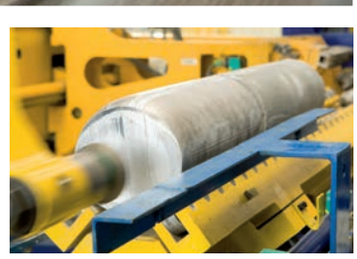
SMS group

LIGHT METAL EXTRUSION PRESSES

Innovative technology for maximum performance



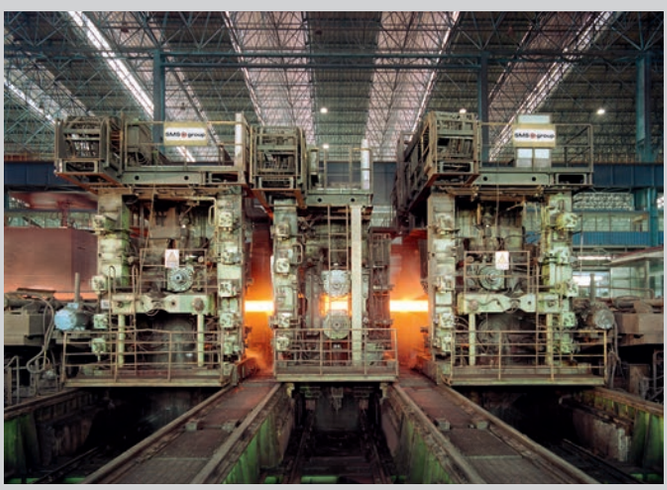
SMS group

THE SMS GROUP IS A GROUP OF GLOBALLY OPERATING COMPANIES IN PLANT AND MACHINERY CONSTRUCTION FOR STEEL AND NON-FERROUS METALS PROCESSING. WE COVER EVERYTHING FROM PIG IRON PRODUCTION TO METALLURGICAL PLANT, ROLLING MILLS TO STRIP PROCESSING LINES, TUBE MILLS AND FORGING PLANTS TO THERMAL TECHNOLOGY – COMPLETE WITH ELECTRICS AND AUTOMATION AS WELL AS SERVICE.

PRODUCT RANGE

IRON MAKING

TUBE AND PIPE PLANTS

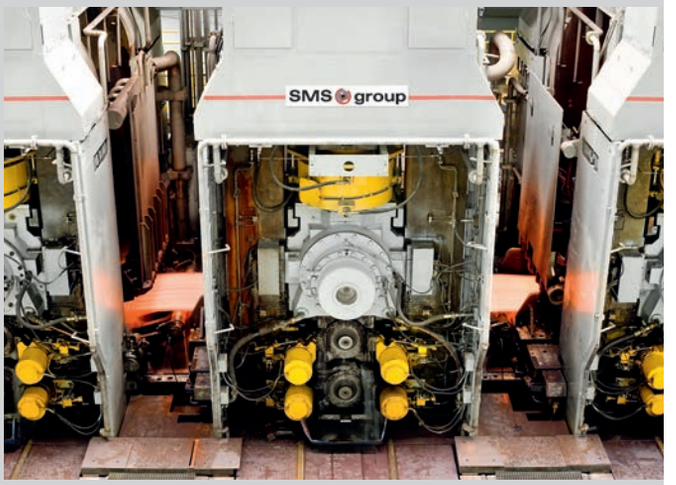


LONG PRODUCTS PLANTS

ELECTRICAL AND AUTOMATION SYSTEMS

PRODUCTION

METALLURGY PLANTS AND
ENVIRONMENTAL TECHNOLOGY



FLAT ROLLING PLANTS

STRIP PROCESSING LINES AND
FURNACE TECHNOLOGY

FORGING PLANTS

TECHNICAL SERVICE

SMS group

LIGHT METAL EXTRUSION PRESSES

Brand name quality to meet the highest demands

Unique worldwide – extrusion presses from SMS group. SMS is the only manufacturer worldwide to offer all extrusion processes for all materials and alloys including all ancillary equipment and automation systems. More than 1400 references across the globe provide impressive evidence of SMS group's experience and expertise.

WORLD'S MOST UP-TO-DATE PRESS TECHNOLOGY

Light metal extrusion presses from SMS group are used to produce sections and tubes from aluminium and aluminium alloys for the automotive and aerospace industries as well as for the construction industry. A special feature is the front loader design further developed by SMS group. It is the most modern extrusion technology to date and has established itself all around the world. The benefits are high productivity and availability as well as excellent sectional quality. These modern light metal extrusion presses can also handle high billet charge weights and maximum billet lengths. In addition to direct extrusion presses, SMS group customers also use indirect extrusion as well as tube extrusion presses for special applications for aluminium alloys.

MORE ECO-FRIENDLY AND COST-EFFECTIVE PRODUCTION

With its extrusion press range SMS group offers both innovative and at the same time sophisticated processes. The maximum press force of the machines is being continuously expanded using new, optimized technologies. Yet despite the increase in performance less energy is required.

Plant owners are able to process new materials and manufacture new products thanks to the higher forging forces. The most powerful press supplied by SMS group has a press force of 160 MN. They can also increase your plant's productivity economically thanks to higher cycle rates. And: they save themselves costly, labour-intensive postmachining processes thanks to higher precision grades such as near-net-shape. Such ultramodern plants, which combine more sustainable production with increased cost efficiency, are awarded the "Ecoplants" label by SMS group.

FULL RANGE OF SERVICES FROM A SINGLE SOURCE

SMS group offers press plant owners a full range of services from a single source: from customized engineering through pioneering, high-availability and high-reliability facilities to self-developed, intelligent control systems with sophisticated man-machine interface, tool management, block reports, production control computer connection as well as practical technology software. All these components together – from the press to the runout and ancillary equipment – form a synergistically coordinated unit.

RELIABLE SERVICE PARTNER

SMS group has built up a global service network to provide the best possible support to plant owners using short routes as well as the local language. As the manufacturer of the plant and machinery, SMS group has unique knowledge and extensive experience. Customers benefit enormously from this. So whether it's commissioning, maintenance or modernization, one thing is sure: you can rely on SMS group's support for the lifetime of your plant.

KEY BENEFITS OF SMS GROUP EXTRUSION PRESSES

- High product quality that can be documented and reproduced
- Optimized material utilization
- Safe material handling
- Effective energy savings
- High productivity
- Stable process management

CUSTOMIZED SOLUTIONS FOR ALUMINIUM PRODUCERS ACROSS THE GLOBE (REFERENCE EXAMPLES)

NANSHAN ALUMINIUM, CHINA

- 22 SMS group extrusion presses, covering the entire range
- Press forces of between 11 and 150 MN
- Processing of aluminium billets between 6" and 23"

ASAS ALÜMINIYUM, TURKEY

- Collaboration with SMS group on the maintenance of the six extrusion presses with a press force of 12.5 to 55 MN
- SMS group technicians are regularly on site, servicing the plants together with their colleagues at ASAS
- The result: consistently high productivity

APT HILLER GROUP, GERMANY, NETHERLANDS

- Almost 30 years of cooperation with SMS group
- 2011: Increased capacity through modernization
- Two new short-stroke presses from SMS group and a new homogenizing furnace from Hertwich Engineering, the aluminium specialist within the SMS group Business Area

FRONT LOADER PRESSES

The recipe for success: state-of-the-art press technology

Front loader extrusion presses are the most modern extrusion technology to date and are now well-established on the global market. Short-stroke front loader extrusion presses from SMS group feature a host of benefits.

They have FEM-optimized, pre-stressed press frames in the classic lamellar tie rod/pressure box design, which is highly rigid and ensures both excellent sectional quality and a long service life. All key components, such as the press crossheads, containers or main cylinders of the machine are manufactured according to the most stringent quality guidelines, with our certified inspection personnel ensuring these are met, even in the case of our suppliers and subsuppliers. Precise, maintenance-free guidance systems ensure minimal tool wear.

In the case of quick front loader presses, in particular, the hydraulic drives are an important integral part of the overall concept and are therefore manufactured according to SMS group engineering standards. Only in this way can short pressure build-up and relief times as well as quick, shock-free motion sequences be assured. Within the press environment our robust linear billet loaders provide optimized motion sequences during the loading process. User-friendly control systems feature a variety of monitoring equipment to control the plant, manage the process and collect data – all fully automatically.

HIGH PRODUCTIVITY AND AVAILABILITY

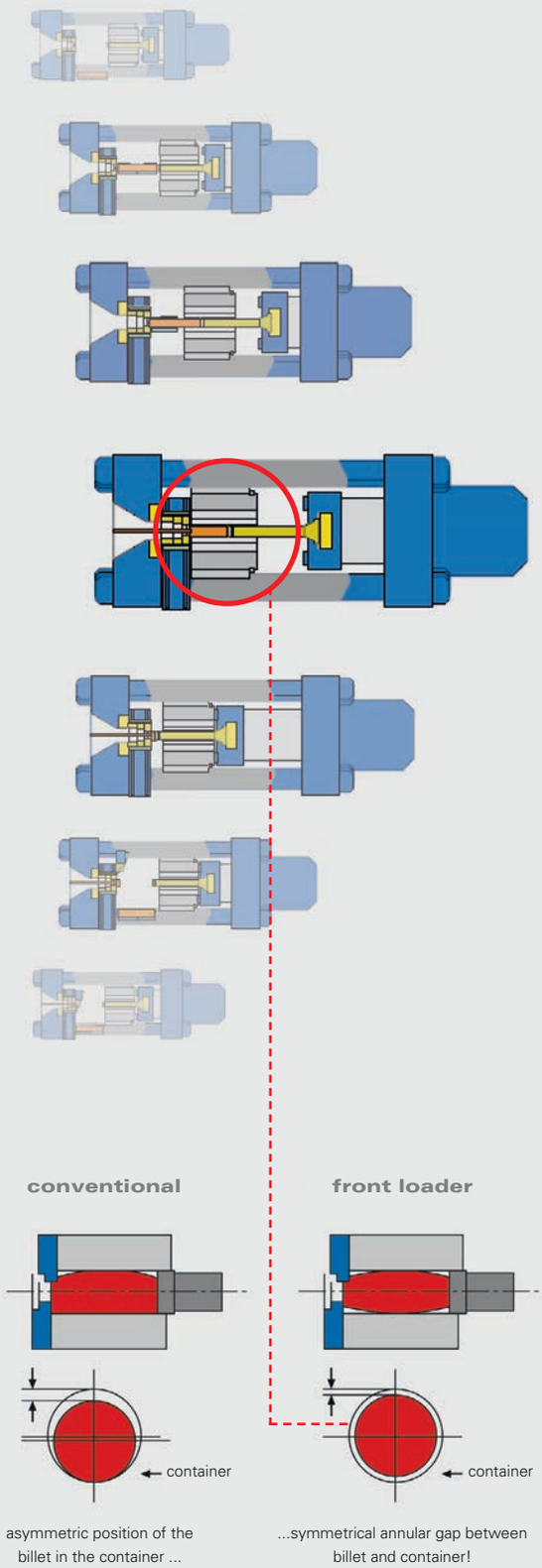
Our short-stroke front loader presses offer high productivity and availability as well as excellent sectional quality. As a result, they go way beyond conventional plant concepts. What's more, state-of-the-art presses from SMS group can handle the highest possible charge weights using maximum billet lengths. Integrated billet length optimization means increased output, with optimized process sequences ensuring significantly short non-productive times.

- The billet is loaded by moving the container forward.
- The centered position of the billet means there is no friction between the billet and the container bush.
- Symmetrical upsetting improves venting of the container

SECURE, DYNAMIC HANDLING

The sensitive hydraulic/electrical clamping function ensures safe billet clamping between the extrusion stem and die – even with soft aluminium alloys. The billet is secured is a centered position throughout the entire loading process. With SMS group plants, therefore, secure and dynamic handling of short and split billets is possible.

PROCESS SCHEMATIC OF SHORT-STROKE FRONT LOADER PRESS



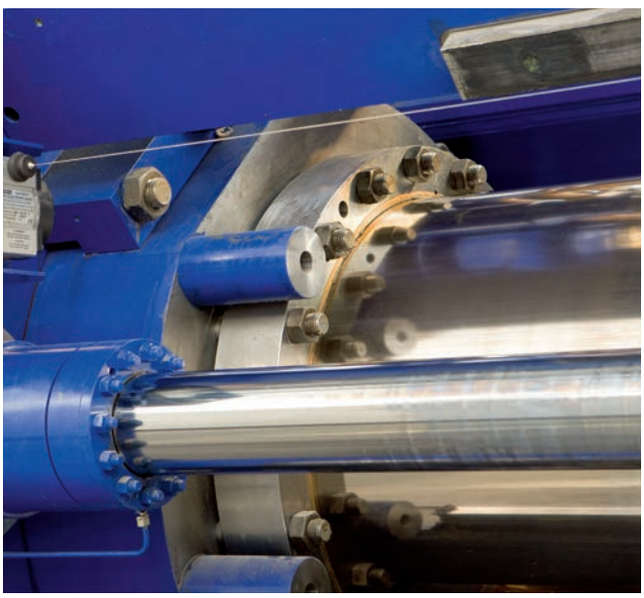
COMPONENTS FOR FRONT LOADER PRESSES

Powerful and perfectly coordinated

Only the right combination of innovative detailed solutions guarantees a perfectly coordinated integrated system. It is only in this way that press plant owners can achieve maximum productivity, quality and reliability. That's why short-stroke front loader extrusion presses from SMS group feature the following:

- Discard shear with automatically controlled shear gap adjustment (patented) for excellent shearing quality
- Dummy block lubrication which is non-relevant to non-productive times thanks to the integration of the spray head in the billet loader
- On-demand heating and cooling systems for the container
- Wear-free linear guidance system for the container and moving crosshead
- Hydraulic drive systems of maintenance-free compact modular design for rapid motion sequences and short non-productive times

Other special units with particular functions are also available. The result: Short-stroke front loader extrusion presses from SMS group increase the long-term efficiency of your press plant with their peripheral equipment.

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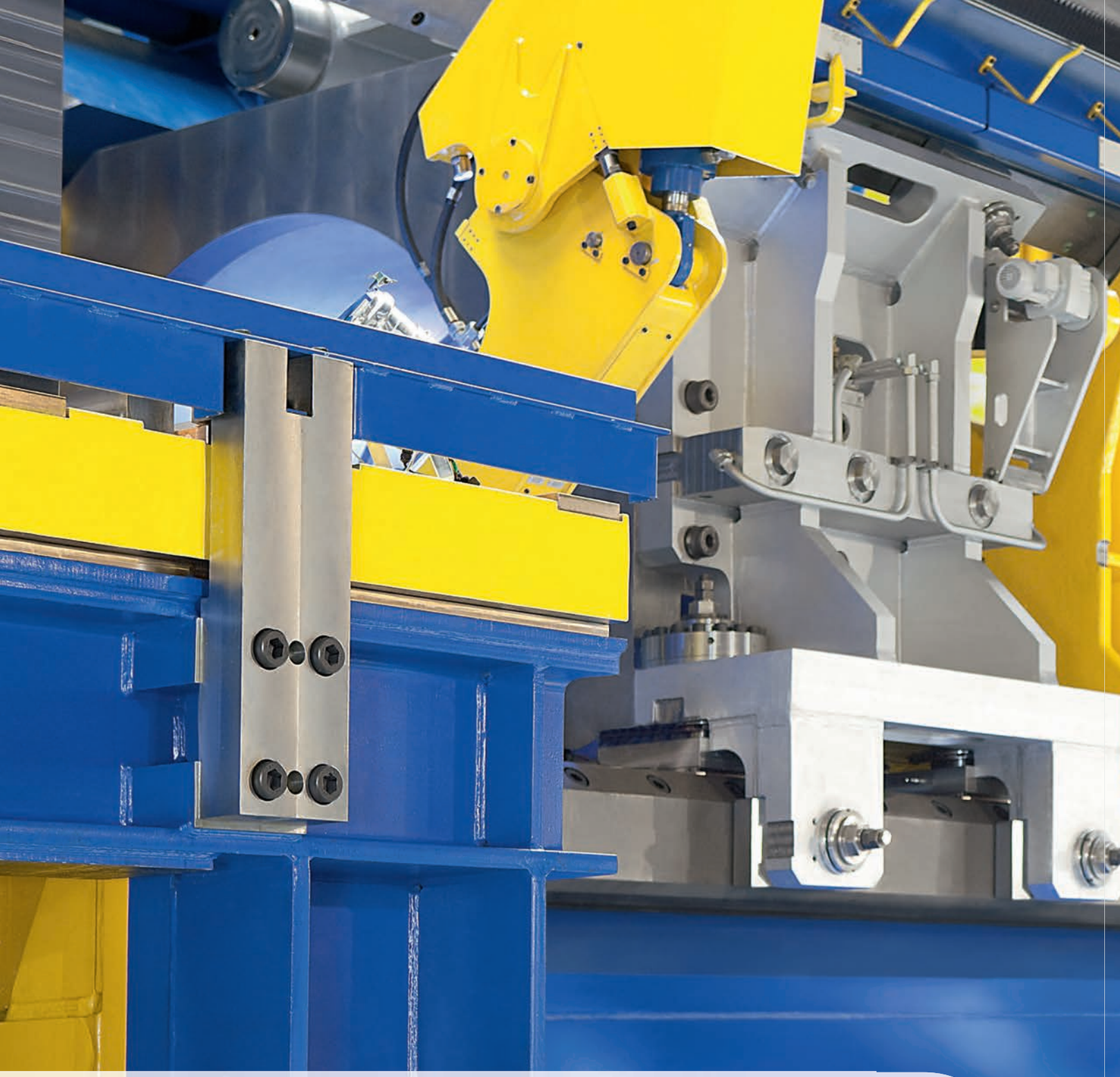
SMS group



THE RIGHT PARTNER FOR EXCEPTIONAL REQUIREMENTS

Smoothly supplying, erecting and commissioning complex plants is our business. But as a flexible partner we can also satisfy unusual wishes: For our customer Shandong Yankuang Light Alloy Company in China, we erected one of the world's most powerful aluminium extrusion presses in our works because they wanted to see for themselves the capabilities of the gigantic machine, which has a press force of 150 MN, in advance. That is what we mean by customer orientation.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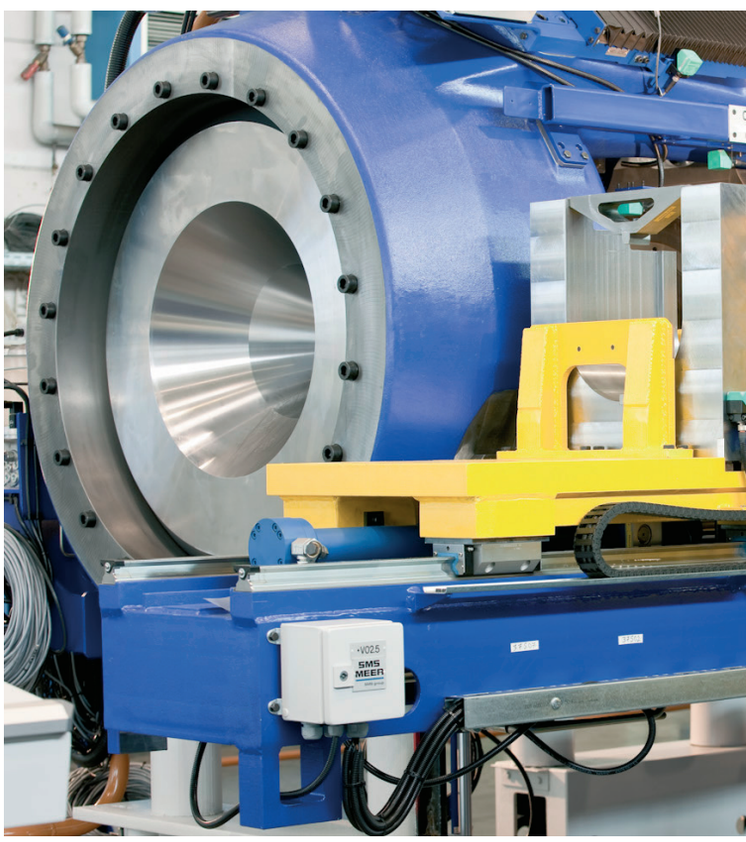
CF PRESSES
A compact power unit



The CF press is the latest addition to the SMS group family of presses. The abbreviation CF is derived from the frame concept: ‚Compact Frame'. With this type of construction SMS group has optimized the geometry of the cast press frame to such extent that the result is an extremely rigid press unit.

AN INNOVATIVE HYDRAULIC CONCEPT

A forged counterplaten is used at one end of the press frame; at the other end there is a forged main cylinder with equalizing tank, which enables an innovative hydraulic concept to be implemented. With this hydraulic concept, the location of the main oil tank is flexible, therefore it need not necessarily be positioned over the cylinder crosshead. As a result, the plant is also suitable for use in production bays where there is less headroom.

COMPACT AND PRE-ASSEMBLED

The compact unit of the CF press offers significant advantages when it comes to transportation, installa-

tion and commissioning in the customer's works. Many components, e.g. the precision guidance system with recirculating linear roller bearings, are already pre-assembled and secured to the frame at SMS group.

MAXIMUM PRECISION EX WORKS

Since the single-part press frame is finish-machined in a single machine setup, maximum positional accuracy of all machinery parts involved in the pressing process is ensured. This means a high tool service life with outstanding product quality.

SHORT IMPLEMENTATION PHASE

In conjunction with tried and tested peripheral equipment, such as a highly dynamic linear billet loader and discard shear for example, an effective production unit can be up and running in no time. This plant operates at the highest technological level and offers a competitive price-performance ratio.

INDIRECT EXTRUSION PRESSES

Effective pressing technique for tubes and bars

Indirect extrusion presses are being used more and more frequently for forming aluminium materials which are difficult to extrude. The indirect extrusion method is an excellent solution which meets growing metallurgical quality requirements. This is particularly true when it comes to the manufacture of components for the automotive and aircraft industries. The indirect extrusion method is especially suitable for extruding hard metal alloy tubes and bars, such as AA2xxx and AA7xxx.

PERFECT QUALITY AND HIGHER PRODUCTIVITY

As there is no friction between the billet and inside wall of the container during indirect extrusion, the material flow is optimized and the press forces are reduced considerably. The result is homogeneous material properties with close section tolerances, while maintaining the specified structural properties and strength characteristics at the same time. Furthermore, longer charging billets can be used and the discarded material is thinner. Compared to the direct method higher press speeds can be used due to the particular material flow. This means productivity levels are higher.

OPTIMIZED PROCESS SEQUENCE

The presses used for indirect extrusion are designed as short-stroke machines with or without piercing device and therefore correspond in their basic design to the standard types of construction built by SMS group. This means they feature a robust, prestressed press frame, precision guidance system and tried and tested machine peripheral equipment. Fully automatic robot handling systems ensure reliable loading and unloading of the bolster. Special accessory equipment, such as an automated tooling circulation system, enables an optimized process sequence. What's more, sophisticated control technology ensures sequences are carried out automatically.

HIGH FLEXIBILITY THANKS TO COMBINED EXTRUSION PRESSES

SMS group also offers extrusion presses which combine the direct and indirect extrusion method. Therefore customers benefit from the advantages of both processes: they can react flexibly to current market demands and adjust their production accordingly.

AUTOMATION

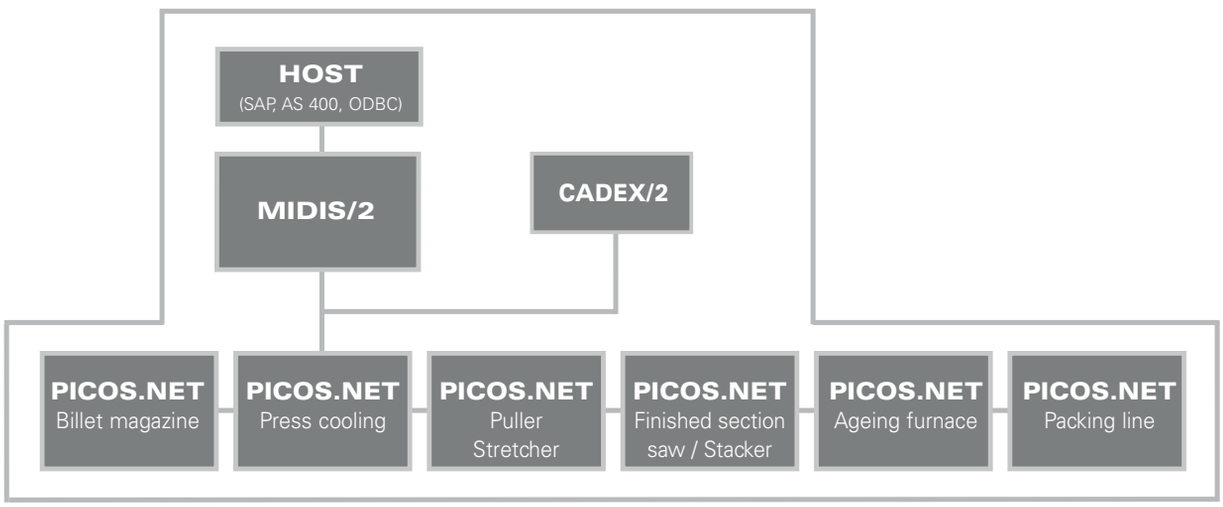
More intelligent simulation, control and evaluation

Using the information-based process control system plant owners can raise the product quality and cost efficiency of modern extrusion press plants to optimal levels. SMS group systems are modular in design and can, if required, be extended in several phases. They are now more user-friendly and provide comprehensive data at the same time. Press plant owners therefore benefit from a homogeneous IT landscape which is easy to use and provides them with current data for production and quality management.

PICOS.NET – FOR PERFECT PRESS CONTROL

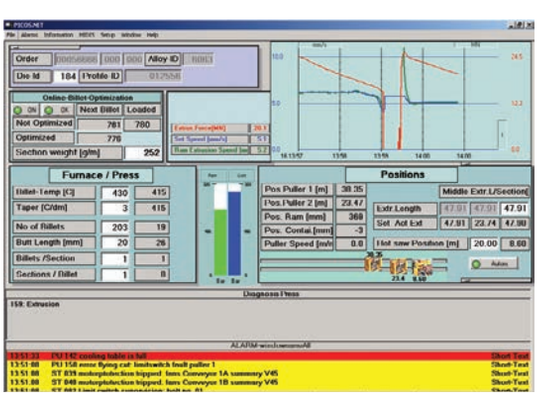
With the PICOS.NET (**P**rocess **I**nformation and **Co**ntrol **S**ystem) man-machine interface, press operators can monitor and control the entire sequence of processes. This tool is used for visualization of the production process and specification of the required process parameters. It shows the current actual values, features an alarm function and provides diagnoses in the event of a malfunction in the production sequence. PICOS.NET also coordinates the control of individual plant areas. Numerous special functions are integrated, depending on the application – for example billet length optimization and block reports. For years now this system has been setting standards worldwide in the field of press control.

MODULAR PROCESS CONTROL SYSTEM FOR SMS GROUP EXTRUSION PRESSES



CADEX – ACHIEVING OPTIMAL PRODUCT QUALITY

CADEX (**C**omputer **A**ided **D**irect **Ex**trusion) uses thermal simulation to optimize the extrusion process. The thermal economy is calculated for each billet to be pressed, to ensure the material is pressed at the optimal billet and taper temperature. Consequently, CADEX isothermes – while maintaining the billet temperature calculated by CADEX – also allows for isobaric pressing to ensure optimum quality within the shortest extrusion time.



COOLEX – SELECTIVE ADJUSTMENT OF PRODUCT PROPERTIES

In cases where an intensive air-water cooling system is used during the extrusion process, COOLEX (Computerized **Coo**ling for **Ex**trusion) is the ideal solution for the simulation and control of the required cooling parameters as a function of the charge material.

MIDIS – TRANSPARENT PRODUCTION PLANNING JUST WHEN YOU NEED IT

MIDIS (**M**anagement **I**nformation **D**iagnostic **I**ndication **S**ystem) is used for production planning and forms the interface between the customer's control system (HOST) and the machine's PICOS.NET systems. For this the system receives the extrusion requests, supplements them with optimized process parameters and passes them on to the machine. MIDIS then saves the operating data fed back – clearly displayed in block, order, shift, monthly or annual reports.

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