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PRESS RELEASE

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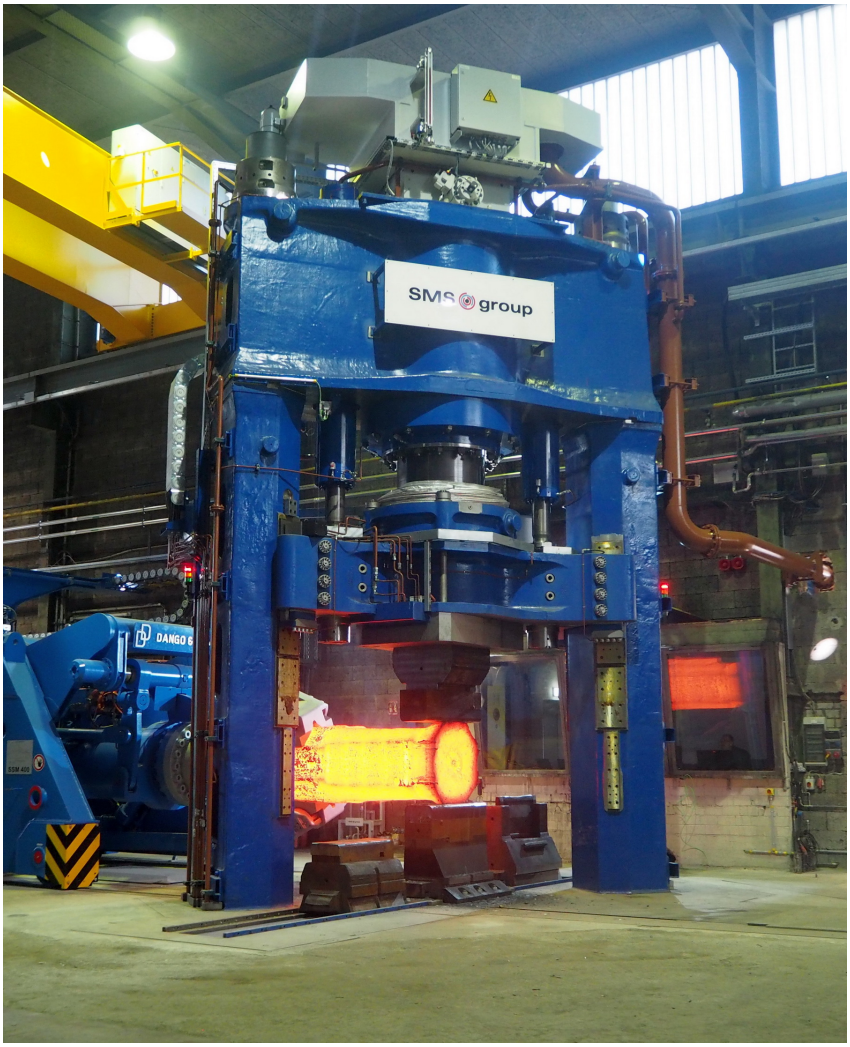
First high-speed open-die forging press with 3D-printed hydraulic manifold block from SMS group goes into operation at Gustav Grimm Edelstahlwerk



Forging of the first billet on the 31.5/34-MN high-speed open-die forging press supplied by SMS group to Gustav Grimm in Remscheid, Germany.

SMS group has put into operation the 31.5/34-MN high-speed open-die forging press at forging company Gustav Grimm Edelstahlwerk GmbH & CO. KG based in Remscheid, Germany. Demolition of the old and assembly of the new press, including the subsequent acceptance tests, were successfully completed during a construction phase of just under eleven weeks.

Gustav Grimm specializes in the manufacture of forgings in high-alloy materials. The new high-speed forging press meets all the relevant requirements for this. Thanks to the built-in, state-of-the-art hydraulic and control systems, Gustav Grimm can reap the benefits of higher process efficiency, as the new high-speed forging press achieves time savings of around ten

percent compared to the old press. For the first time, SMS group has installed an additively manufactured machine component in an open-die forging press. The 3D-printed hydraulic manifold block is lighter and more compact, and has a flow-optimized design.

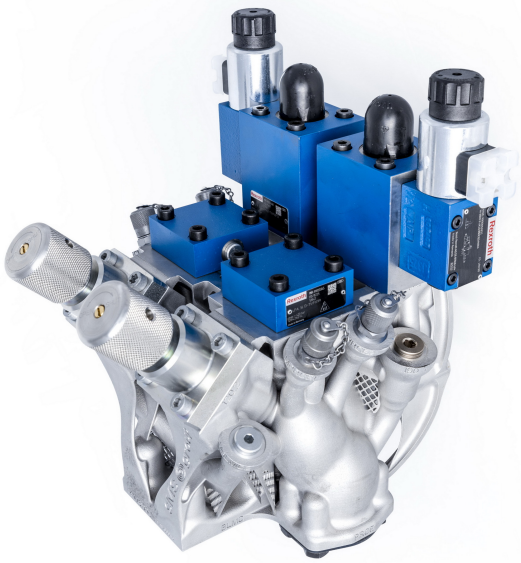
Hydraulic components with a fluid-conducting function, in particular, are perfectly suited to be additively manufactured due to the high degree of design flexibility that this technology offers. “This new manufacturing technology enables not only the channels to be engineered for optimized flow but also the installation space and mass to be reduced as a result of the much more compact design,? explains Nina Uppenkamp, research and development engineer at SMS group. With the new function-oriented design approach, modelling of the design starts from within the component, i.e. from the inside out. In case of the manifold block, first the fluid volume was simulated and then the required wall thickness generated, so that material is only used where it is actually needed for functional reasons.

The 3D-printed hydraulic manifold block, designed by SMS group and made in an aluminum alloy, weighs just one tenth of the component conventionally designed in steel. The manifold block is used to distribute the hydraulic oil for operating and venting the cylinders. The optimized valve arrangement takes into account the direct, optimized flow of fluid through the individual channels and provides easier access to the manual valves for maintenance. The monolithic component design significantly reduces the number of potential leakage points. Despite its high complexity, the 3D-printed hydraulic manifold block can be delivered in much less time than its steel equivalent.

“With our new open-die forging press from SMS group, we can manufacture customized forgings of highest dimensional accuracy for our clients and expand our product mix even further. What impressed us most about the press were the high-quality, state-of-the-art components, the high level of automation, and the improved process efficiency,? says Götz Grimm, CEO of Gustav Grimm.

The high-speed open-die forging press is equipped with a data monitoring system. All target and actual parameters are captured during the forging process. In the event of a fault, the SMS specialists can analyze the machine condition and operating data, and immediately perform a remote fault diagnosis. The data monitoring system can also be used for process optimization and quality assurance.

For quick tool changes, the press is equipped with a hydraulic forging-tool changing device. As the die turning and clamping device now comes with significantly fewer mechanical components, it requires much less maintenance.



The 3D-printed hydraulic manifold block developed by SMS group is capable of withstanding high loads and comes in an impressive futuristic design.

SMS group is a group of companies internationally active in plant construction and mechanical engineering for the steel and nonferrous metals industry. It has some 14,000 employees who generate worldwide sales of more than EUR 2.9 billion. The sole owner of the holding company SMS GmbH is the Familie Weiss Foundation.