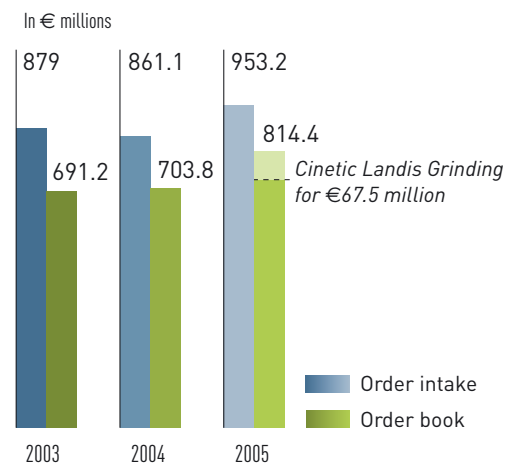
Concerning the preparation and processing of accounting and financial information, the internal control mechanism is based on:

- implementing professional accounting and financial procedures throughout the Fives-Lille Group by building on the experience of its staff;
- a uniform system of accounting methods and consolidation rules;
- an integrated and common consolidation and management application throughout the Group, thus ensuring the consistency of accounting data and management information.

In the context of their assignment, the Statutory Auditors carry out a limited review of the consolidated interim financial statements and a detailed audit of the individual annual consolidated financial statements. The company and consolidated financial statements have, to date, been approved without qualifications.

## 2005 Consolidated Key Data

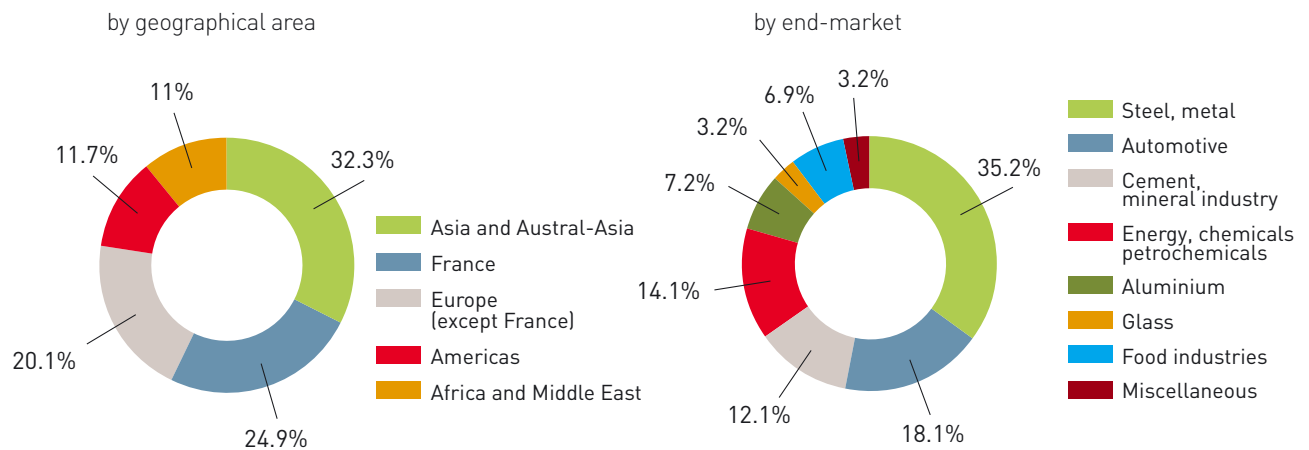
2005 was an excellent year for the Group in terms of business, thanks to an efficient and innovative technical offer and a global sales force. It entered the present year with a record order book giving it good visibility for 2006 in most of its businesses.

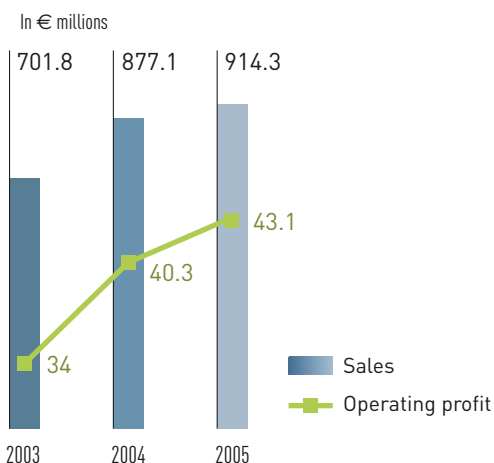


### Order intake and order book

The Group entered the present year with a record order book, of nearly €750 million (€814 million including Cinetic Landis Grinding), giving it good visibility for 2006 in most of its businesses.

### Breakdown of 2005 order intake



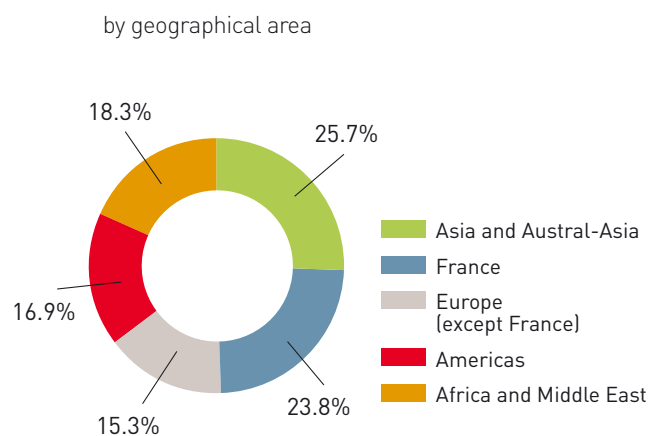
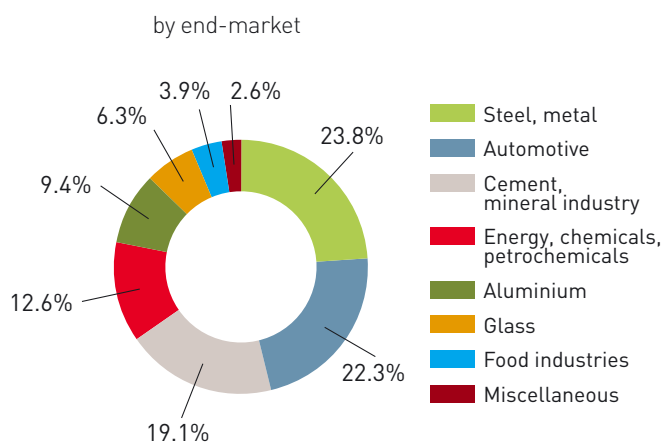


## Sales and operating profit

After an already remarkable year in 2004, sales increased by 4.2% in 2005 despite the disposals in the automotive activity in Germany and in steel in the US. This performance, achieved without any contribution from the Landis Group reflects a record opening order book combined with an exceptional level of order intake.

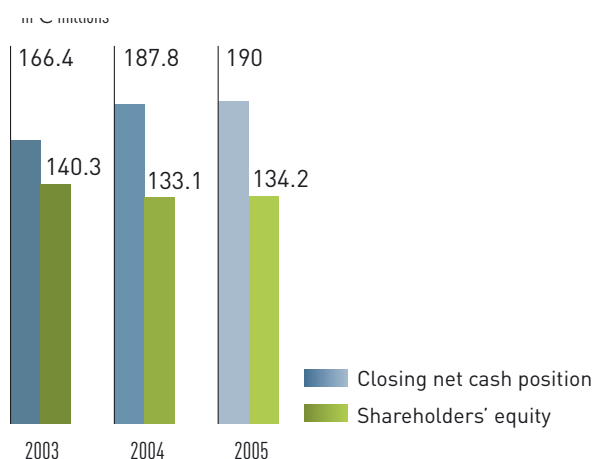
Operating profit for the year came to €43.1 million, up from €40.3 million the previous year (+7%). All the Group's activities made a positive contribution to growth.

## Breakdown of 2005 sales



## Closing net cash position and shareholders' equity

With a rise in cash and cash equivalent balances during the year and shareholders' equity of €134 million at the year end, the Fives-Lille Group has a healthy and solid financial structure.



*Note: with the exception of the order book at 31 December 2005 and of the number of employees, the above data is excluding Cinetic Landis Grinding Group, which was first consolidated in December 2005.*

## 2005 Highlights

World leader in orbital grinding machines, Landis joins the Automotive division of the Fives-Lille Group.



**In December 2005, the Group significantly strengthened its Automotive division through the acquisition of the assets of the Landis Group.**

Roger Coverdale  
Managing Director –  
Cinetic Landis Grinding Ltd.



**“Thanks to Landis Grinding Systems having joined the Cinetic Group, we are now even better equipped to develop our range of high precision grinding machines. Landis, a name recognised worldwide, has become associated with another internationally-known name, that of Giustina. Together with the synergies provided by Cinetic Linking and Cinetic Automation, this association enables us to offer our long-standing customers an improved service while also making ourselves known to new customers.”**

The acquisition of the assets of the Landis Group from the American company Unova substantially strengthened the Automotive division's positioning in its markets and significantly boosted its contribution to the Group. With a global market share of almost 40% and sales of around €120 million in 2005, Landis is the world's leading supplier of grinding machines for crankshafts and camshafts.

Apart from strengthening its position in the field of powertrain equipment, this acquisition provides the Cinetic Group with access to new markets, particularly in Asia, and to new customers as Landis works with virtually all the world's cars, lorries and heavy vehicles manufacturers.

The Cinetic Group now ranks as a world leader in the construction of grinding machines for engine parts, and has thus broadened its product offer for equipment and systems for the automotive industry.

Cinetic Industries has thus acquired two new subsidiaries:

- Cinetic Landis Grinding Ltd., based in Cross Hills (United Kingdom), produces orbital grinding machines – mainly for crankshafts and camshafts – for European and Asian carmakers, as well as very high precision machining systems at its Cranfield plant;
- Cinetic Landis Grinding Corp., based in Waynesboro (United States), works for American carmakers. In addition to orbital grinding machines, its also manufactures machining tools: cutting and diamond-tipped tools at its CITCO Chardon plant, and abrasive tools at its GARDNER South Beloit plant.



Daniel Pheil  
President  
and CEO –  
Cinetic Landis  
Grinding Corp.

**“I feel that our relationship with Fives-Lille fits perfectly with our philosophy as market leader: the values that we share are the desire for excellence – to be the best in our category – integrity, and the determination to ensure a successful outcome to all tasks undertaken.”**

## The Group decides to boost the shared resources made available to the subsidiaries.

**It established an Innovation Department in late 2005, and brought together the IT resources and skills within a specialised economic interest group.**

Creation of a Groups' Innovation Department: technological innovation lies at the heart of Fives-Lille's development strategy



The creation of the Innovation Department forms part of a broader approach aimed at enhancing the Group's intellectual property and coordinating the various subsidiaries' research and development programmes to pave the way for the future. It also focuses on strengthening the protection of expertise, systematising a technological watching brief, optimising financing solutions, developing within the Group a network of experts to promote the sharing of experience and consolidate links with external research centres.

Creation of an economic interest group: promotion of shared IT skills and applications

Fives-Lille Systèmes d'Information, the economic interest group that became operational on 1 January 2006, is charged with encouraging the sharing of experience within the Group and optimising operating and investment budgets in the field of IT and telecoms at Group level, notably through the promotion and implementation of shared applications.



MAY 2005

### Sale of non-core assets of DMS Bliss

The non-core assets of DMS Bliss were sold in late May to an American company engaged in related activities. Acquired in 1999, DMS Bliss provided DMS with expertise and references that, by complementing its range of rolling mills ("Skin-Pass" process), contributed to enhance its image and to guarantee it a not insignificant increase in added value, particularly in the field of coating lines for carbon steel.



DECEMBER 2005

### Sale of Cinetic GmbH

Cinetic GmbH, formed from the merger in June 2005 of the German entities Cinetic Automation GmbH and Cinetic Conveying & Assembly GmbH, was sold on 30 December 2005 to KV Capital, a German recovery fund. Cinetic's development in the German market remains a priority, however, and Cinetic will endeavour to seize all external growth opportunities that might come its way in this country. The initiatives and commercial presence in Germany of the other network subsidiaries will continue to be developed.



JANUARY 2006

### Change of company name

On 1 January 2006, the company names of Cinetic Etfa Linking, Cinetic Conveying & Assembly and Cinetic Rapidcharge Filling were changed to Cinetic Linking, Cinetic Assembly and Cinetic Filling respectively. In addition, all Cinetic's subsidiaries now use the same logo, being that of the Cinetic Group.

# Fives-Lille throughout the world

## Fives-Lille: a deep commitment at international level.

Delivery to all four corners of the world of complex industrial installations, using technologies that are up-to-date and environmentally friendly, while complying rigorously with all contractual commitments, that is the expertise shared by all companies within the Fives-Lille Group.

This professionalism is recognised by the Group's customers as well as its financial partners.

The objective of Fives-Lille Group's International Department is to establish a fruitful and well-balanced collaboration with these financial partners – banks, export credit agencies and public and private insurance firms – and to design appropriate financing solutions for the Group companies' customers.

Through the development of its network of sales representative offices – in Beijing, Bangkok, Jakarta, Ho Chi Minh City, Mexico and Moscow – the International Department ensures that commercial skills are firmly rooted close to its customers while also permitting the capitalisation of the experience acquired by the various Group companies in a given geographical area.

## China: Fives-Lille's primary market

In 2005, the Chinese market remained the most fertile market for companies in the Fives-Lille Group, which were able to acquire strong commercial positions in this country and develop year after year relationships in partnership with leading customers such as Baosteel or Tisco.

This was particularly true in the steel sector, as witnessed by the numerous contracts taken on in this country by DMS and Stein Heurtey. In 2005, DMS won contracts from both Wisco and Tisco for the supply of reversible cold rolling mills for silicon steel, and a contract from Tisco for an annealing and pickling line for stainless steel, known as "Jumbo Line" due to its sheer size. Stein Heurtey won contracts from Ma Steel International Trade and Economic Corp. for the supply of three Digiflex® vertical furnaces to be used on a continuous annealing line for automotive sheets and two galvanising lines with a cold rolling mill. In addition, DMS and Stein Heurtey formed a consortium that won two contracts from Baosteel for the supply of a tinplate annealing line and two hot galvanising lines.

These sales and marketing initiatives also draw on a series of entities that implement, on the ground, the efforts made by the Group's subsidiaries. In addition to Fives-Lille's representative office in Beijing, this

mechanism includes the production subsidiaries – Pillard Tianjin International Trading Co. Ltd. for Pillard E.G.C.I. in Tianjin, Stein Heurtey MECC Industry Furnace Co. Ltd. for Stein Heurtey and Fives-Lille China for Fives-Lille, both in Shanghai.

Since its creation in 2004, Fives-Lille China has succeeded in becoming an indispensable partner of most Group companies as a supplier of the local portion of contracts in China. In 2005, Fives-Lille China achieved recognition notably by:

- assuming responsibility for the local manufacture of mechanical parts under the contract won by Solios from Chalco Lanzhou;
- creating in Shanghai a Solios Services structure that is in charge of after-sales service for Solios's equipment installations in China;
- forming a structure to provide support for the realisation of the local portions of DMS contracts in China;
- supervising the manufacture of Horomill® units for FCB Ciment;
- winning, in consortium with Fives Cail, the Skeldon II contract (Guyana). It also supervises the local manufacture of equipment produced using sheet metal work (diffuser, continuous vacuum pan, reheater, etc.);
- negotiating partnership contracts for Cinetic.

- Group head office
- ▲ Subsidiaries
- Representative offices

### AMERICAS

Canada (Montreal)

United States (Chardon, Coral Gables, Farmington Hills, Livonia, Pittsburgh, South Beloit, Waynesboro)

Mexico (Mexico City)

Brazil (São Paulo)



Michelle X.Y. Shan – Vice President Business Development of the Fives-Lille Group  
Chief representative of the CFL Beijing office and Chairman of Fives-Lille China

“The major contracts won last year illustrate the commercial maturity of Group companies in China.”



## Development of Fives-Lille's international operations

Jean-Marie Caroff  
 International Director  
 – Fives-Lille Group



“In addition to a now highly structured presence in Asia, Fives-Lille is expanding its network of representative offices with the creation in early 2006 of a CFL office in Moscow with responsibility for the Group's development in Russia and the Commonwealth of Independent States (CIS). It is well recognised that we are witnessing in this geographical area a resurgence of industrial investments in all our industrial skill areas.

In 2006, the strengthening of our presence in India constitutes a strategic priority on which we will take action. It is a matter of providing a response to sales and marketing needs as well as production needs in a region that is remarkable in terms of both its potential and degree of heterogeneity.”

## Sustainable Development

Strengthening every aspect of our sustainable development policy – labour, society, the environment and safety – forms the very basis of our profit and growth strategy.



Sustainable development “[...] meets the needs of the present without compromising the ability of future generations to meet their own needs” – Gro Harlem Brundtland, Prime Minister of Norway (1987).

Reconciling environmental protection, social justice and economic performance: by applying this objective to their daily relations with their customers, employees and partners, the companies of the Fives-Lille Group demonstrate their commitment to a sustainable development approach.

### Fives-Lille is committed to the amicable resolution of business conflicts

Under the auspices of the Paris Chamber of Commerce and Industry (PCCI), Fives-Lille signed an inter-company mediation charter in September 2005 with 44 major French companies. By deciding to join this process, the signatory companies make it possible to retain control over the resolution of their differences while maintaining the confidentiality of their relationship. They also agree, together with the PCCI, to drive the process of promoting mediation among all French companies.

#### Cinetic adheres to the principles of the United Nations Global Compact

Signatories to a joint purchasing charter, the companies of the Cinetic Group undertake to ensure that their suppliers and subcontractors comply with United Nations Global Compact principles regarding human rights, labour standards, the environment and anti-corruption efforts. In the event of non-compliance with these principles, the Cinetic Group, through its Purchasing Committee, shall help the supplier or subcontractor implement these principles, while naturally taking into consideration its specific characteristics. If a supplier or subcontractor fails to follow the committee's recommendations, the committee can decide to terminate all planned business relations.



#### Fives-Lille supports the efforts of Amnesty International

Respect for individuals and their rights is one of Fives-Lille's key values. For two years, the Group's management has been supporting Amnesty International's efforts to protect people from all forms of discrimination and to help eradicate violations to human rights, physical and mental integrity, and freedom of speech and conscience.

#### Fives-Lille encourages entrepreneurship by supporting Paris Entreprendre

For the past two years, Fives-Lille has been supporting start-up and takeover entrepreneurs via the Paris Entreprendre organisation, which mainly consists of business leaders. A member of the "Réseau Entreprendre" network, this organisation helps individuals with small, high-potential projects, granting them "loans on trust" (interest-free or low-interest medium-term loans) and providing them with the tools for success: project evaluation, business networking and individual and group support.

#### Fives-Lille supports the efforts of the Fondation de la 2ème Chance to fight job insecurity

The mission of the Fondation de la 2ème Chance, a government-recognised charity, is to assist individuals who, despite their situation of great insecurity, demonstrate a real desire to improve their lives. In addition to assistance solicited from other organisations, the foundation offers personal and financial support to help individuals successfully carry out a realistic and sustainable career plan, such as training leading to a qualification or the creation or takeover of a business. Over the past two years, Fives-Lille has worked with 120 partners among financial institutions and large government-controlled and private companies to support the foundation's efforts and help the growing number of people who are changing their lives for the better.

# Sustainable Development

An industrial engineering Group, Fives-Lille supports the transformation of its businesses by developing the skills of its employees, improving their working conditions and strengthening the relationship of trust within its teams.



## Ensuring personal safety: a key Fives-Lille objective

Because ensuring personal security is a major concern shared by Fives-Lille and its customers, the Group's companies take practical measures that aim to reduce occupational accidents, particularly at work sites.

A supplier of piping components for nuclear, chemical and petrochemical installations, Nordon Industries thus organises an annual "Safety Challenge" to encourage operational divi-

sions to improve their safety results. This initiative is a very effective part of the company's efforts to ensure its employees' safety; the number of work accidents was cut in half between 2002 and 2005.

Solios, with a record of more than four million on-site hours without an accident leading to a work stoppage, was congratulated by the aluminium producer, Alba, for its performance at the line 5 site in Bahrain and thus was awarded safety certificates attesting to these excellent results.

## Providing a charter to encourage international mobility

Due to Fives-Lille's extensive international operations, employees work in many different countries for periods of time ranging from a few days to several years. In order to manage and encourage such mobility, Fives-Lille has created an international mobility charter to more effectively support its teams worldwide.

The charter's primary objective is to ensure the safety of the Group's employees during all their assignments abroad by seeing to their physical protection and medical needs and by maintaining the level of benefits and living conditions they enjoyed in their country of origin no matter where they are currently working.



## Encouraging gender balance in the Group's businesses with pro-active policies

Faced with a long tradition of male dominance in its businesses and the high proportion of men in engineering

schools, Fives-Lille is developing a pro-active policy of hiring more women.

This effort has quickly resulted in an increase in the number of women hired and their accession to management positions in fields traditionally held by men. This change has been particularly noticeable in the subsidiaries' design and R&D departments since new hirings and promotions took place in 2005.

The Group has decided to improve on these initial results by negotiating, in 2006, a group agreement dealing with the status of women in the company and defining the methods of applying the law of 23 March 2006, which concerns salary equity between women and men.



## Paving the way for the future by recruiting young graduates

Because the Group must prepare for major changes in the job market and guarantee its future, Fives-Lille has created a pool of young engineers through the VIE (Volunteer International Experience) programme in partnership with the French Ministry of Foreign Affairs.

### Standardising and improving supplementary employee benefits

The initiative undertaken by the Fives-Lille Group Human Resources Department in 2005 has led to the implementation, on 1 January 2006, of a single supplementary medical expenses and pension scheme for all employees of the Group's French subsidiaries. This new scheme meets the major objectives set by management and labour: the company-wide expansion of a supplementary safety net comprising medical expenses and retirement pensions, common to all managerial and non-managerial employees working for the Group's French subsidiaries and guaranteeing a good level of coverage. "It's very important that all employees benefit from the same scheme, independent of their job category," said Anne François, Force Ouvrière trade union representative at Stein Heurtey. Even though the basic scheme already provides good coverage, the Group wanted to offer employees the opportunity to improve their insurance benefits under attractive terms by joining an optional scheme that provides them with excellent protection. "A choice that was made by a large number of employees," noted Anne François.

### Managing skills based on respect for employees

By signing an agreement on the employee appraisal process and career management with staff representatives on 12 December 2005, Fives-Lille Group reaffirmed that skills management is compatible with respect for the individual.

Applicable to all employees working for the Group's French subsidiaries, this agreement states that the appraisal of employees must be based exclusively on objective criteria, such as job performance, recognised skills and each employee's contribution to results with respect to his or her position, and also that the employee must be given a genuinely active role in the development of his or her career.

### Transferring knowledge within our teams

Fives-Lille largely owes its success to its technical expertise and mastery of complex industrial processes. At a time when many new people are being hired, preserving and passing on knowledge is essential. The Group's companies have found various solutions to this key strategic need.

Fives Cail, for example, is building up a Database comprising 3D models of its range's main equipment. This Database is made of the whole technical knowledge of these equipment and also serves as a reference for the detail drawings. Solios Environnement recently completed a programme begun three years ago with the online publication of "design guides", which bring together and formalise the company's technical knowledge.



Alain Le Corre  
Managing Director  
- Solios  
Environnement SA

"With the online publication of design guides in France and Canada, we are now completing a programme we began three years ago with the aim of identifying and organising all our knowledge about our three fume treatment technologies. One of the programme's objectives was to provide a single solution for a technical problem and not one solution per individual. Our employees now have a useful guide for helping them proportion, design and secure installations both before the sale and at the time of implementation. The design guides are part of the Technical Reference Database, which, at a later stage, will provide technical guidelines to determine the applicable technology. These tools are particularly motivating for newly hired engineers, who can call upon an impressive range of knowledge. In addition, the tools serve as the basis for their training."

# Sustainable Development

**As it shares its customers' concerns regarding protection of the environment, the Fives-Lille Group develops technologies to enable them to achieve, or even exceed, their objectives of reducing energy consumption and polluting emissions.**

## AUTOMOTIVE

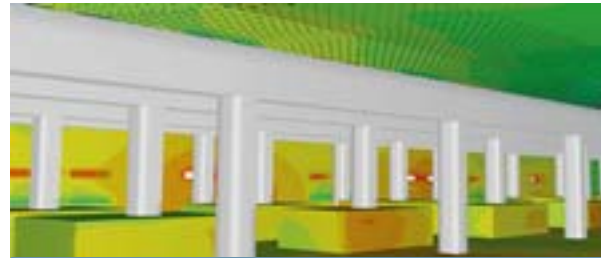
### **Ford congratulates Cinetic Landis Grinding Ltd. for its "clean" grinding machines**

Ford awarded Cinetic Landis Grinding Ltd. a certificate of excellence in recognition of their developments toward reducing emissions from machine tools. Grinding operations consume various fluids, especially for cooling the tools used. Cinetic Landis Grinding Ltd. has designed a machine with strategically positioned mist extraction ducts, which ensures that the coolant mist generated during the grinding process is fully contained with the machine, whilst using minimal air extraction flow rates.



Landis grinding machine

## STEEL



Inside view of a Digit@l Furnace® modelled with Fluent®

### **Stein Heurtey's Digit@l Furnace® consumes and pollutes less than conventional reheating furnaces**

The Digit@l technology developed by Stein Heurtey cuts down on energy consumption and CO<sub>2</sub> emissions from reheating furnaces while improving the thermal homogeneity of products. These performances are achieved by a combination of three factors: improving the supervision of furnace operations especially when switching between different products; using proprietary digital simulation tools; and obtaining better heat distribution through finer, more flexible zoning over the length of the furnace.

Measurements taken on the ten Digit@l Furnace® in service confirm that substantial savings can be achieved, representing more than 10% of consumption and discharges. At Ruukki in Finland, measurements conducted on two reheating furnaces operating on a single rolling mill – one being of conventional design and the other based on Digit@l technology – showed that, in equivalent production conditions, the Digit@l Furnace® gave an energy saving of 14% and an equivalent reduction in CO<sub>2</sub> emissions.

Extremely good results for VOC emissions can also be achieved by combining Stein Heurtey's Digit@l technology with regenerative burners, as demonstrated by the successful installation of the first such system in China.

## CEMENT



General view of the Holcim cement plant being built in Costa Rica

### FCB Ciment enables Holcim to exceed its carbon dioxide emission reduction targets

Having embarked upon a very determined campaign to reduce its greenhouse gas emissions, Holcim asked FCB Ciment to build its new cement plant in Costa Rica in July 2002.

After operating the plant for a full year, Holcim gave its first report on the plant's environmental performance. The new unit emits just 545 kg of CO<sub>2</sub> per tonne of cement, which is 37% less than the average figure of 870 kg generally noted by cement manufacturers. By using a low-NO<sub>x</sub> precalciner burning alternative fuels (solid or liquid industrial waste), while maintaining the quality of clinker, and a Horomill® grinding mill, Holcim significantly improved the thermal efficiency of the burning line and reduced the electric power consumption of the cement grinding plant.

Thanks to FCB Ciment's technologies, Holcim exceeded not only the objectives set by the Kyoto protocol but also those it had defined itself.

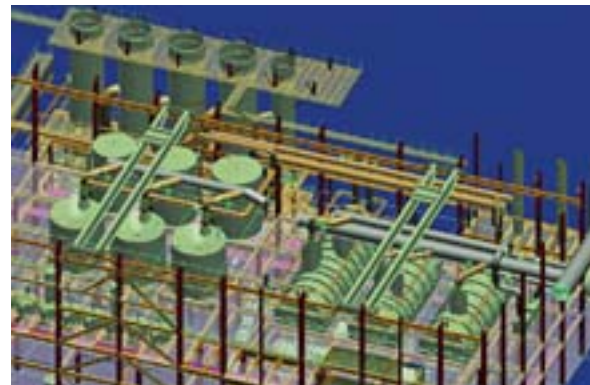
## SUGAR

### Fives Cail Group places its turnkey contract expertise at the service of the environment

Developments pursued by the Fives Cail Group in both equipment and technologies make full allowance for criteria aimed at reducing the energy consumption of sugar factories. Its goals are to: reduce the energy bill for beet factories; output electrical power to the grid for cane sugar plants (cogeneration); and ensure compliance with new regulations on greenhouse gas emissions, especially carbon dioxide.

The Bogazliyan factory, in Turkey, with a daily capacity of 10,000 tonnes of beet, combines the latest generation of equipment and processes developed by the Fives Cail Group including, in particular, multi-effects falling film evaporators, continuous vacuum pans, latest-generation centrifugals, and the recovery of heat from the hot water and low-pressure steam from the continuous vacuum pans.

As a result, the energy consumption at this sugar factory should be 10% lower than the average for French sugar factories even though they are already very energy efficient. The direct impact on the environment will be an annual reduction of 7,000 tonnes in the amount of carbon dioxide released into the atmosphere.



Sugar crystallisation plant in Bogazliyan

# Automotive



The Cinetic Group is PSA Peugeot Citroën's main supplier for the final assembly shop of its new plant in Trnava (Slovakia). In November 2005, following work conducted by Cinetic Assembly (handling systems and decking station), Cinetic Linking (automation for some Cinetic Assembly supplies) and Cinetic Filling (fluid filling and testing equipment) Cinetic Service and PSA signed a three-year contract to be managed by Cinetic Service Slovakia for the preventive and corrective maintenance of handling equipment for the stamping, body-in-white and painting workshops.

# Cinetic, a network of specialists able to support its customers in the automotive industry throughout the world

2005 saw the strengthening of the Cinetic Group's international presence, thanks to its acquisition of Landis Group and the continued export growth of its other subsidiaries. The Cinetic network – more than ever before – is proving to be a global player that is able to support its customers all over the world.

## The network takes shape

In 2005, in addition to the PSA Trnava project that mobilised four companies in the Cinetic Group, the development of the synergies between subsidiaries was continued:

- The exchange of solutions, often complementary, between Cinetic Automation and Cinetic Linking led to the development of a joint range of Cinetic washing machines;
- Cinetic Assembly renewed its cooperation with Cinetic Linking for the automation of a new skillet line for PSA Poissy;
- Cinetic Linking joined forces with Cinetic Machining to supply equipment for the supply of a robotised connecting rod broaching all for John Deere.



## Cinetic develops a flexible and modular washing machine performing washing and drying cycles consecutively in the same chamber

In 2005, Cinetic Linking was awarded the first European order for a flexible and modular washing machine unit for breech. Based on the joint range of Cinetic washing machines developed through the exchange of often complementary solutions between the USA and France, the FM100 uses the concept developed by Cinetic Automation

in the USA and already implemented in Chrysler plants: a single module performs washing and drying cycles consecutively in the same chamber.

To meet the requirements of the European market, the machine was redesigned and equipped with numerical axis for optimum flexibility in customising the washing and drying programmes for each item to be processed. For the drying, turbines will feed the chamber with forced air.

Delivered to Montupet at the end of December 2005 and commissioned in January 2006, this machine was integrated into a more complete system including an Efta T2 dual arm gantry facilitating the loading and unloading of the machine, and also of the upstream and downstream conveyors, the static cooling stock and a "TRACE" leak test station.

## FIVES-LILLE AUTOMOTIVE OFFERING

### 2005 KEY DATA\*

Sales  
**€219**  
million

Order intake  
**€195.6**  
million

### → POWERTRAIN

#### Machining:

- Production grinding machines (orbital, O.D., cylindrical, centreless, double-disc grinders)
- Tooth chamfering machines
- Laser welding machines
- Washing and deburring systems
- Refurbishment of machine tools
- Production reapplication

#### Foundry:

- Carousels for gravitational casting
- Core assembly

#### Automation:

- Powertrain assembly stations (fastening, shrink fitting, bonding)
- Hot and cold test stands
- Leak test
- Mechanisation (gantries, conveyors)
- Robotised islands

#### Engineering:

- Powertrain assembly (engines, gearboxes, axles)
- Rotating parts machining lines
- Light alloy casting shops.

### → VEHICLES

#### Conveying:

- Automated handling systems and equipment

#### Automation:

- Assembly stations (decking...)

#### Process:

- Circuit testing and fluid filling

#### Engineering:

- Trim and final assembly shops.

### → SERVICE

- Automated systems maintenance and maintenance engineering with guaranteed targets.

\* Except Landis Grinding System.

Gilles Thieuleux  
Director of the  
Powertrain  
Division  
– Cinetic  
Industries



“The acquisition of Landis brings new prospects to Cinetic which can now provide its international customers with comprehensive machining solutions.”

“The arrival of Landis is a major event for the Cinetic Group’s Powertrain division, as machining systems now represent more than half of the division’s business and grinding machines more than one third. Given the complementary nature of the products of Landis and Giustina as well as their internationally recognised leadership, it was quite natural to make Cinetic Landis Grinding responsible for orbital and cylindrical grinding machines and to entrust Cinetic Giustina Grinding with double-disc and centreless grinding machines. As a result, Cinetic offers an unmatched product range for the grinding of moving parts for engines. In the field of transmission component grinding, where Cinetic already had a firm footing with the Evolution grinding machine designed mainly for high-speed grinding with crossfeed, Cinetic Landis Grinding will use this as a basis

for the development of a comprehensive range of conventional high-speed grinding machines for shafts and gears in 2006. The sales networks have also been pooled and will soon support the entire range of machines, as it is already the case in France, the UK, Italy, the USA and China. Yet the synergies do not end there: through Cinetic Linking and Cinetic Automation, the group provides Landis with complementary skills and products in mechanisation, washing, assembly and testing. Thanks to Cinetic Landis Grinding, Cinetic is now able to meet its international customers’ needs seeking comprehensive machining solutions, especially for crankshafts and camshafts. The integration of Landis into Cinetic therefore brings new future prospects beyond Landis’s specific business field and which are likely to offer new outlets for several other group subsidiaries.

**In the powertrain sector,** Cinetic Machining confirmed its development in export markets, especially with an order from XAE in P.R. China for the adaptation of a Lapointe horizontal broaching machine for turbines and the supply of two laser welding machines for manual gearboxes gears to Tata in India and Oyak in Turkey.

- The acquisition of Landis, world leader in crankshaft and camshaft grinding machines, significantly strengthened the Cinetic Group’s position in the machine-tools field, on commercial and technical levels. – Cinetic Landis Grinding Ltd. was chosen by Hyundai, in South Korea, for a crankshaft grinding line and by Suzuki, in India, for a camshaft and crankshaft project, thereby demonstrating its ability to satisfy the notoriously demanding specifications of Asian manufacturers. – Cinetic Landis Grinding Corp. notched up its best year since 2001 by securing two major orders for high-productivity lines in the USA: one for a second crankshaft plant for the HF V6 engine project at General Motors and the other to boost capacity at GEMA for the 4-cylinder engine project conducted jointly by DCX, Mitsubishi and Hyundai. It also secured significant orders from several parts manufacturers supplying carmakers including, in particular, the supply of ten camshaft grinding machines for Cemtol Manufacturing and three machines for Dana Corporation. As for Cinetic Giustina Grinding, the high productivity of its machines enabled it to break into areas that had previously been the fief of Japanese suppliers. It won orders from General Motors DAT in South Korea for supplying ten pinions surface grinding machines and from Chinese firms Chang’an Ford Mazda and

Shanghai Jiao Yun to supply grinding machines for connecting rods.

- After the delivery of mechanisation for several flexible production lines for gearbox components for Renault Cléon between 1999 and 2005, Cinetic Linking was chosen again by Renault for the mechanisation of various installations making up those lines, as part of the "PF6" gearbox project. These installations are scheduled for commissioning between June and October 2006.

- Having successfully revamped the 62 TE transmission assembly line at DaimlerChrysler's Kokomo plant, Cinetic Automation was chosen once again by the carmaker to retool its existing transmission assembly line at the Indiana plant for the new six-speed model transmission (68 RFE). In 2005, Cinetic Automation also won a new customer, Nissan North America, with a first order for the retooling of thirteen hot test stands for both its 6 and 4-cylinder engines at its Decherd plant.

**In the vehicle sector,** Cinetic Assembly, which assists carmakers in their European developments, supplied its expertise in final assembly shops of four PSA plants in charge of the 207 vehicle: apart Trnava, Cinetic assembly also intervened in Poissy for the construction of the vehicle trim line No.1 featuring a variable height skillet trim line and the adaptation of an existing overhead handling system. In Madrid also, Cinetic Assembly and its Cinetic Conveying Iberica subsidiary were awarded contracts for the enhancement of the final assembly line and the construction of the handling equipment on the new folding roof and boot assembly line. In addition, thanks to the quality of services it can provide, Cinetic Assembly has integrated the

European panel of suppliers to RNPO (Renault Nissan Purchasing Organization) for the conveying systems segment.

- Cinetic Filling strengthened its partnership with Toyota outside Japan by securing three new orders in 2005 for the supply of a complete line of combined fuel and oil filling machines for its Burnaston plant in the UK, the automation of fuel filling equipment for Toyota Motors Manufacturing France, and the supply of all the backup machines for the Kolin plant in the Czech Republic that supplement the installation of the fluid filling line commissioned in 2004. Cinetic Filling also obtained its first major references in Germany with the manufacturing of two complete lines for DaimlerChrysler's plants at Düsseldorf and Ludwigsfelde, in the context of the NCV3 utility vehicle project.

- For its part, in 2005, Cinetic Transistique, which works with the industry's major players, consolidated its commercial presence with Michelin. Having already been chosen in 2004 to supply automated storage and conveyor systems in France, Hungary, the USA and Thailand, Cinetic Transistique won an order in 2005 for a car tyre conveyor system in Poland.

Lastly **in the service sector,** Cinetic Service extended the range of its operations for DGA, at its Montauban plant, by securing the conditional portions of the multi-technical maintenance contract signed in 2004. It was also awarded a contract for the maintenance of production installations for the Airbus A380, A320 and A340 programme at the Le Havre site of Aircelle, a subsidiary of the Safran Group specialised in the design, integration and manufacture of aircraft engine pods.



### Cinetic Transistique, exclusive partner of Sandvik Sorting Systems in France

Cinetic Transistique, a specialist in automated handling and sorting systems, signed a co-operation agreement with Sandvik Sorting Systems, based in Italy, in October 2000, thus becoming the group's exclusive representative in France. The flagship product that enabled Sandvik to become the world's leading supplier in this field was the high-speed cross-belt sorting system with a capacity of between 6,000 and 20,000 items an hour.

For the first contracts performed jointly by the two companies, Sandvik delivered fully constructed sorting systems, including installation and on-site wiring, while Cinetic Transistique integrated them into its handling installations. In 2004, following a commercial setback, it was agreed with Sandvik that Cinetic Transistique would manufacture 40% of the sorting systems itself, taking care of installation, wiring, mounts, sorting outlets and computerised control. This decision was the key to future commercial success: by cutting the overall cost of the installations, Cinetic Transistique won three new contracts in 2005:

- from the Leclerc Group, which awarded it with a first contract for the mechanisation and automation of two distribution centres supplying supermarkets, Cedilec and Scapest;
- from La Poste, which chose it for the equipment of its new mail distribution platforms for the sorting of plastic trays to be routed to secondary distribution centres.

At the end of 2005, Cinetic Transistique renewed its exclusive co-operation agreement with Sandvik and extended its fields of competency to include the maintenance of the sorting systems by training about ten of its technicians in Milan, Italy.

# Aluminium

24



In the aluminium market, Solios sets out to provide its customers with innovative technical solutions that will reduce investments and operating costs while boosting performance and improving the quality of end products.

# Solios establishes its clean technologies and its expertise in large-scale projects

The contracts won by Solios in 2005 provide continuing proof of its technological lead in environment-related fields and its skill in managing large international projects.

## Work on the Alba site is completed without a hitch

Having secured the mechanical acceptance of the fume treatment centres for the electrolysis pots on line 5, Solios went from success to success at the Alba site in Bahrain:

- The start-up of the new 336-pot line by Bechtel and of the first fume treatment centre by Solios Environnement went smoothly and in a record time of seventy days. Furthermore, the fume treatment installations handling emissions from the anode baking furnaces were already giving excellent performances in terms of releases into the atmosphere by offering the lowest current levels of dust, fluorine and tar.

- After the production of the first anode at the beginning of the year, Solios Carbone obtained provisional acceptance, in June 2005, of the green anode plant equipped with Rhodax® technology, which achieved an operating rate of 94% and a mean density of 1.63 for green anodes.
- In addition, Solios Thermal successfully commissioned eleven furnaces supplying the three Wagstaff casting lines and the Properzi casting line within the very short lead time of twelve months. These results were achieved in compliance with the strictest safety standards and set a record of more than four million hours worked on the site without any accidents resulting in lost time. Alba marked this performance by presenting the various Solios entities with safety certificates recognising these excellent results.



## Sohar Aluminium entrusts Solios with the construction of its anode paste plant

In December 2005, Sohar Aluminium awarded Solios Carbone a contract for the turnkey supply of a complete green anode plant including an anode paste plant with a capacity of 36 t/h, handling, storage of coke and liquid pitch, and the carbon butt recycling unit.

The excellent work performed by Solios on the Alba line 5 and its capacity for innovation were key factors in its successful bid for the contract: for the anode paste plant, Rhodax® technologies for the preparation of dry materials and IMC® (Intensive Mixing Cascade) for mixing of the paste will be used in combination for the first time.

This new plant using Alcan technology and comprising 360 AP 35-S electrolysis pots will produce 350,000 t/y of aluminium. It is scheduled for commissioning in the third quarter of 2008.

## FIVES-LILLE ALUMINIUM OFFERING

### 2005 KEY DATA

Sales  
**€90**  
 million

Order intake  
**€73.1**  
 million

#### → THE ELECTROLYSIS AREA

Gas treatment centres and bath processing units.

#### → THE CARBON AREA

Green anode plants, carbon butts processing, pitch processing and fume treatment centres for anode baking furnaces.

#### → THE CASTHOUSE AREA

Melting holding furnaces, heat treatment furnaces.

# Aluminium

Large items of equipment (sheet metal work and structures) are generally constructed on or near the site. For the Fjardaal contract and in accordance with the customer's wishes, the gas treatment centre (GTC) was built and pre-assembled as modules under the responsibility of Solios Environnement Inc., mostly in Portugal and France, and then transported to Iceland by sea.



Vincent Plard  
Assembly  
Supervisor  
– Solios  
Environnement SA

“At the end of October 2005, we received in Iceland the first shipment comprising 170-tonne filter modules and 100-tonne support structures. In mid-November 2005, a second ship delivered the rest of the western section of the GTC and the 80-metre high chimney in five sections. In a country such as Iceland where labour is expensive, pre-assembly offers obvious advantages for the customer: while it normally takes five to six months to install a GTC filter on site, pre-assembly reduces the installation time to two and a half months. This enabled our customer to retain maximum control over on-site expenses.

As technical advisors during the installation phase, for adjustments, settings and heavy lifting operations, especially for the 80-metre high chimney, we did not encounter any difficulties thanks, in particular, to the quality of our engineering studies and our constant liaison with the design office during the operations. The customer also facilitated our work by providing a lot of mechanical equipment for the installation phase. In fulfilling this contract, Solios secured customer satisfaction through the speed and quality of its work.”

## Alcoa chooses Solios for its new investments

In the context of an ambitious investment programme for the next five years, Alcoa has chosen the Solios Group for three major projects:

- For its first investment in a green-field project in twenty years, the world's leading aluminium producer entrusted Solios with the construction of a new 322,000-tonne smelter in Fjardaal, Iceland, which has the strictest environmental protection standards in the world.
  - Solios Environnement delivered the pre-assembled modules for the plant's first gas treatment centre in November 2005, just eleven months after winning the order. The rest of the equipment is to be delivered in the second quarter of 2006.
  - The complete bath scrap processing unit and holding furnaces are being supplied by Solios Carbone and Solios Thermal respectively. The holding furnaces will be heated electrically in order to comply with the emission standards in force in Iceland. Among other reasons, Alcoa chose Solios for its ability to comply with environmental standards, which are draconian in that country, and to adapt to very difficult site conditions by supplying entirely pre-assembled modules.

- Bechtel, acting for Elkem (an Alcoa subsidiary) chose Solios to design and supply the pitch fume treatment centres for the new green anode plant in Mosjøen, Norway. Two treatment facilities will be installed in parallel, one for sources of emissions with the lowest levels of pitch fumes and the other for those with the highest levels, the latter being mainly the paste mixer and cooler. The coke treatment unit for the second of these facilities, with a regenerative thermal oxidiser (RTO) installed downstream, will eliminate practically all the contaminants contained in the fumes and will thus provide excellent environmentally-friendly performances along with optimal running costs.

- In addition, the construction of a liquid pitch unloading, storage, handling and treatment facility, with a capacity of 2 x 320 tonnes, to replace the old solid pitch facility at the Alcoa plant in Aviles, Spain, was completed at the end of December 2005.

#### Other large aluminium producers opt for Solios

- Solios won its first contract with Nordural in Iceland in 2005. As part of the plan to increase the plant's annual aluminium production capacity from 90,000 tonnes to 212,000 tonnes by 2006, Solios Thermal will supply two electrically-heated holding furnaces, with a capacity of 60 tonnes each, and associated launders. The

first furnace was to be commissioned and ready to receive the first metal by early March 2006.

- Hillside Aluminium in South Africa chose Solios Carbone to supply two new twin-table vibrocompactors equipped with all the latest technologies: vacuum system, back-pressure and pneumatic suspension. The commissioning of the first vibrocompactor is scheduled for June 2006.

### Solios innovates to help its customers' achieve their goals



GTC equipped with a Dual Suction System – Alba (Bahrain)

The Solios Group is fully committed to developing innovative equipment and processes that will enable its customers to achieve their sustainable development goals in while improving the productivity of their installations.

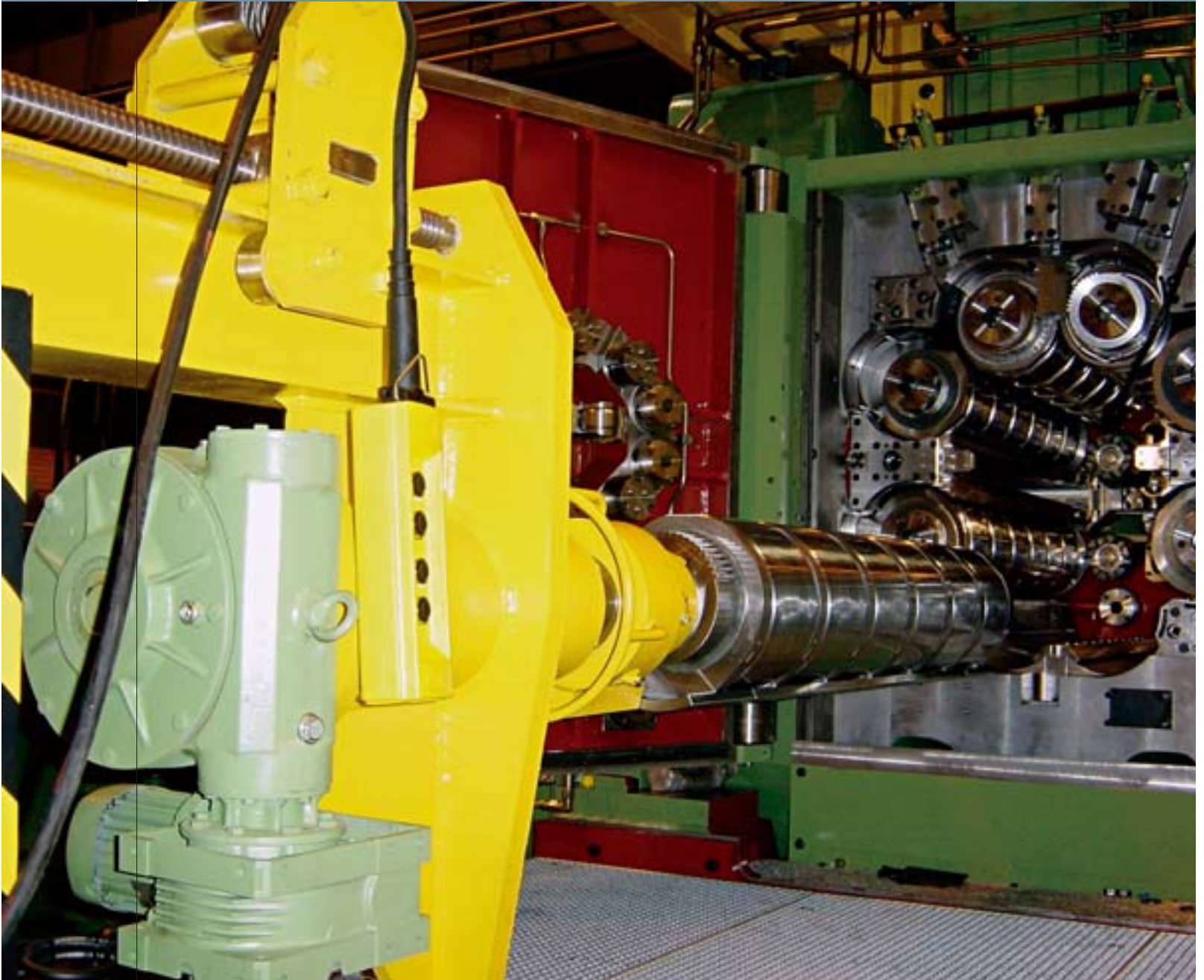
- YPRIOS, the Optimum Solution for Lower Potroom Emissions, is the optimal solution for reducing fluoride emissions. This system doubles the flow rate of gases exhausted from pots during anode changes and can reduce total plant emissions by between 30% and 40%. It is especially suitable for large-capacity plants seeking to boost their productivity without increasing their fluoride emissions.
- EOLIOS, the Solution for a Clean Paste Plant, is the efficient environmental solution for anode paste plants, jointly developed by Solios Carbone and Solios Environnement.

The new Eolios process features a dry pitch fume treatment unit which treats the main fumes and dusts produced by the mixing and forming lines, along with a regenerative thermal oxidiser (RTO) to treat damp fumes from the cooler.

- RHODAX, the Natural Dry Mix Solution, is the ecologically and economically optimal technology for the preparation of dry material. Using 40% less equipment than conventional grinding technologies, this system reduces potential sources of dust emissions and so helps improve health and safety conditions in the workshop while improving the quality of the anodes.

# Steel

28



2005 was an outstanding year for DMS in terms of the volume of order intake and strengthened its position as a leading supplier in the stainless steel manufacturing field, especially in P.R. China where it won four major contracts.

## An outstanding year in every respect for the Group's steel division

The many business successes notched up by Stein Heurtey and DMS in 2005 confirmed the excellent positioning of their technologies and ensured that the Steel division finished the financial year with a record order book. This performance was partly due to a joint effort by the two companies, with a double success at Baosteel, China's leading steel producer.

### Stein Heurtey, emphasising innovation

In the reheating field, 2005 was notable for the wide geographic dispersion of sales:

- In Ukraine, Ilyitch chose Digit@l technology for its new slab reheating furnace with a capacity of 350 t/h. This contract marks Stein Heurtey's return to Eastern Europe;
- In Brazil, Gerdau Açominas entrusted Stein Heurtey with the construction of a 280 t/h Digit@l walking beam furnace for the reheating of blooms for its Ouro Branco plant;
- In Turkey, following the commissioning of a 220 t/h Digit@l slab reheating furnace in Eregli, the Erdemir Group chose Stein Heurtey once again to supply two 400 t/h Digit@l slab reheating furnaces with loading and unloading machines for

the Isdemir plant in Iskenderun;

- In Austria, Voest Alpine Stahl GmbH, a company that is well known for its demanding level of requirements and quality, entrusted Stein Heurtey with the turnkey supply of a 420 t/h reheating furnace using Digit@l technology with the special characteristic of running on natural gas and blast furnace gas, the latter being preferred for environmental reasons;
- In Spain, the Stein Heurtey Bilbao subsidiary won a contract from Celsa for a 180 t/h walking beam furnace for billets. This Digit@l furnace® is the first one to be installed in this country.
- In India, Welspun Gujarat Stahl Rohren Ltd. chose Stein Heurtey Bilbao for the supply of a slab reheating Digit@l furnace® with a capacity of 200 t/h for a Steckel rolling mill producing metal sheets.



Digital simulation of gas flows in the flame.

### Stein Heurtey proposes a new type of burner for the Digit@l furnace®

Keeping faith with its innovation strategy, Stein Heurtey developed a new burner for the Digit@l furnace® in 2005. This burner allows the flame length to be adjusted according to the furnace loading diagram, regardless of the heating requirement, and therefore provides better control of the temperature profile over the whole length of the product by optimising the distribution of energy. Tests on prototypes were limited by basing the main design choices, for the burner nose in particular, on modelling simulations performed with the Fluent® system.

The burner's good performances were confirmed by measurements conducted in 2005 on two industrial installations, at Rukki in Finland and CST in Brazil.

By proposing a burner providing a spread flame of variable length with controls that optimise zone temperature setpoints and crosswise energy distribution, Stein Heurtey has strengthened its position as a technical reference in the field of reheating furnaces.

### FIVES-LILLE STEEL OFFERING

#### 2005 KEY DATA

Sales

€213.3  
million

Order intake

€330.7  
million

- Reheat and heat treatment furnaces.
- Reversible cold-rolling mills.
- "Skin-Pass" rolling mills.
- Treatment and coating lines for flat products.
- Welded tube lines.
- Induction heating equipment.

## The “Jumbo Line”, a world first

Dominique Le Fer  
Chief Project  
Engineer  
- DMS



**The signing of a contract in May 2005 for a second annealing and pickling line for hot-rolled stainless steel coils took the collaboration between Tisco and DMS to new heights.**

“After the successful installation of a 800,000 t/year annealing line – then considered to be the largest in the world – which was started up in early 2005, two months ahead of the initial schedule, Tisco renewed its confidence in DMS in 2005 with a massive challenge: the installation and commissioning of a stainless steel treatment line with a capacity of 1,150,000 t/year within 21 months. For this unprecedented contract, DMS is leading an international consortium that includes Chugai-Ro for the furnace, Sundwig for the rolling mill at the top of the production line, Siemens for the electrical engineering and UVK for the pickling and degreasing. Dubbed the “Jumbo Line”, this line

can boast a number of world-beating superlatives: in addition to providing the largest capacity in the world, it will also offer the largest strip cross section with a thickness of 14 mm and a width of 2,100 mm, and it will be able to process products between 1.4 and 14 mm thick. The unusually large engineering and equipment studies (involving 3,800 tonnes of DMS equipment) took more than 50,000 hours to complete and mobilised more than 50 personnel during the busiest period.

This line will be the only one in the world with a process section on six superimposed levels, four of which will be framed and supported by an enormous framework weighing 3,500 tonnes, with the annealing furnace located 20 m above ground, two accumulators and the pickling unit. Two other accumulators will be located below ground, up to 10 metres deep.

In terms of lead times, DMS faces a real challenge. It must design all the equipment for this line within lead times normally associated with a routine contract while integrating the equipment supplied by partners and subcontractors. It will also have a vital part to play in supervising the local manufacture and, then, in conjunction with its partners, in supervising and coordinating the facility’s installation and commissioning in compliance with the customer’s objectives.”

**In the field of continuous lines** and by dint of its efforts to develop cutting-edge heating and cooling technologies offering unparalleled performances, Stein Heurtey achieved unprecedented commercial success in 2005: having already won seven orders for vertical furnaces in 2004, it went on to win, in 2005, orders for nine more vertical furnaces for six galvanising lines and three continuous annealing lines, mainly for prominent customers such as Arcelor, US Steel and Baosteel.

- After a first project for a vertical furnace for its CRM1 galvanising line No. 2, Ma Steel International Trade and Economic Corp. placed a further order for three Digiflex® vertical furnaces. One of these, intended for a continuous annealing line for metal sheets for the automotive industry, will be the first furnace installed in P.R. China to be equipped with the Flash Cooling® system. The other two vertical furnaces are intended for the new galvanising lines No. 1 and No. 2 of the 2130 cold rolling mill.
- As part of a consortium led by SMS Demag, US Steel Kosice continued to demonstrate its confidence in Stein Heurtey by ordering a Digiflex® furnace for its new galvanising line No. 3 for metal sheets for the automotive industry.
- Panzihua Iron & Steel Co. (Pangang) chose the Digiflex® furnace technology for the third time in four years for its new continuous galvanising line in Chengdu, P.R. China.

In addition, Stein Heurtey commissioned a number of installations, demonstrating the excellent performances of its Digiflex® vertical furnace technology in combination with the Flash Cooling® system on Posco's galvanising line No. 5 in South Korea, on Ma Steel's galvanising line No. 2 and on the galvanising line at Baotou Iron & Steel in P.R. China. Stein Heurtey also commissioned a horizontal furnace for the new Galma 2 automotive galvanising line at Arcelor in France.

**In the field of services,** Stein Heurtey Services completed the reconstruction and revamping of the first reheating furnace for the Corus hot-rolling mill in Port-Talbot, in the United Kingdom, within very short lead times. As a result, the installation was started up in October 2005. Work on the second furnace began in early 2006.

### An excellent year for DMS

In addition to the two orders from the Baosteel group for a continuous tinplate annealing line and two galvanising lines, DMS will supply Tisco with the world's largest annealing and pickling line for extra-wide, very thick stainless steel and a 20-roll rolling mill for the production of grain-non oriented silicon steel, equipped with a 4,400 kW squirrel-cage motor running at 800 m/minute.

Following the order for two rolling mills for Wuhan Iron & Steel Co in 2004, this new order from Tisco confirms DMS's position as worldwide leader in the silicon steel rolling market.

DMS completed a number of significant commissioning operations in 2005, including: the Galma 2 galvanising line for Arcelor in Dunkirk, France, which was successfully revamped; an annealing and pickling line for hot-rolled coils for Tisco in China, and an annealing and pickling line for cold-rolled coils, three 20-roll rolling mills and a reversible Skin-Pass rolling mill for Baoxin, a subsidiary of the Baosteel Group.

DMS occasionally calls on its partner, DMS Industries, for the revamping, handling and manufacture of its equipment.

### Celes

Celes offers innovative solutions in the field of induction by developing dedicated power sources and applications for its customers. For specific projects, Celes operates in synergy with other companies in the Group.



Digiflex® furnace installed by Stein Heurtey on a galvanising line for Ma Steel in P.R. China.

### DMS and Stein Heurtey join forces for two contracts with Baosteel (P.R. China)

In 2005, Baosteel, China's leading steel producer, chose DMS and Stein Heurtey for two major production lines orders:

- The first, for the Yichang plant near Shanghai, concerns the supply of a continuous tinplate annealing line with a capacity of 450,000 t/y, intended mainly for the processing of steels to be used as very thin packaging material (0.15 to 0.5 mm thick). The Digiflex® furnace supplied by Stein Heurtey caters for the application of all the necessary thermal cycles with a strip length of more than 3 km. The two quarto Hi Skin-Pass rolling mills in tandem supplied by DMS are capable of operating at very high speeds of about 800 metres a minute.
- The second order, for the Baoshan plant, is for the supply of two hot galvanising lines with a capacity of 360,000 t/y each for the production of new steels with very high elastic limits, intended mainly for the automotive industry. One of the two lines will be equipped with Stein Heurtey's Flash Cooling® technology, an ultra-rapid cooling system that is especially suitable for this manufacturing process.

AUTOMOTIVE

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STEEL

GLASS

CEMENT

ENERGY/SUGAR

## Business remained brisk and diversified for Stein Heurtey and its subsidiaries in 2005

Stein Heurtey, Belgium Glass Equipment and BH-F (Engineering) maintained a high level of business activity in 2005, confirming their dominance in the float glass segment and their position as leading supplier in the hollow glass market.

**In the flat glass industry,** Stein Heurtey and BGE successfully commissioned three hot ends (melting furnace, tin bath equipment, lehr and control system) in P.R. China in 2005: a 700 t/d installation for Guangzhou CSG Glass, a 400 t/d installation for Jiangmen Farun Glass and a 600 t/d facility for Fuyao Group Shuangliao.

BGE demonstrated its increasing specialisation in the special glass industry in 2005 by winning orders for the supply of equipment and services with a high technological content for borosilicate float glass lines from Schott in Germany, NEG in Japan and Saint-Gobain Glass in Portugal.

Furthermore, in addition to the work on melting furnaces and tin bath equipment, numerous commissioning operations were conducted and new orders taken for lehrs in India, P.R. China, South America, North African countries and in R.S.A.

**As for the reconstruction of existing installations,** and following an appraisal of a 500 t/d float glass line at Saratovstroysteklo in Russia, Stein Heurtey was awarded a new contract for the modernisation



Through their operations in 2005, Stein Heurtey and BGE once again played an active part in the modernisation and development of the Chinese glass industry.

Above: annealing lehr for a 600 t/d float glass hot end supplied to Fuyao Group Shuangliao Co. in P.R. China.

### FIVES-LILLE GLASS OFFERING

#### 2005 KEY DATA

Sales  
**€57.7**  
 million

Order intake  
**€30.3**  
 million

- Thermal equipment for the production of float and flat glass and hollow glassware (melting furnaces, tin baths, annealing lehrs, Air Pollution Control).
- Equipment for glass conditioning prior to forming and rolled glass forming machines.
- Complete processing lines for flat glass and hollow glassware.
- Tin bath equipment.
- Forehearths and feeders for forming machines for hollow glassware.
- Air Pollution Control for glass industry.

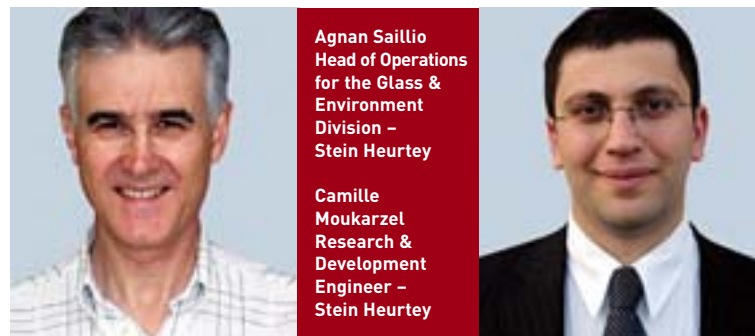
## Modelling, an indispensable decision-making tool

of the relevant hot end. In France, Euroglas entrusted Stein Heurtey with the reconstruction of its Hombourg float glass melting furnace, with the aim of increasing glass production without increasing the size of the melting area.

**In the hollow glass industry,** BH-F (Engineering) won several orders for feeder channels and working ends from long-standing customers, such as Thai Glass in Thailand, Sam Kwang Glass and Kumbi Corporation in South Korea, and two large orders from San Miguel Yamamura Asia Corporation in the Philippines.

BH-F also won the confidence of several new customers, including Nanjin Glass Co. in P.R. China for feeder channels for the manufacture of glass insulators and Huta Szkla Tarnow in Poland for a complete tableware production line.

In addition, acceptance was secured in 2005 for three of the four orders from TSVC in Turkey. These orders were for a new tableware production installation in Bulgaria and equipment for hollow glass lines in Ufa and Pokrov in Russia. The fourth order was for an installation in Turkey which is currently being assembled.



**Agnan Saillio**  
Head of Operations  
for the Glass &  
Environment  
Division –  
Stein Heurtey

**Camille  
Moukarzel**  
Research &  
Development  
Engineer –  
Stein Heurtey

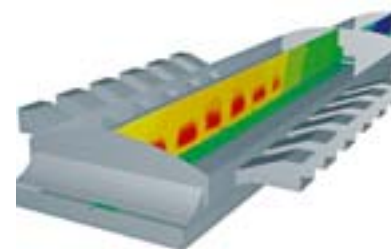
**Stein Heurtey started developing its mathematical modelling tools nearly 20 years ago in order to simulate the operation of its glass-making furnaces and to offer its customers the best possible technical solutions by:**

- better understanding and predicting the behaviour of its furnaces,
- improving its ability to develop and manage innovations implemented on its furnaces;

**Agnan Saillio explains: “Thanks to Stein Heurtey’s modelling tools and the availability of computers with very high computing powers, we are now able to analyse and compare various technical solutions, and predict and visualise the behaviour of our furnaces according to the technical solutions envisaged. Recently, during the reconstruction of one of our furnaces at Euroglas in Hombourg, the mathematical modelling proved to be critical in choosing the most suitable solutions to meet the new requirements of our customer who wanted to increase production without increasing the area of the furnace and improve the quality of the glass produced without increasing discharges into the atmosphere. In order to do this, Stein Heurtey started by conducting a series of measurements to validate the modelling of the existing furnace and, then, modelled a number of possible**

**furnace configurations representing various solutions compatible with the customer’s requirements and the feasibility study conducted by the design office. Once we had analysed and compared the results obtained, we selected the solution to be adopted, in agreement with our customer.”**

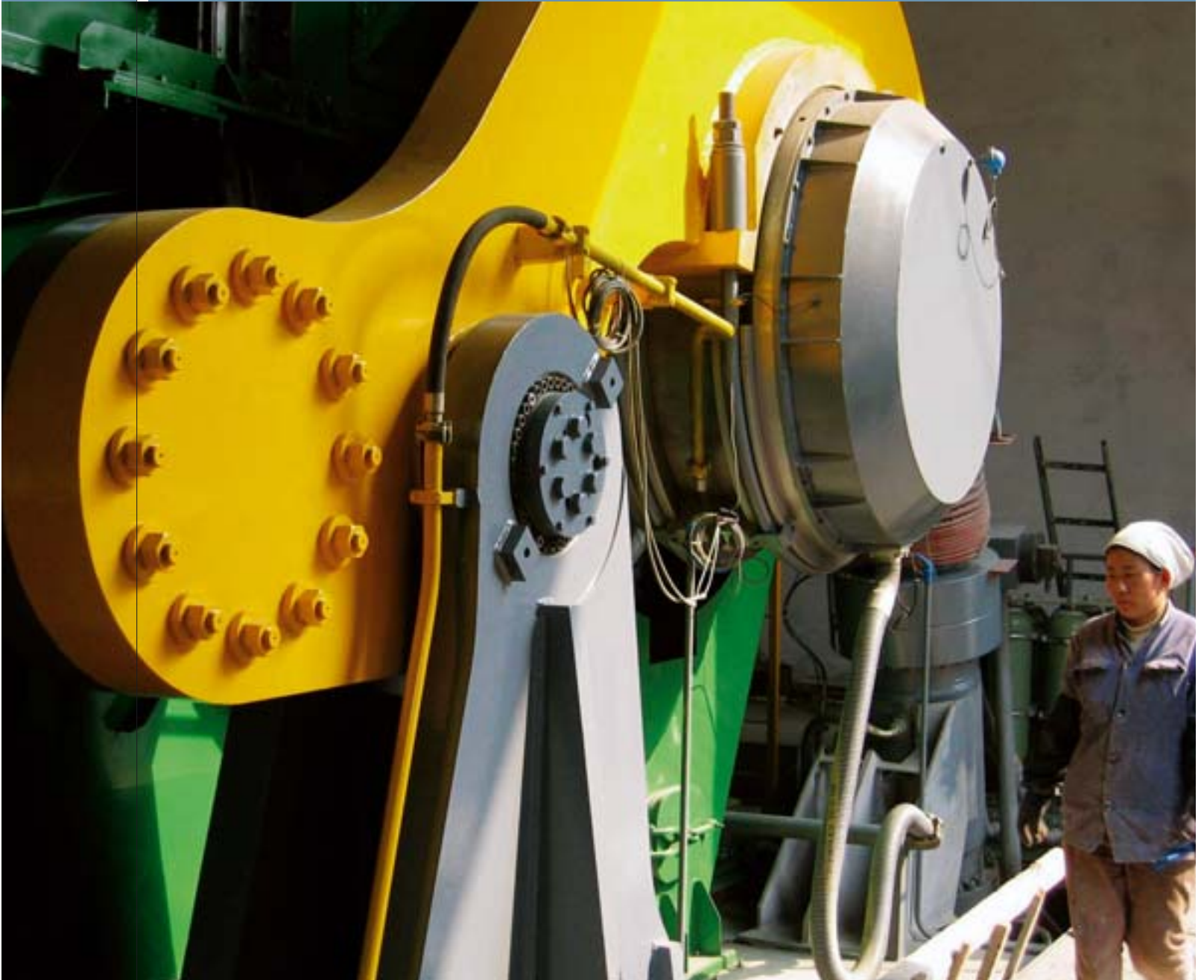
**Camille Moukarzel continues: “Modelling offers a third way of studying the reality of our installations and is complementary to studies based on experience and analytical theory. It has become an indispensable tool for the design of our equipment and helps us make the right technical choices. Stein Heurtey has integrated modelling into its organisation in order to establish a sound knowledge base, safeguard its expertise and provide efficient support for the development of its furnaces.”**



Speed range and temperature mapping in the median plane of a flat glass furnace.

# Cement

34



To continue its growth, develop new processes and face future competition, FCB Ciment – whose sales have increased from €35 million to more than €100 million in three years – implemented a reorganisation at the beginning of 2006, primarily in order to strengthen its International Purchasing and Sourcing Department and its R&D Department.

In 2005, the Group's Cement division, comprising the FCB Ciment and Pillard E.G.C.I. sub-groups, crowned its excellent performances by winning a new contract for a complete cement plant.

**FCB Ciment**

**Tula contract for Lafarge in Mexico: end of 2005, a promising start to commissioning**

FCB Ciment signed a contract with the Lafarge Group on 8 January 2004 for the turnkey supply and installation of a complete cement plant with a clinker production capacity of 1,500 t/d at the Tula site in the State of Hidalgo, about 70 km north of Mexico City. The new kiln produced its first clinker on 16 December 2005, less than 23 months after the start of the contract. In view of the excellent results obtained during the initial start-up tests, provisional acceptance of the cement plant could be completed several weeks earlier than the stipulated deadline of end-July 2006.

The outstanding performance on this first turnkey project for the Lafarge Group, the world's leading cement manufacturer, provides this client with a clear demonstration of FCB Ciment's ability as a turnkey contractor.

**Thai Nguyen contract for Vinaincon in Vietnam: FCB Ciment wins its fourth turnkey contract in four years**

Having made its name in the Vietnamese cement industry with the commissioning of the 4,000 t/d Hoang Mai cement plant in 2002, FCB Ciment won its second contract, awarded by Vietnam Industrial Construction Corporation (Vinaincon) for a complete cement plant in Vietnam in 2005.



65 MW alumina calciner with 12 injection nozzles for coke oven gas and pilot burner.

**Pillard E.G.C.I. wins major sales contracts with Chinese cement manufacturers**

Pillard continued to expand its business activities in P.R. China and, as a result, secured about 30 orders during 2005, both directly through its Beijing sales office and through its subsidiary, Pillard (Tianjin) International Trading Co. Ltd. These orders included, of course, Rotaflam® burners and associated installations for cement plants but they also concerned burners and hot gas generators for alumina calciners. The main customers Pillard dealt with in 2005 were: SINOMA, CBMI, CBMEC, Luoyang Xinan, Baoshan, Shanxi Aluminium, Yantai and Yunnan Kung Gang Cement. The equipment ordered by these customers was destined not only for P.R. China but also for Saudi Arabia, the United Arab Emirates and Morocco, for end users such as UCC, RCC, Holcim and Italcementi.

**FIVES-LILLE CEMENT OFFERING**

**2005 KEY DATA**

Sales  
**€188.9**  
million

Order intake  
**€128.4**  
million

- Turnkey cement plants.
- Grinding plants, process equipment for the cement industry and mineral grinding (kilns, ball mills, Horomill®, Rhodax®, TSV™ classifiers...).
- Spare parts and services for cement maintenance.
- Dust collection equipment for kilns, coolers and grinders.
- Heating equipment for rotary kilns.
- Multi-fuel burners and combustion equipment for boilers, industrial drying systems and furnaces for the petrochemical industry, etc.\*
- Hot gas generators running on all fuels (including solid fuels).\*

\* For the Energy sector

AUTOMOTIVE

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GLASS

CEMENT

ENERGY/SUGAR



Philippe Benoit  
Project Manager  
– FCB Ciment

## Turnkey contract: start-up of the Tula cement plant in Mexico expected with several months ahead of schedule

The commissioning phase for Lafarge's Tula cement plant in Mexico began in September 2005. The plant produced its first clinker using fuel oil on 16 December, two and a half months ahead of the initial schedule. The coal grinding plant was started up in December 2005 and the cement grinding plant followed at the end of January 2006.

"The purpose of the commissioning phase is to make all the necessary adjustments. Personnel carry out increasing numbers of tests on the equipment in progressive stages. The tests organised included: mechanical and electrical no-load tests, item by item; sequential tests which entail operating the equipment in the no-load state but all together and in automatic mode; then tests under load. In the event of a failure, we find a solution very quickly as there is a lot of industry in the Tula area (cement plants and oil refineries). Otherwise, we bring in parts from other countries.

After starting up the cement grinding plant at the end of January 2006, we launched industrial clinker and cement production tests and conducted performance tests for each shop to check their production rate, quality and reliability, these tests lasting from one to three days depending on the shop concerned.

By the end of 2005, the contract was nearing its conclusion and it was time to draw up the first reviews. The results were outstanding as regards safety: only seven minor industrial accidents were reported in a total of 2.5 million working hours on site with, sometimes, as many as 850 personnel present. This success was matched in terms of lead times too as, by the end of January 2006, FCB Ciment was already 15 weeks ahead of the contractually specified schedule. And the customer was extremely satisfied."

FCB Ciment will supply a complete 4,000 t/day plant scheduled for commissioning in late 2007.

This production facility will benefit from the latest technologies and processes developed by FCB Ciment, including, in particular, a 4,000 t/d single-line preheater featuring the latest generation of low pressure-drop cyclones and a Low-NO<sub>x</sub> precalciner burning 100% Vietnamese anthracite with low volatile content; preparation of the raw mixture at the quarry with on-line analysis and circular pre-blending storage; a 240 t/h cement grinding plant incorporating FCB Ciment's recently developed Twin Horomill® technology offering an annual power saving of more than 20 million kWh compared with the solutions generally used in Vietnam. A key factor in the success of this project is the high proportion of mechanical and electrical equipment (75% by weight) which will be manufactured under FCB Ciment's supervision in Vietnam by the customer, Vinaincon, a corporation made up of twenty one firms operating in the fields of building, manufacturing and implementation of industrial projects.

### **The Umm Bab No. 3 contract for QNCC in Qatar: early commissioning of the cement grinding plant means a highly satisfied customer**

After the delivery in 1997 of the complete Umm Bab line No. 2 with a capacity of 2,000 t/d, QNCC (Qatar National Cement Company)



From top to bottom, views from:

- Tula cement plant (Mexico) - FCB Ciment
- Start-up generator (100% COG) 11 MW for Shanxi (P.R. China) - Pillard
- Signing of the Thai Nguyen contract between Vinaincon and FCB Ciment - Vietnam

demonstrated its confidence in FCB Ciment in July 2004 by awarding it a new contract for the turnkey supply of the new 4,000 t/d Umm Bab line No. 3 on the west coast of the peninsula.

FCB Ciment worked extremely quickly in fulfilling this contract: 20,000 tonnes of cement had already been produced by the end of 2005, after commissioning the cement grinding plant ahead of schedule to meet the enormous demand on the Qatari market.

This excellent responsiveness ensured that FCB Ciment won the full confidence of its customer, which also greatly appreciates the performances and reliability of its proprietary equipment.

The next major step in this project will be the start-up of the kiln in the course of 2006.

#### **FCB Ciment: technologies combining productivity and protection of the environment**

Following the commissioning of the Holcim plant in Costa Rica at the end of 2004, the first results obtained in 2005 with regard to emissions of carbon dioxide and NOx were truly remarkable. Thanks to FCB Ciment technologies, the amount of carbon dioxide produced per tonne of cement was reduced to 545 kg at the new plant: 37% less than the average of 870 kg usually noted in the cement industry. Furthermore, NOx emissions, measured on outlet from the preheater running on 100% pet-coke, were less than 400 ppm with 10% oxygen.

In the field of equipment with low energy consumption, the Horomill® continued its run of commercial successes in 2005 and the year ended with a new order from the Vicat Group for the supply of a Horomill® 3800 unit to boost cement production at its Cimento Konya Sanayii plant in Turkey. This grinding mill is able not only to produce 115 t/h of CEMI 42.5 type cement but also to provide the same performance level for three other cement qualities completely automatically. This type of Horomill® grinding mill had already been installed for the Vicat Group at its Konya plant in 1999.

This new reference brought the number of Horomill® grinding mills sold by FCB Ciment throughout the world to 38, including six in Turkey.

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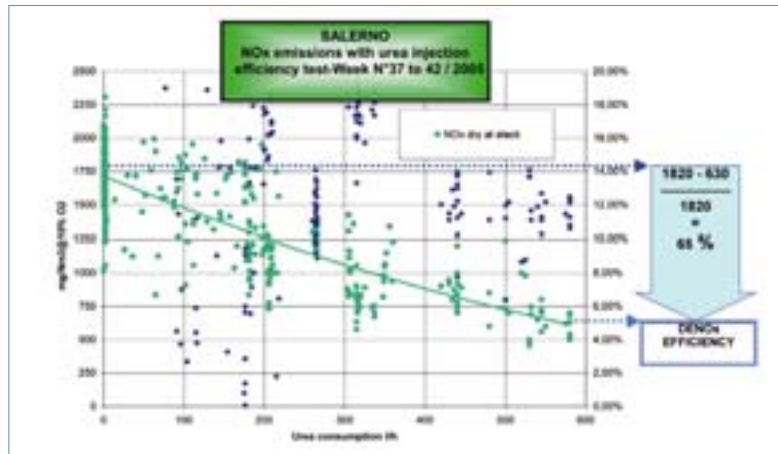
STEEL

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CEMENT

ENERGY/SUGAR

# Cement



NEUTRINOx, the SNCR liquid urea injection process developed by Pillard E.G.C.I., reduces the nitrogen oxide emissions from the chimney stack at the Salerno cement plant in Italy

Cement manufacturers are required by European regulations to greatly reduce nitrogen oxide releases from their stacks. Pillard offers a complete solution to achieve this goal by using a Rotaflam® burner which produces a flame giving a very high quality clinker while at the same time reducing nitrogen oxide emissions, in combination with its new SNCR (Selective Non-Catalytic Reduction) system called "NEUTRINOx".

Developed in co-operation with the Italcementi Group at the Salerno cement plant in Italy, NEUTRINOx

is based on the principle of optimising the injection of liquid urea into fumes by conducting a specific study of each duct. At a temperature of about 950°C, the NO and NO<sub>2</sub> produced by the combustion process are neutralised by the NH<sub>3</sub> from the liquid urea. Thanks to the installation of the NEUTRINOx system, NOx emissions have been reduced by about 65% at the Salerno plant.

On the basis of these results, Italcementi and Holcim have placed new orders with Pillard.

## Pillard E.G.C.I.

E.G.C.I. Pillard and its subsidiaries, which sales predominantly result from the Cement activity, also operate in the **Energy sector**. Their business activities also benefited in 2005 from the strong demand for the enhancement of boilers to bring them into compliance with stricter environmental standards, and from investments generated by the discovery of new gas resources in the Middle East.

Having developed a range of burners with low polluting emission levels, Pillard and its subsidiaries were able to provide suitable solutions for their customers' needs in terms of safety, reliability and pollution. In 2005, Pillard supplied CPCU (Compagnie Parisienne de Chauffage Urbain) with four "LONOxFLAM®" type low-NOx and low-dust Pillard burners to equip two new 120 t/h boilers for its pollution-free, oil-fired plant in Grenelle (Paris, 15<sup>th</sup> arrondissement). The first unit was commissioned in the first quarter of 2006. Emin Leyder/Papeteries de Champagne chose Pillard to equip France's three largest single-tube,



From top to bottom, views from:  
 - Umm Bab cement production line No. 3 under construction for QNCC (Qatar) - FCB Ciment  
 - VG2 burner on a WANSON boiler - Pillard  
 - Lighting of Tula cement plant's kiln (Mexico) - FCB Ciment

fire-tube boilers (unit steam output of 3 x 36 t/h) in Nogent-sur-Seine with three low-NOx, Pillard gas/diesel oil burners.

Pillard's expertise was also internationally recognised: for the modernisation of its boiler in Juaymah, Saudi Arabia, Saudi Aramco has entrusted Pillard with the replacement of the original IHI burners with low-NOx Pillard burners.

Furthermore, Pillard has continued to play a part in the exploitation of one of the world's largest natural gas field. Having already supplied Total with acid gas burners for the South Pars phase 2 and 3 sulphur plants in Iran, Pillard obtained an order for burners of the same type, for phases 4 and 5, from South Korean boiler-making company KWB, for AGIP, and for phases 9 and 10, from the Iranian company NIOC-POGC

These new orders, reflecting the market trend, confirm once again the sound reasoning behind the technological developments pursued by Pillard in recent years.



**Pillard E.G.C.I. proposes innovative technical solutions to bring boilers into compliance with new standards**

The new environmental and safety standards which came into force in Europe in 2003 stipulate that gas and oil fired industrial boilers must be brought into compliance by 2008.

The solutions that may be considered include:

- primary measures involving the installation of low-NOx burners with low unburned emissions (dust and carbon monoxide);
- secondary measures such as urea injection (SNCR) and the installation of fume treatment systems (NOx, SCR, SOx, dust collectors).

Pillard, which specialises in primary measures (low-NOx burners) and urea injection (SNCR), has successfully brought many plants into compliance with regulations and is currently working on others.

Projects of this type are being stepped up as the deadline approaches

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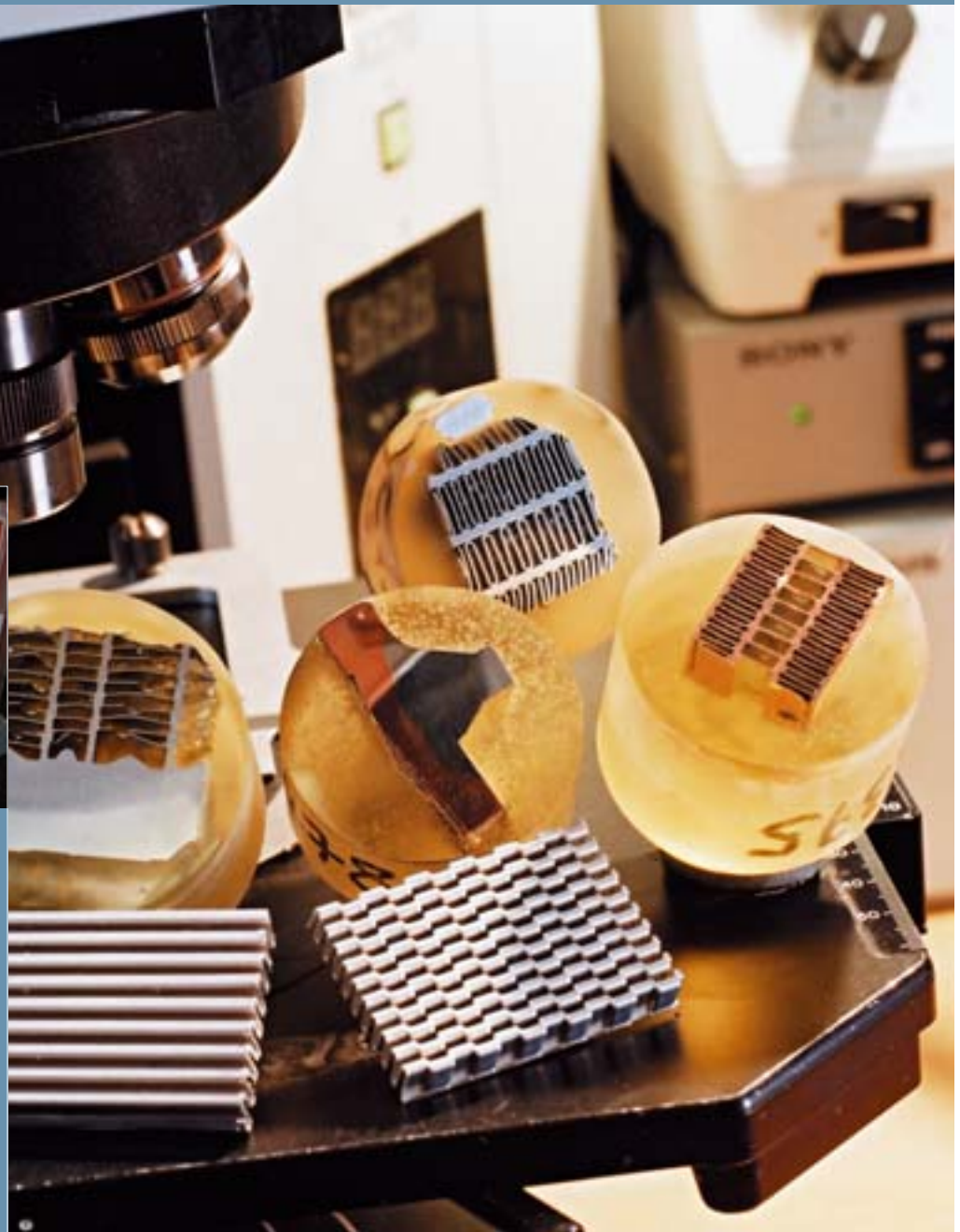
ENERGY/SUGAR



### Reliquefaction of natural gas evaporated in transport: a promising new market for Nordon Cryogénie and Cryomec AG

Nordon Cryogénie and its subsidiary, Cryomec, were chosen by Hamworthy Gas Systems in 2005 to equip LNG tankers with cold boxes and cryogenic pumps to reliquefy natural gas that is vaporised during transport. Studies have shown that it is more cost-effective to recondense gas vapours formed during transport than to use them to propel the vessel.

Under separate orders for equipment for LNG tankers chartered by Qatargas, Nordon Cryogénie and Cryomec, respectively, will supply a series of 15 cold boxes each containing a heat exchanger with brazed plates and a separating tank, and 26 pumps with DNV and Lloyds qualification for operation in zone 1 (hazardous explosive areas). Three cold boxes that have already been finished will be submitted for acceptance in the customer's presence in the first half of 2006 in South Korean shipyards, and new orders were received for identical equipment in early 2006. The new market of LNG transportation offers very promising prospects for Cryomec and Nordon Cryogénie, pioneer in the supply of brazed plate heat exchangers for this application.



### FIVES-LILLE ENERGY OFFERING

#### 2005 KEY DATA

##### NORDON INDUSTRIES

Sales  
**€74.4**  
 million

Order intake  
**€71.4**  
 million

##### NORDON CRYOGÉNIE AND CRYOMEC AG

Sales  
**€36.6**  
 million

Order intake  
**€59.4**  
 million

#### → NORDON INDUSTRIES

##### Design and production of equipment

- HP/MP - LP piping systems for each type of materials.
- Aluminium piping systems/composite materials.
- Expansion joints.
- LDPE.

##### Services

Expertise, new projects, unit shutdowns, maintenance.

#### → NORDON CRYOGÉNIE AND CRYOMEC AG

Brazed aluminium heat exchangers and pumps for cryogenic processes.

## Nordon Industries, Nordon Cryogénie and its subsidiary, Cryomec AG, benefit from the exceptionally high level of investment in the energy production sector

**New impetus in the nuclear industry and the exceptionally high level of investment in Nordon Cryogénie and Cryomec AG's business activities have brought the three companies major sales successes and opened up very promising development prospects.**

### **New impetus in the nuclear industry for Nordon Industries**

Anticipated increases in world energy demands and the targets set by the Kyoto protocol have persuaded many countries to resume the construction of nuclear power plants. This situation offers substantial opportunities for Nordon Industries – a major player in piping that has built up considerable experience in new construction work and maintenance for nuclear power plants. In 2005, Nordon Industries won orders for the prefabrication of primary cooling pipes and the pressuriser surge line for the Olkiluoto EPR reactor in Finland, and is well placed for piping contracts to be awarded in 2006 in P.R. China.

Furthermore, its sales drives and modifications to its industrial organisation have enabled Nordon Industries to reposition its offering in the field of piping work for chemical and petrochemical plants which represented 30% of its business in 2005.

Nordon Industries has also demonstrated its expertise in the automotive sector by supplying paint circulating piping and sealing compounds distribution for the paint shop at PSA's plant in Trnava, Slovakia. This project gave Nordon Industries the opportunity to display its full range

of skills in special welding and bending processes, to the complete satisfaction of the customer.

### **Spectacular boom in business for Nordon Cryogénie and its subsidiary, Cryomec AG**

Sales and, more especially, the order intake of Nordon Cryogénie and its subsidiary, Cryomec, soared in spectacular fashion in 2005 in a flourishing market buoyed by investments in the steel industry in China, India, Russia and Ukraine, increases in ethylene production capacities in P.R. China and the Middle East, and natural gas liquefaction projects.

In the field of natural gas liquefaction, Nordon Cryogénie and Cryomec secured a number of orders to equip LNG tankers with cold boxes and pumps for the reconcondensation of gas vapours, for companies including Hamworthy Gas Systems, in particular.

In the steel sector, these two companies received several orders from their biggest customer, Air Liquide:

- Nordon Cryogénie will supply Ukrainian steel manufacturer Alchevsk with a large air separation unit. For this project, Cryomec developed a double pump shaft seal providing the customer with the assurance of zero-risk of contamination of the pumped fluid.

- Air Liquide's Chinese engineering subsidiary chose Nordon Cryogénie and Cryomec to supply China's leading steel producers with heat exchangers and pumps for air separation units.

Nordon Cryogénie also brought into effect several orders from Technip for the equipment of three different ethylene production facilities with cold boxes in the Middle East.

Lastly, to better serve its customers, Cryomec has recruited two technicians in P.R. China through Fives-Lille China. They will be in charge of service and after-sales support for Cryomec's pumps in P.R. China.

In the present context of high oil prices, market prospects remain good. Indeed, to cope with the influx of orders, Nordon Cryogénie has launched an investment programme in order to increase its production capacity while improving its productivity.



In 2005, Fives Cail Group won contracts for six new sugar refineries in Asia and sold various items from its range of process equipment throughout the world including, in particular, more than 150 centrifugals – mainly in Asia – and 12 continuous vacuum pans with capacities of up to 250 m<sup>3</sup> - in Central America, especially in Mexico.

#### FIVES-LILLE SUGAR OFFERING

##### 2005 KEY DATA

Sales

€34.7  
million

Order intake

€65  
million

- Turnkey sugar factories and refineries.
- Process equipment for the sugar industry: diffusers, beet washers, cane mills, continuous and batch centrifugals, continuous vacuum pans, evaporators, dryers, etc.
- Maintenance engineering services.
- Engineering consultancy and feasibility studies.

## A record-breaking year for order intake at the Fives-Lille Group's Sugar division

Fives Cail Group won a turnkey contract for a beet factory in 2005, as well as numerous contracts for the main units in its range of equipment.

### Contract for Kayseri Seker in Bogazliyan, Turkey: Fives Cail Group wins a turnkey contract for a beet factory

On July 2005, Fives Cail Group, as part of a consortium between French and Turkish companies, won an order from Kayseri Seker for a 10,000 t/d turnkey sugar beet plant in Bogazliyan, Turkey. For this contract, Fives Cail Group will supply all the equipment from refining through to packaging and storage of the sugar.

The technological challenge is enormous: the most modern, most automated factory in the world will be equipped with all the latest technologies developed by Fives Cail Group including, in particular, a 5-effects falling film evaporator plant, a three-strikes crystalliser with high-capacity dual continuous vacuum pans and very high-output continuous/discontinuous centrifugals. With commissioning scheduled for the end of 2006, the Group has just 18 months to secure the installation's industrial acceptance.

### Skeldon II contract for CNTIC in Guyana: a first for the consortium formed by Fives Cail Group and Fives-Lille China

Fletcher Smith, Fives Cail's UK subsidiary, signed a major contract in September 2005 with Chinese

company CNTIC for its customer, Guysuco. The contract covers several items in Fletcher Smith's range of equipment including a diffuser, three continuous vacuum pans, two vertical crystallisers and a massecuite reheater.

This contract is a first: as a result of the co-operation developed between Fives Cail Group and Fives-Lille China, Fives-Lille's Shanghai-based engineering subsidiary, more than one thousand tonnes of equipment will be manufactured in P.R. China in accordance with Fives Cail Group's quality standards.

### Contract for SUDS in Mauritius: opting for Fives Cail Group technology

As part of the extension of the Savannah factory from 3,600 to 9,000 t/d of cane, Fives Cail Group signed a contract with SUDS (Société Usinière du Sud) in Mauritius in 2005 for the supply of two continuous vacuum pans and a Tongaat Hulett type diffuser.

The Skeldon and SUDS contracts, both won by Fives Cail Group, were the only contracts awarded during the year for the supply of sugar cane diffusers, which is evidence of the Group's incontestable technological leadership.



### Fives Cail Group launches a new range of discontinuous centrifugals offering unmatched performances

Named ZUKA, a prototype discontinuous centrifugal with capacities of 1,000 to 2,250 kg/cycle was installed at the Lillers sugar factory in France in early 2005 and tested in industrial production for more than five months.

Excellent results were obtained:

- an innovative design compared with all other products on the market;
- a production rate of up to 30 cycles an hour, i.e. 25% more than the previous generation;
- a 30% reduction in energy consumption;
- perfect sugar quality with no pollution;
- extremely comfortable control and operating conditions;
- the integration of new technologies: on-line connection providing access to operating parameters;
- a new generation of permanent magnet motors contributing to energy savings and supplementing the available choice of motors.

These results confirm the Fives Cail Group's great capacity for innovation and should considerably strengthen its competitive position. By the end of 2005, this product had already attracted more than twenty firm orders.

AUTOMOTIVE

ALUMINIUM

STEEL

GLASS

CEMENT

ENERGY/SUGAR

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