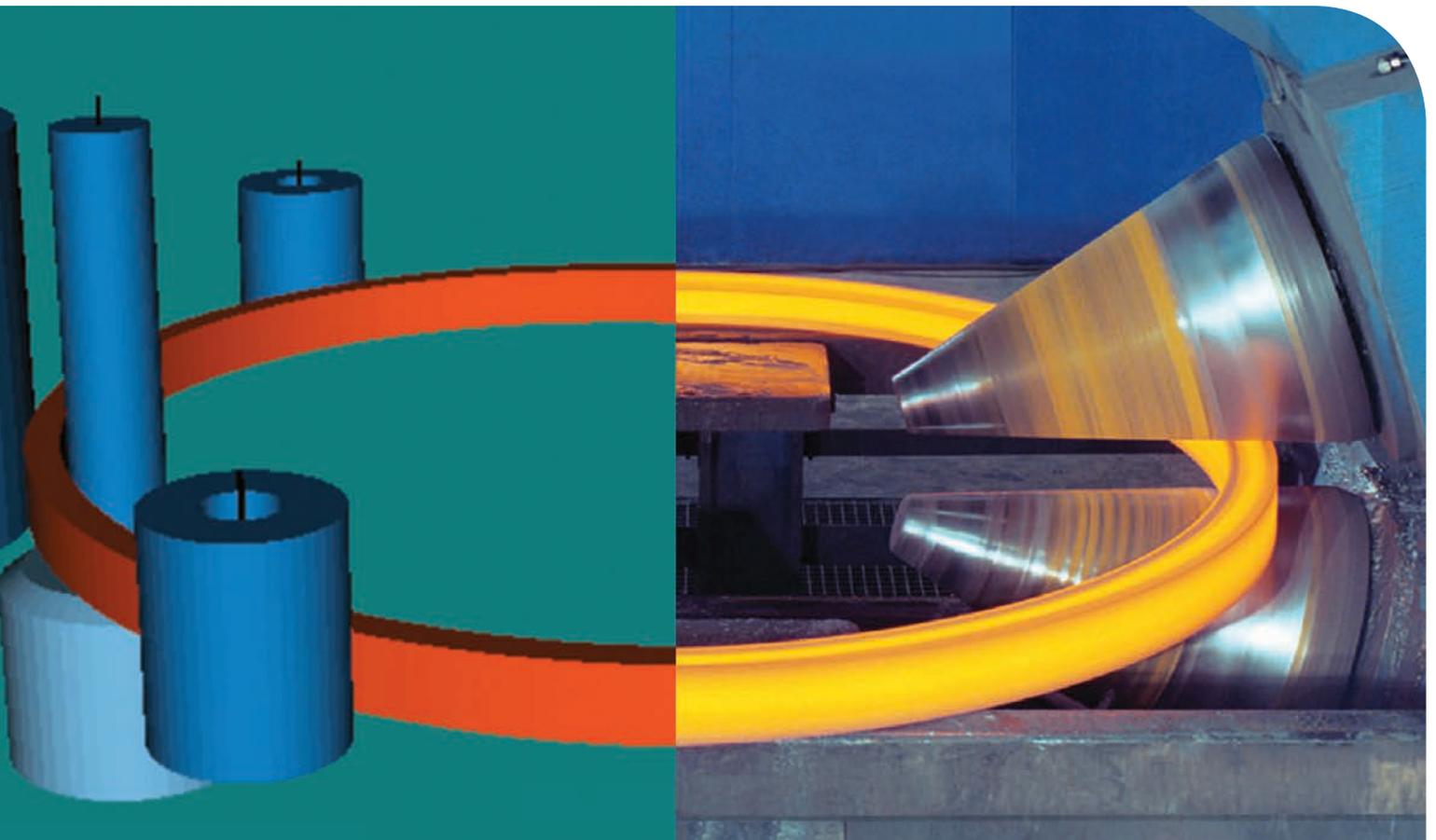


# ROLLTECH RINGS

Integrated technology solutions from SMS group



ROLLTECH Rings from SMS group is a software package that measurably increases the profitability and product quality obtained from radial and radial-axial ring rolling machines.

## **BENEFITS AT A GLANCE**

- Simple and flexible simulation technology
- Comprehensive range of services on offer, including consulting, training and software
- Customised, user-friendly databases
- High degree of internal automation
- Flawless manufacturing thanks to the high level of repeatability when using the program.

# ROLLTECH RINGS

High cost effectiveness through optimal use of technology

SMS group is a world-leading manufacturer of cost-effective axial and radial-axial ring rolling machines. They offer consistently excellent performance in terms of both quality and quantity for the production of rings in nearly all sizes and shapes. This is the result of decades of experience in mechanical and electrical engineering as well as expertise in control systems and technology. SMS group brings these disciplines together in a single self-contained software system: ROLLTECH Rings.

## EFFICIENT, INNOVATIVE TECHNOLOGY

The manufacture of forged rings is influenced by many economic and technological aspects: On the one hand, the product must be technically feasible to manufacture, and on the other, the production strategy employed must be economically viable. ROLLTECH Rings addresses these key requirements and guarantees the operator the best possible manufacturing results.

## FLEXIBLE AND PRACTICAL

ROLLTECH Rings is easy to operate. The planned production technology can still be changed even during production.

### BENEFITS AT A GLANCE

- ROLLTECH Rings not only meets technical and economic requirements, but redefines them
- A high degree of internal automation through the merging of technological and restrictive control parameters – comparable to an expert system
- Customized, user-friendly databases
- Complexity makes it easier for the user to achieve perfectly reproducible results – from billet selection to the machined finished form.

SMS group marries experience, expertise and know-how in a single self-contained software system: ROLLTECH Rings.

# COMPREHENSIVE PACKAGE

Experience, expertise and know-how

The technological interdependencies and their impact on the product are very involved when manufacturing rings. Misjudgments during production planning and production itself can lead to instability of the product thus leading to economic disadvantages. In order to avoid this, SMS group offers a complete package that includes ROLLTECH Rings.



## ROLLTECH SOFTWARE – ALWAYS UP TO DATE

- Software maintenance for existing simulation programs
- Old software being brought up to date
- Software development/add-ons for:
  - Production planning
  - Process simulation
  - Process control
- Training for software operators

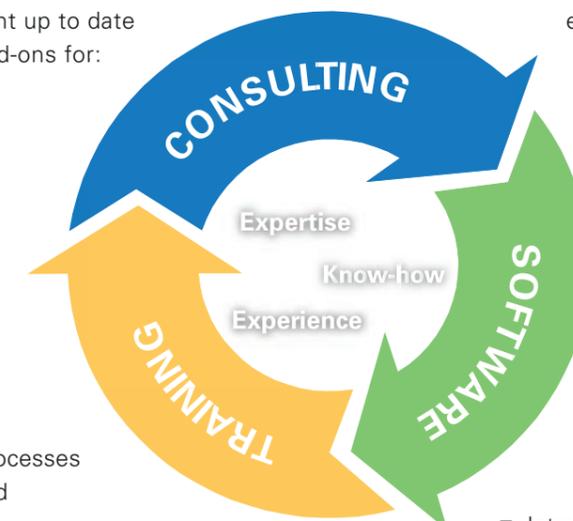
## COMPREHENSIVE CONSULTATION SERVICE

- Consultation on forming technology
- Optimisation of existing processes
- Reduction in materials used
- Process substitutions
- Expansion of the product spectrum through the introduction of new methods and practices

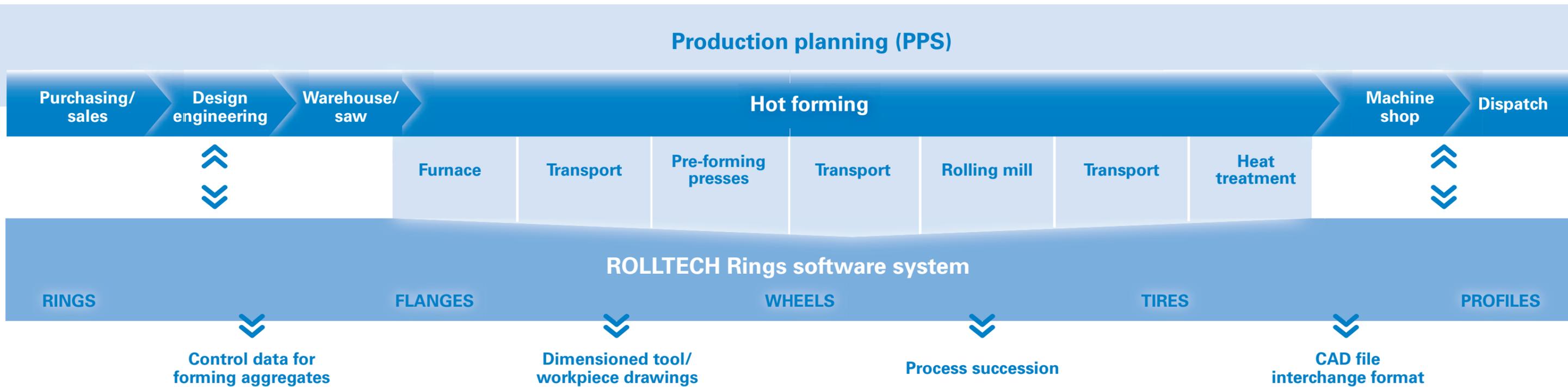
- Geometric product enhancements
- Material-dependent innovations
- Process design for production technologies
  - Mechanical engineering improvements for existing equipment
    - Consultations prior to or when making new investments
    - Supervision and/or realisation of R&D projects
    - Modernisation of equipment control systems

## CUSTOMISED TRAINING COURSES

- Process engineering training of operating personnel
- Machine operation
- Strategic and methodological optimisation of process sequences
- Introduction of tools for systematic job planning



# ROLLTECH RINGS: CENTRAL INTERFACE FOR ALL DEPARTMENTS \*



## INTEGRATED SOLUTIONS FOR EVERY PROCESS SEQUENCE

All production-relevant stages of the operational workflow can be integrated into the software system. This makes its use in all areas a sensible option:

- The purchasing/sales department independently determines the feasibility/manufacturability of a product without having to involve the technical departments
- The design engineering department can, for instance, dispense with time-consuming profile contour drawings of the tools

- The warehousing/sawmill operation gets given an overview of the required input materials
- The complete hot forming process, from furnace to heat treatment, is supplied with data such as temperatures, operation and transport times as well as process data
- The machine shop is provided with process parameters for the workpiece.

## EASY TO LEARN: THE USER INTERFACE

ROLLTECH Rings is a Windows-based program. Its functions conform to standard Windows applications. This simplifies operation significantly. The operator can easily find his way around the system and quickly become productive.

## QUICK AND EASY: SIMULATION OF A RING

Simulating a ring with ROLLTECH Rings essentially involves just three steps:

1. **The material question:** Which material is best suited for providing the desired product characteristics?
2. **The equipment question:** Which ring rolling machine can manufacture the product most efficiently?
3. **The size question:** What final dimensions should the end product have?

Done. All other process-relevant parameters are generated automatically.

## CUSTOM MADE: MATERIAL AND MACHINERY SELECTION

The choice of material and machinery is based on an extensive database. ROLLTECH Rings contains materials data for calculating the resistance to deformation, temperature profile and resultant shrinkage characteristics for the entire forming process. The materials include:

- Carbon steels
- Low and high-alloy steels

- Super alloys
- Non-ferrous metals, such as aluminum, titanium, copper

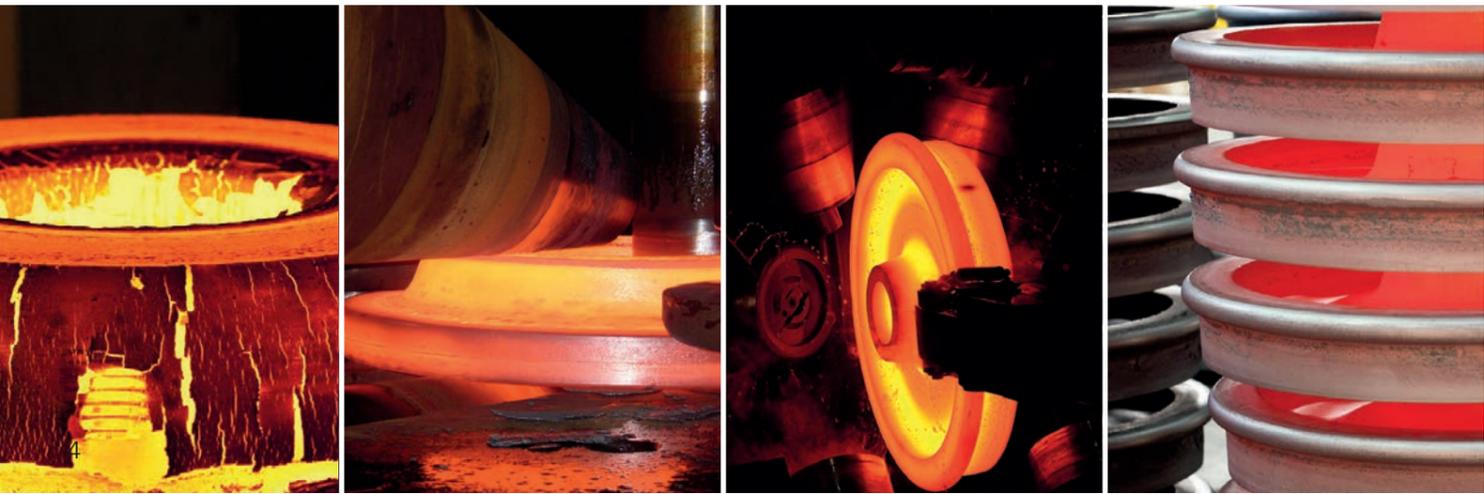
The material-specific properties are editable and can be extended almost without limit. SMS group adapts the options available to match the individual requirements of the plant operator: A selection of machine data is provided according to the specific operational requirements.

## FLEXIBLE: FINISHED FORM, ALLOWANCE FORM, TOLERANCE FORM

After entering the geometry of the machined finished form, the allowances for machining and production tolerances are determined, depending on the preset, either automatically or manually as the operator wishes.

## RESULTS-ORIENTED: THE DESIGN OF THE BLANK

The ideal preform is calculated based on the tools being used (rollers/presses) and the minimum requirements for the deformation characteristics. Intentional deviations from this or those necessary for production engineering reasons (e.g. a minimum ring growth rate at the start of rolling) are the basis for the simulation process.



\* ROLLTECH can be applied to other areas too, such as wheels.

**GRAPHICAL: CHECK, EDIT AND MANAGE TOOLS**

Geometric constraints, such as tool collisions or erroneously entered data are illustrated using an animated, graphical representation of the entire rolling process. This allows the correctness of changes made to tool dimensions to be quickly verified. Detail magnification - zooming - and a three-dimensional view make it easier to assess the feasibility of the rolling job. All the tools necessary for the rolling process are maintained in a database. In this way the plant operator has everything under control and can rely on the values being accurate even before starting production.

**USER FRIENDLY: DETERMINING THE ROLLING STRATEGY**

The rolling strategy is characterised by rolling process-dependent specifications, such as cross-sectional profiles, shut-down behavior and rolling modes for:

- Rings
- Flanges
- Titanium rolling strategy
- Solid discs

As with almost all input menus, data for the rolling strategy are input either manually, automatically or using a control module.

**IT'S VERY SIMPLE: THE PREFORM PRESSING OPERATIONS**

ROLLTECH Rings visualises the tools for the production of blanks too. The menus make it quick and easy to check:

**Stamping tools:**

- Upper die
- Lower die of the billet
- Piercer geometry

**Press operations:**

- Pre-punching
- Upsetting
- Repositioning/piercing
- Widening

**LOOKING AHEAD: CONSTRAINING SETTINGS**

Forming temperature ranges (upper and lower limits), transport and operation times of the individual aggregates (furnace, preform press, ring rolling machine) significantly affect production capacity. This data allows a definite statement to be made regarding production times, re-heating and weight losses. This enables the plant operator to better plan and thereby optimise production.

**FLAWLESS: CONTROL MODULES AND DATABASES**

Control modules and databases ensure a high level of repeatability when using the program. They free the plant operator from subjective influences and reduce the error rate when inputting process data. This guarantees the best possible manufacturing results.



**INDIVIDUAL: THE OUTPUT OF THE SIMULATION DATA**

There are a number of ways in which the system outputs the results of the simulation. The operator can retrieve all process-relevant data in either graphical or tabular form:

- Geometry of the product (diameter, cross-sectional profile, etc.)
- Dynamics of the rolling process (machine utilisation, forces, growth speeds)
- Material characteristics (temperatures, deformation resistances)
- Forming dimensions (reductions, adjustments)
- Control data (ring displacement, axis positions)

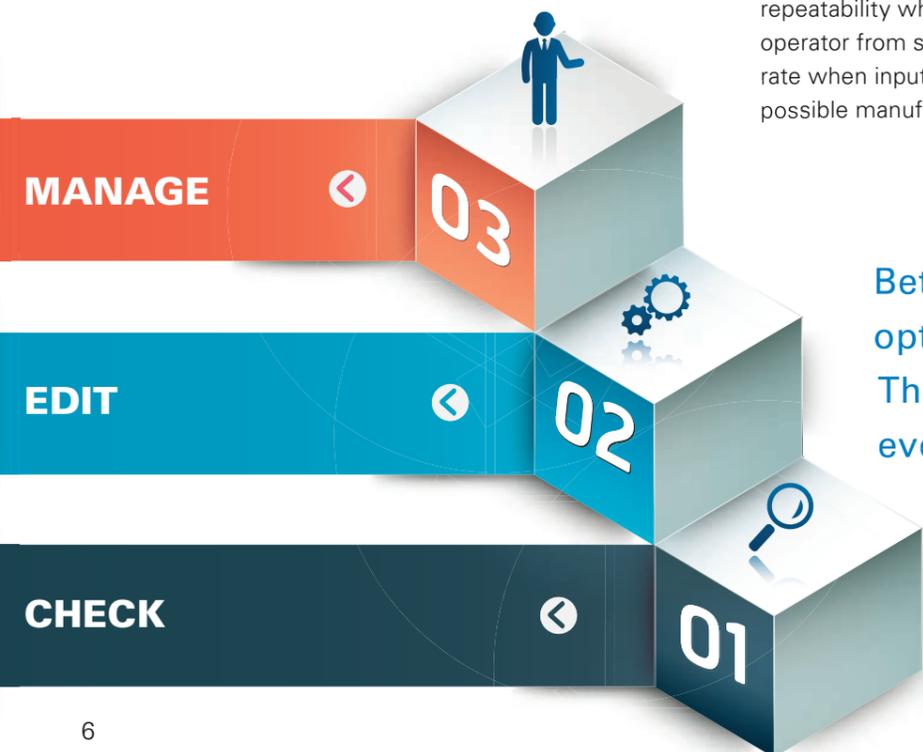
- Where can material be saved (allowances, tolerances, flash, scale)?
- What performance limitations are impeding faster production?
- What non-productive times can be optimised (transport)?

In addition to output on the screen, ROLLTECH Rings offers other important options for further processing simulation results:

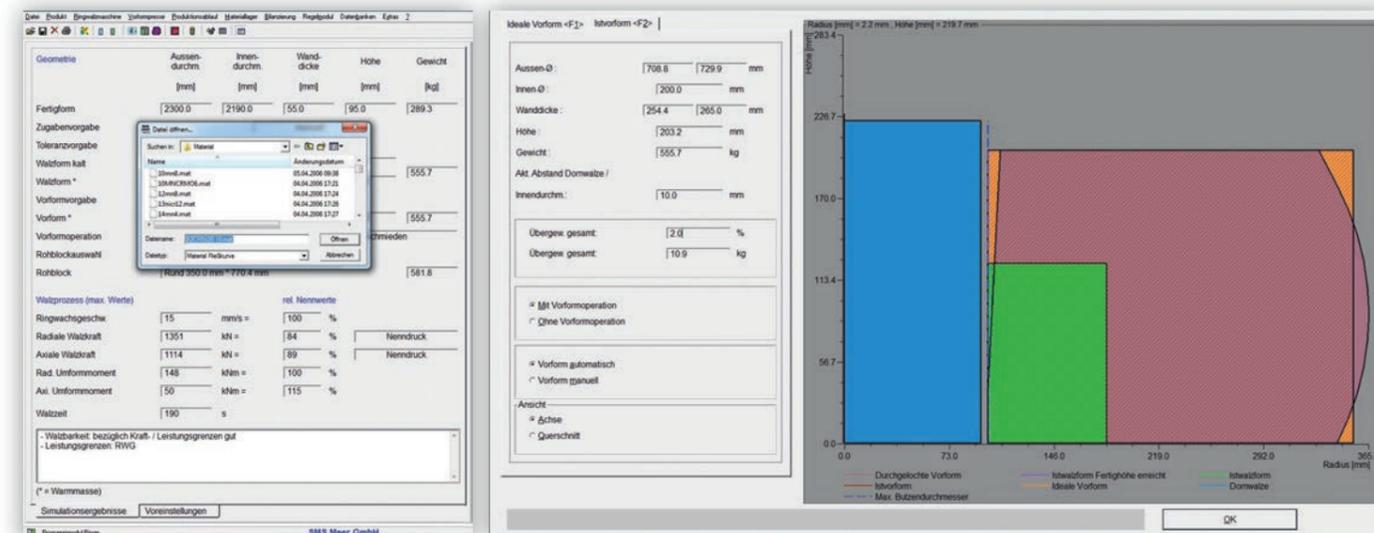
- Process data for CARWIN, the control program for radial-axial ring rolling machines
- Process data for PRESSTRONIC, the control program for pre-forming presses
- Files in DXF format for importing into a CAD system so that further design engineering work on workpiece and tool outlines (e.g. flanges, wheels) can be performed
- Printing of production data, technical drawings, graphs and tables.

**INTEGRATED: WORKING WITH THE SIMULATION RESULTS**

Important questions that have a direct impact on the economics, product quality and output, can be more easily and more accurately answered with ROLLTECH Rings:



Better planning and optimization with ROLLTECH: The plant operator has everything under control.



**SMS GROUP GMBH**

Business Unit Forging Plants  
Ring and Wheel Rolling

Stockumer Straße 28  
58453 Witten  
Germany

Phone: +49 2302 7098-3439

Fax: +49 2302 7098-3356

[ringrolling@sms-group.com](mailto:ringrolling@sms-group.com)

[www.sms-group.com](http://www.sms-group.com)