

Editorial



Detlef Becker
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SIMONA AG

Dear Readers,

It is important to have reliable partners at your side, all the more so in times of crisis. At SIMONA, we are convinced that the current economic situation also holds many opportunities. Companies with a high level of expertise, comprehensive technical know-how and a solid base will hold their own in the market.

We are committed to assisting our customers every step of the way, and SIMONA.report constitutes a key element within our comprehensive range of special services. The focus of this issue is on finished parts – a product segment that is characterised by its unlimited diversity when it comes to tailor-made applications.

Do pay us a visit at Stand D29 (Hall 8.0) at the AICHEMA exhibition in Frankfurt from 11 to 15 May 2009. We look forward to seeing you. First of all, though, we would like to wish you informative reading.

Finished parts

Top quality tailored to your needs

SIMONA offers a wide range of finished parts for fields of application in mechanical and transport engineering – not only standardised products but also custom-designed ones.

Well-prepared for the future: SIMONA AG's market position has been further enhanced following the introduction of four new CNC milling centres. From now on, semi-finished products can be machined up to a size of 5,750 mm x 1,750 mm x 400 mm (L x W x H).

Machining plastic parts

Chip-removing production (machining) with CNC milling machines and CNC lathes is

a fast and economical way of producing finished plastic parts with large wall thicknesses in small to medium quantities. High-precision parts are produced at CNC-controlled machining centres to within extremely close tolerances. Five-axis CNC milling machines are superior to other methods of manufacture which are unable to produce such complex finished parts with precision.

Proven materials

SIMONA materials such as dehoplast® PE-1000 (PE-UHMW) and dehoplast® PE-55 (PE-UHMW containing recycled materials) are highly effective and constitute an ideal basis for the production of top-quality fin-



CNC milling of a plastic sheet

ished parts. Excellent material properties such as high impact resistance and notched impact strength, excellent chemical resistance, perfect slip, durability, corrosion resistance and high wear resistance ensure outstanding results and top quality.

Customised finished parts

SIMONA manufactures parts according to samples, drafts and drawings. That means all customer orders are first of all prepared for shop production at CAD/CAM workstations. The possible formats are: step, iges, dxf and dwg. Then the customer-specific programs thus created are sent to the CNC machine tools. In this way, the considerable set-up costs usually associated with such processes can be reduced to a minimum for the customers' benefit. All industrial plastics can be processed on our state-of-the-art CNC machinery. In



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addition, the fully fledged CAD/CAM workstations can be utilized to render sophisticated design services.

Everything from a single source

SIMONA stands for comprehensive service: we are able to offer customised material solutions from our own compounding unit, applications technology advice in the field and a quality of supply that is guaranteed worldwide. Take advantage of our manufacturing breadth, with a portfolio that includes semi-finished parts production, machining, profile extrusion, finishing and advanced processing.

Fields of application for finished parts

- Mechanical engineering
- Paper industry
- Chemical industry
- Transport, materials handling and storage systems
- Packaging and filling systems
- Bulk commodities industry
- Port and fender construction
- Food industry

Areas of use for finished parts

- Profiles, chain guides
- Shafts, slide rails, star wheels
- Cam guides, deflection pulleys
- Silo linings
- Fender strips

Example: impeller production

Such impellers are made on a 5-axis CNC milling machine at our machining centre. The so-called solid (surface model)

is read by the CAD/CAM software via a data import. By means of 5-axis milling strategies, such as impellers and turbine blades, which cover all the subtleties of 5-axis simultaneous machining, a custom program is created for the respective machine control. The program for manufacturing such a complex pump impeller contains approx. one million data records and only takes a few hours on state-of-the-art 5-axis milling machines such as those deployed by SIMONA AG.

Dehoplast® PE-1000 exhibits extremely favourable wear behaviour with components that are subject to abrasion. The abrasion is minimal, as a result of which creep rupture strength is outstanding. Furthermore, dehoplast® PE-1000 is ideal for manufacturing pump impellers on account of its good resistance to a wide range of media used in chemical sectors of industry, e.g. acids, alkalis and saline solutions.

Shahram Adjili

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Draft of the pump impeller

Plastics Expertise

CNC Milling

CNC stands for “Computerized Numerical Control” (in other words: controlled numerically by computer). In a milling process rotating cutting tools traverse certain contours of a fixed workpiece and remove material in the form of a chip. The rotating cutting tool on conventional machines can be moved along three axes, X, Y and Z, using set wheels. On CNC milling machines this takes place using separate, computer-controlled and adjustable feed axes. In 5-axis milling the cutters can be positioned at any angle to the workpiece and moved. Thus, even complex 3-D contours can be created. The tools and the relevant milling parameters (speed, feed, etc.) are also stored in the programs controlling the CNC machines. The CNC milling machine automatically takes the necessary tools from a magazine that has been loaded beforehand. A milling machine can be used to perform operations such as milling, drilling, deflashing, planing and grinding.

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Your contact



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Shahram Adjili holds an engineering degree in plastics technology and has been Sales Manager at the Mechanical Engineering & Transport Technology business unit since January 2009.

His field of activity covers global sales and management of key accounts for the product segments of pressed sheets, solid rods, welding rods and finished parts. Mr Adjili has a proven track record in the fields of applications technology, applications development, machining and marketing of industrial plastics and high-performance plastics. Before joining our management team, he worked for well-known manufacturers in the fields of mechanical engineering and installation construction. He is able to assist SIMONA customers when it comes to the implementation of technical projects and is responsible for market cultivation and business development.

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Project Report

SIMONA® PE-EL pipes at Boehringer Ingelheim



The pipes are secure on a network of pipe bridges. Numerous custom components make it possible to meet the particular conditions.

The research-based pharmaceutical company Boehringer Ingelheim is responding to increasing effluent pollution by extending its central waste water treatment plant). The investment programme will help to drive the transition of the company, whose corporate headquarters are to operate as the launch site for the global group of companies.

The project to redesign the waste water treatment process also included measures aimed at extending the waste-air monitoring system. To clean the increased flow of waste air, a new, two-line waste-air treatment system was installed.

Initial situation

As part of a complex process the production effluent is cleaned in a number of stages. By means of complete encasement during the first treatment stage, including buffering and sludge treatment, any solvent or odour emissions are collected and subjected to controlled treatment. The waste air is cleaned by chemical, physical and biological means. In this way a total volume of 30,000 m³ per hour is treated and discharged to the environment as filtered waste air.

Task

The general planner, peters engineering ag, was looking for a material with the

following properties in order to design the piping system:

- electrical conductivity
- excellent UV resistance allowing outdoor deployment
- good thermal resistance up to +80°C
- extended service life for improved efficiency
- reliable chemical resistance
- high corrosion resistance

Solution

The technical preliminaries of this project explicitly called for pipes and fittings with continuous, homogeneous conductivity. With this in mind, peters engineering ag and SIMONA AG developed a piping sys-

tem above ground made of SIMONA® PE-EL (electrically conductive polyethylene).

So-called conductivity carbons are added to polyethylene. This reduces the electrical resistance. In this way, the resulting static is discharged and sparks are prevented from developing. The light weight of plastic pipes is an unrivalled advantage when it comes to assembly. The plastics contractor, IKS GmbH in Ingelheim, was thus able to lay a total of 700 m of SIMONA® PE-EL pipes within a very short space of time.

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