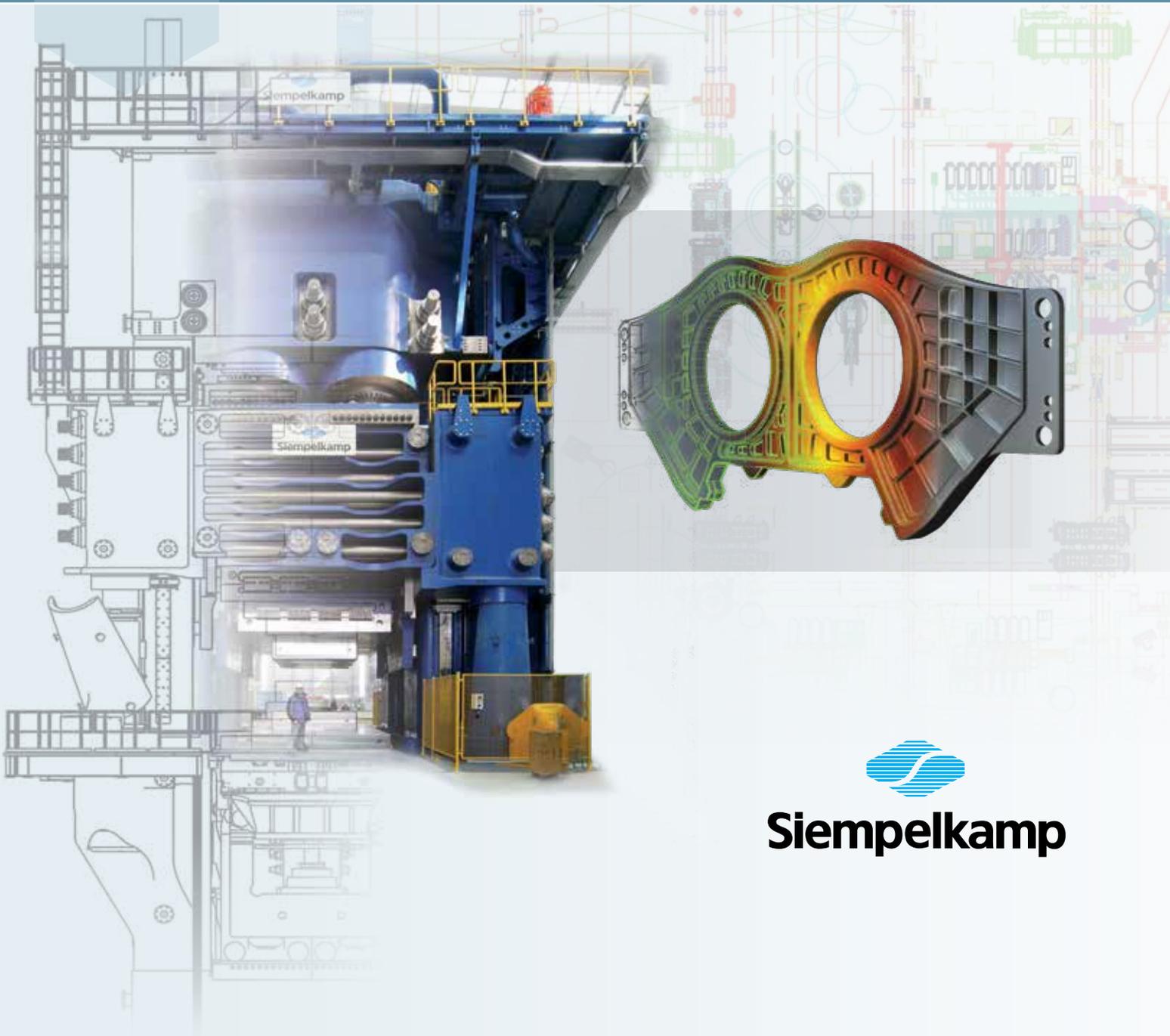


Forging Under Control

THE SHAPE OF PARTNERSHIP



Siempelkamp

CONTROL

Deliver the highest-value, most-difficult parts at peak levels of quality, consistency and operational efficiency

Forging is about much more than just producing the right shape. It is about achieving optimal material properties accurately, repeatably, efficiently and cost effectively.

Siempelkamp forging presses provide the ultimate in control, greatly reducing process variation and providing a higher level of capability – giving you better control over your operations while delivering superior parts to your customers.

Siempelkamp forging presses help you gain better CONTROL:



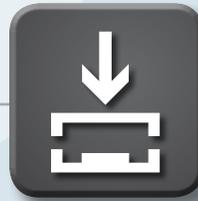
Position

With position accuracy of ± 0.039 " or better, Siempelkamp presses enable tighter die closure and less variation in forging geometry, thereby delivering a more consistent forging envelope and using less input stock.



Speed

Siempelkamp's forging press control system – with an accuracy of $\pm 5\%$ of desired speed independent of forging force – allows you to adjust the forging speed throughout the press stroke, providing precise control during the critical metal flow portions of the stroke. The net result: lower forging cycle time with the highest possible process repeatability.



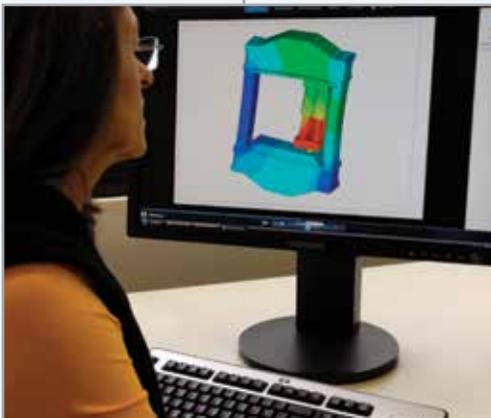
Strain rate

More complex, higher-value forgings require precise strain-rate control to develop optimum material properties. Siempelkamp forging presses have built-in, highly accurate controls that precisely maintain the strain-rate curve without tedious calculations and adjustments. The result is significantly better and more consistent material properties, including critical grain flow and grain size. This is particularly vital in aerospace and aero-engine applications.



Force and balance

Whether running in automatic or manual modes, Siempelkamp presses provide highly accurate forging forces. These forces can be evenly applied, balanced and maintained over a wide range of eccentric loading conditions. This allows more precise forging and fewer restrictions on forging part geometry. It is possible to realize eccentric loads of 17" or more from press center point at full forging tonnage. Additionally, it is possible for the moving beam to maintain a maximum parallelism of $< 0.25\text{mm/m}$.



The Siempelkamp difference



Customer collaboration

We believe that a close partnership is the best path to deliver a manufacturing solution to meet customer needs now and for years to come.

Start with the finished part

Siempelkamp listens carefully to gain a clear understanding of the purpose of the finished forged part, including material, tolerances, and production throughput.

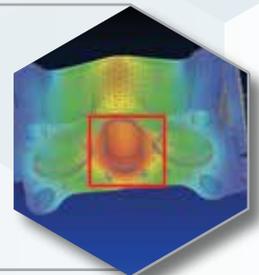


Complete system solution

Because we have produced hundreds of forging operations, we are uniquely positioned to provide complete workflow solutions, from blank to finished forging.

Dynamic simulations

Using advanced modeling tools, we are able to represent press performance, mechanics, hydraulics and automation technology in order to speed development and ensure the long-term performance of your forging investment.



Hydraulic drives

Designed and built in-house to provide extreme precision for press forces ranging from 500 up to 100,000 tons.



Automation and control technology

Fully integrated operating systems for optimal control of all plant elements.



Press manufacturing

With our unique casting and machining capabilities, we precisely control the entire forging press manufacturing process, delivering equipment with extremely tight tolerances.



Production management

Our proprietary Prod-IQ® production management system optimizes productivity and per-piece costs.



Energy efficiency

Siempelkamp's proprietary intelligent Power System (iPS) with iPS.ecostart, iPS.servo drives, iPS.secondary drive and iPS.energy recuperation, provides energy-saving cost benefits of 20%-60%.



CONTROL at every level

Beyond providing high-performance metal forming equipment, a Siempelkamp partnership can improve every aspect of your forging business.

Plant design

Creating the most efficient production path

Machine specification

Detailing equipment to deliver precise capabilities

Operations

Integrating systems to maximize efficiency

Bidding work

Providing confidence in quoting accurately

Winning work

Attracting value-added business

Profitability

Delivering on time and on budget



Siempelkamp metal forming equipment

- Open-die forging presses up to 20,000 tons
- Closed-die and isothermal forging presses up to 100,000 tons
- Ring-blanking presses up to 12,500 tons
- Radial-axial ring rolling machines up to 2,000 tons
- Titanium-compaction presses up to 10,000 tons
- Hydroforming presses up to 10,000 tons
- Dishing presses up to 10,000 tons
- Pipe-forming presses up to 75,000 tons



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