Dear reader,

The proportion of time spent by automotive parts suppliers on research and development work in relation to total turnover is already considerably greater than that of the automobile manufacturers. For particular areas of research work, the SCHERDEL subsidiary SIMENT supplies computer simulations for complex physical correlations.

Of course investment also plays a part in the realization of our strategy for the Group’s future and so we have opened a new unit for assembly technology in Friedau and a production plant has gone into operation in Myjava in Slovakia.

At present, SCHERDEL is represented in ten countries, with locations as near to our customers as possible. The aim of our Service Centers is to solve customers’ problems using the synergy effects available within the Group.

Despite the negative trend in the trade as a whole and the unfavourable political framework in Germany, SCHERDEL achieved an increase in turnover this year again. Of course, our activities are also determined by government decisions and so, as far as the future is concerned, it would be fine if these decisions were made by statesmen instead of politicians.

To all our readers I extend my very best wishes for your health and happiness in the Year 2003.

Walter Bach
Group Managing Director

Facing the future with confidence

HAMÜL celebrates 75th anniversary

In 1927 the Company founders Hans Mühlhöfer and Theodor Kirschbaum began manufacturing belt disengaging devices for flat belts in transmission units. 75 years later the name HAMÜL stands for high-tech portal milling machines, high-grade machine-tool components, milling heads and wire working machines.

The Company has been part of the SCHERDEL Group since 1987. Six years later the entire production process at Marktredwitz was transferred to the existing Meeder works near Coburg. In 1998 a new production plant for steel weldment applications and machine housings was set up on a 3,500 m² site at Plauen in Saxony. In addition to constructing special machines HAMÜL, in cooperation with Darmstadt Polytechnic, was also the market leader in the production of the first concrete polymer machines in Germany for high-speed machining operations. The development of high-quality milling equipment for machining turbine blades was another important addition to the range of products. This example in particular demonstrates the innovative capacity of HAMÜL’s engineers with regard to finding solutions to complex problems.

The success which the Company owes to innovative products and its strong position in a highly competitive marketplace is also reflected in staff development. During the last ten years the number of employees has risen from 70 to 185. The number of trainee positions at HAMÜL – eleven per cent of the total staff – is well above the regional and national average.

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SBIMENT GmbH was founded in Coburg in December 1999. Its associates are the SCHERDEL subsidiaries INNOTEC GmbH and HAMÜL GmbH, and also Professor Mösinger in a private capacity.

SIMENT GmbH’s predecessor was a Users’ Centre set up by the Association of Bavarian Technical Colleges with the aim of promoting technology transfer. At present, SIMENT GmbH still cooperates closely with the Coburg College of Technology. For example the Company allocates topics for dissertations and supervises the work involved, and professors act as project managers or advisers.

Should you have any questions, your contacts at SIMENT are Mr Achim Stegner (graduate engineer) and Professor Mösinger (tel. 0 95 61/31 96 16; www.siment.de).

In addition to design-related developments in mechanical engineering and tests involving measurement in the field of vibration and acoustics, the focus of activity is on computer simulation, i.e. the calculation of complex physical correlations and processes relating to mechanical structures or fluids.

The activities range from a simple demonstration of the stability of a mechanical component to the calculation of a machine’s vibrations or the simulation of the flow configuration in process-related devices or in air vents in motor vehicles.

The aim here is not only to determine and describe the actual state but to indicate ways of eliminating weak points, improving efficiency and optimising functions.

The following contains a general description (without going into detail) of a few selected examples, presented with the permission of the client concerned.

1. Connecting rod

For a well-known car manufacturer, the Company calculated the stress exerted on a connecting rod by the force of gas and of inertia. The particular problem here was to make the cross-linkage in the region of the thread of the bearing shell screws so fine that – taking the notch effect into account – the stress in the thread region could be calculated correctly.

2. Injection mould

A critical feature regarding the quality of injection moulds is the attainable cycle time. The greater the intensity and uniformity of the heat loss produced by the cooling system, the greater the number of parts produced per unit of time. Using FEM simulation techniques, an injection mould can be optimised quickly and cost-effectively by varying its geometric shape, the type of material selected and the position and size of the cooling ducts. This method also allows us to make recommendations regarding the design, with the aim of minimising deformation caused by the injection pressure.

3. Vibration analysis, modal analysis

In relation to machine tools, in addition to keeping static flexibility as low as possible, the question of dynamic flexibility is also important. When new
equipment is being designed in this field, the natural frequencies and natural modes as well as the frequency response in relation to flexibility are often calculated using the FE Method. This enables us to determine, at the design stage, the attainable machine quality, for example in relation to the potential dynamics of the driving gear. This frequently avoids the expense incurred by subsequent improvements or redesigning measures during the initial operating phase or at the client’s premises. In the case of FEM simulation the rigidity values of the bearings, the linear guides, the castor spindle and other elements pertaining to the drive system and bearings must be taken into account in order to obtain sufficiently precise results.

4. Optimising the design of forging hammers 1)

In the case of forging hammers an extremely high level of force is exerted within a very short time. With each blow of the hammer the base of the machine is subjected to a broadband impulse excitation with frequencies extending well into the kilohertz range. These high-frequency vibrations can subject the machine base to alternating stress levels which adversely affect its fatigue strength. The problem here, in addition to determining a suitable design for transitional areas and hollows, is to obtain a proper mass distribution, so as to ensure an optimum level of fatigue strength for the machine base.

5. Flow simulation

The air vents in motor vehicles have to meet exacting requirements. For example, one important criterion is the angle of the incoming air-flow and its range according to the position of the slats. Flow simulation using the FE Method analyses the effect of the air-emission geometry and the position of the slats on the flow field in the interior of the vehicle. The resulting information helps to achieve an optimum design.

Source:
1) Schmiede Journal, September 2002, page 19
Proximity to the customer and exploitation of synergy effects

SCHERDEL Service Center in Erlangen covers Bavaria north of the Danube

We install every spring at our customer’s premises – this is Walter Bach’s pragmatic definition of the duties of a Service Center. In the opinion of the Managing Director of the SCHERDEL Group, these decentralised sales branches make an important contribution towards enhancing the Group’s local presence. Our Group Managing Director also stated: “Of course, the consumers and local buyers of our products in the field of engineering springs, stamping and bending technology and vehicle components are well aware of SCHERDEL’s expertise and engineering know-how. However, we also have a lot to offer with regard to special machines and systems, obtaining new ones, the focus is therefore on the provision of information. Oswald Skrobotz, the Manager of the Center, sees it this way: “We also act as advisers who will determine – in the case of production equipment which already exists or which the client is planning to install – whether, in the field of automation technology for example, a SCHERDEL solution can provide an optimum production flow. If this is the case, the data will immediately be passed on to the appropriate company in the SCHERDEL Group. In our example, that would be ZARIAN. The engineers and specialists from the field in question will then hold detailed discussions on the type and extent of automation and control technology, tools and equipment, and surface finishing as well.”

The SCHERDEL Service Center (SSC) Erlangen is responsible for presenting this attractive range of products and services in the region of Bavaria north of the Danube. In addition to serving existing customers and obtaining new ones, the focus is therefore on the provision of information. Oswald Skrobotz, the Manager of the Center, sees it this way: “We also act as advisers who will determine – in the case of production equipment which already exists or which the client is planning to install – whether, in the field of automation technology for example, a SCHERDEL solution can provide an optimum production flow. If this is the case, the data will immediately be passed on to the appropriate company in the SCHERDEL Group. In our example, that would be ZARIAN. The engineers and specialists from the field in question will then hold detailed discussions on the type and extent of automation and control technology, tools and equipment, and surface finishing as well.”

In the opinion of Oswald Skrobotz: “There’s no doubt that the advice and solutions provided by the SSC also help to increase customer satisfaction. You see, all the SCHERDEL synergy effects can be used and specifically aimed at solving the problem in question.”

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ramped working conditions are a thing of the past now that the new production hall has been built at the SCHERDEL Works in Friedau. Ten months ago the excavators had begun to dig the foundations and then, after the winter break, the work continued at top pressure until the building was completed in September. The visitor is immediately impressed by the feeling of spaciousness and this was one of the aims of the building which has now been realised. Works Manager, Manfred Wegmann, remarked with satisfaction: “Delivery, assembly and dispatch procedures can now be better organised.”

The production hall, which measures 44.5 by 33.5 metres, was built at a cost of 1.2 million euros and it has a production area of just under 1400 m². The new assembly area is linked to the existing building via a connecting unit. Thanks to the height of the building it was possible to save space by positioning two office areas one above the other. The new premises are used mainly for the manufacture of compression-tension elements and tailgate shock-absorbers for opening and closing mechanisms in motor vehicles. This includes parts for vehicles such as the BMW series 3 and 7. The department for dispatching tension springs is also housed in the new premises, which means that storage can be more efficiently organised. With the new valve train (valve-tronic) used in the latest generation of BMW engines, the assembly unit has made an important contribution to the automobile industry. Other items produced here are weight compensation mechanisms for the furniture industry. These are fitted in cupboards for kitchen and office use. Here, the wide variety of systems with varying lengths and designs requires a highly efficient materials handling process. The new production hall also meets this requirement. Another feature is the unit designed by the SCHERDEL subsidiary ZARIAN for the manufacture of spring packs for automatic gearboxes. There is enough space for the installation of a second assembly unit of this type in the future.

(Reiner Bittner)
If you want to survive in today’s national and international marketplace you have to increase your competitiveness by cutting costs and, at the same time, increasing productivity and quality. Here, the MOTEK trade fair provides a wide survey ranging from individual parts to complete solutions from the fields of assembling, joining, controls, integrated systems, handling, propulsion, testing and organising. As Wolfgang Wölfel, signing clerk at KANYA, put it: “For us, the trade fair at Sinsheim offers an ideal opportunity for presenting our products and, of course, solutions with innovative designs.” The “KANYA-Safe protective housing system” provides a customized solution. It makes no difference whether it’s a question of noise emission, the danger involved in the use of lasers, or protection from dangerous working procedures or leaking fluids. In accordance with the motto “KANYA – always a winner” the visitors to the trade fair could take part in a lottery where the prize was a weekend for two at Lake Zurich in Switzerland. In order to take part you had to write down four words on a piece of paper and “post” it through a slot in the “KANYA-Safe”. The words in question were hidden in four different protective housing models. Summing up, Wolfgang Wölfel said: “MOTEK was a great success for us and the visitors took a great interest in our range of products. In addition, we were able to pass on inquiries regarding automation and control technology to ZARIAN another company in the SCHERDEL Group.”
The ten years during which the firm of C.E.P Scherdel Pružiny s.r.o. has been in existence have been characterised by a continuous and successful process of development. The initial difficulties were followed by a period of steady progress. In line with the long-term corporate strategy for Central Europe, the new building in Myjava marks another important milestone. Our subsidiary in Slovakia now has the modern production and storage facilities which were so urgently required.

It all began in September 1992 when C.E.P Scherdel Pružiny s.r.o. was founded. The Marienberg spring-production factory under the direction of its manager, Herbert Makosch, took the new company “under its wing” and assumed responsibility for strategic management. The first production premises were in a rented building in Brezova where shaped wire components and upholstery springs were manufactured using a manual or semi-automatic process. The Company grew to such an extent that the rented building became too small and more spacious production premises were urgently required.

A suitable site was found in Myjava; the building was soon erected and the Company moved in without delay. Here, the staff performed a feat of logistics: in addition to the activities connected with the removal, deliveries to the customer continued to made on time and without interruption.

The new building has a production hall with an area of 2,700 m²: 38 m by 73 m. A two-storey section provides ample space for offices, social and sanitary facilities. The following products are manufactured: shaped wire components, torsion springs, welded parts for seat frames and headrests, as well as welded components and various types of accessories.

Since 1994 the number of staff has increased from 10 to 100. We would like to take this opportunity of thanking all our employees in Slovakia, and the management in particular, for the efforts they have made.

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The whole is more than the sum of its parts

SCHERDEL Group offers clients an additional advantage thanks to a wide variety of synergy effects

Progress based on tradition. Maybe this motto sounds a bit old-fashioned. And of course it would be if we didn’t revitalise it continuously. We are constantly striving after progress in all areas. This is something we owe to ourselves and to our customers. Our aim is to save you time and money, and present you with new opportunities. Indeed the above motto could be changed to: “At SCHERDEL progress is a tradition”. This is guaranteed by the potential available in the individual companies in the Group and it applies to all the following divisions:

**SCHERDEL Group**

- **Customer**
- **Surface finishing**
- **Stamping and bending technology**
- **Vehicle components**
- **Automation and control technology**
- **Special machines and systems**
- **Tools and equipment**
- **Engineering springs**
- **Surface finishing**
- **Research and development**

**Engineering springs**

- Development and production of:
  - valve springs
  - compression springs
  - tension springs
  - disk springs
  - sleeve springs
  - torsion springs
  - retractor springs, constant force springs and spiral springs
  - spring elements for oil distribution rings

**Surface finishing**

- cleaning
- phosphating
- powder coating
- cathodic electro immersion painting
- Delta “Magni” products (Delta Tone, Delta Seal)

**Research and development**

- testing of materials and components
- design and project work on components, machines and systems

**Vehicle components**

- formed wire springs
- vehicle seat frames: riveted, upset, clamped, welded (projection welded, spot welded, pressure welded, MIG-MAG welded)

**Automation and control technology**

- feeder equipment
- assembly devices
- ZARIAN single and multi-axis motion systems
- control systems for special machines
- KANYA aluminium profile module systems

**Special machines and systems**

- Development/design/production of:
  - high-speed and portal milling machines
  - single-axis and coordinate tables
  - linear robots
  - handling portals
  - machine-tool components
  - special machines for spring production

**Tools and equipment**

- Development/design/production of:
  - punching tools
  - bending tools
  - stamping tools
  - follow-on composite tools
  - transfer tools
  - gauges, gripping devices
  - peripheral equipment for automatic handling machines
  - and special machines

**Stamping and bending technology**

- stampings and shaped components:
  - thickness of material 0.1 - 3 mm
  - wire shapes: wire diameter 0.1 - 4 mm