БРОШЮРА

Зажимные головки PowerStroke со встроенной функцией короткого хода

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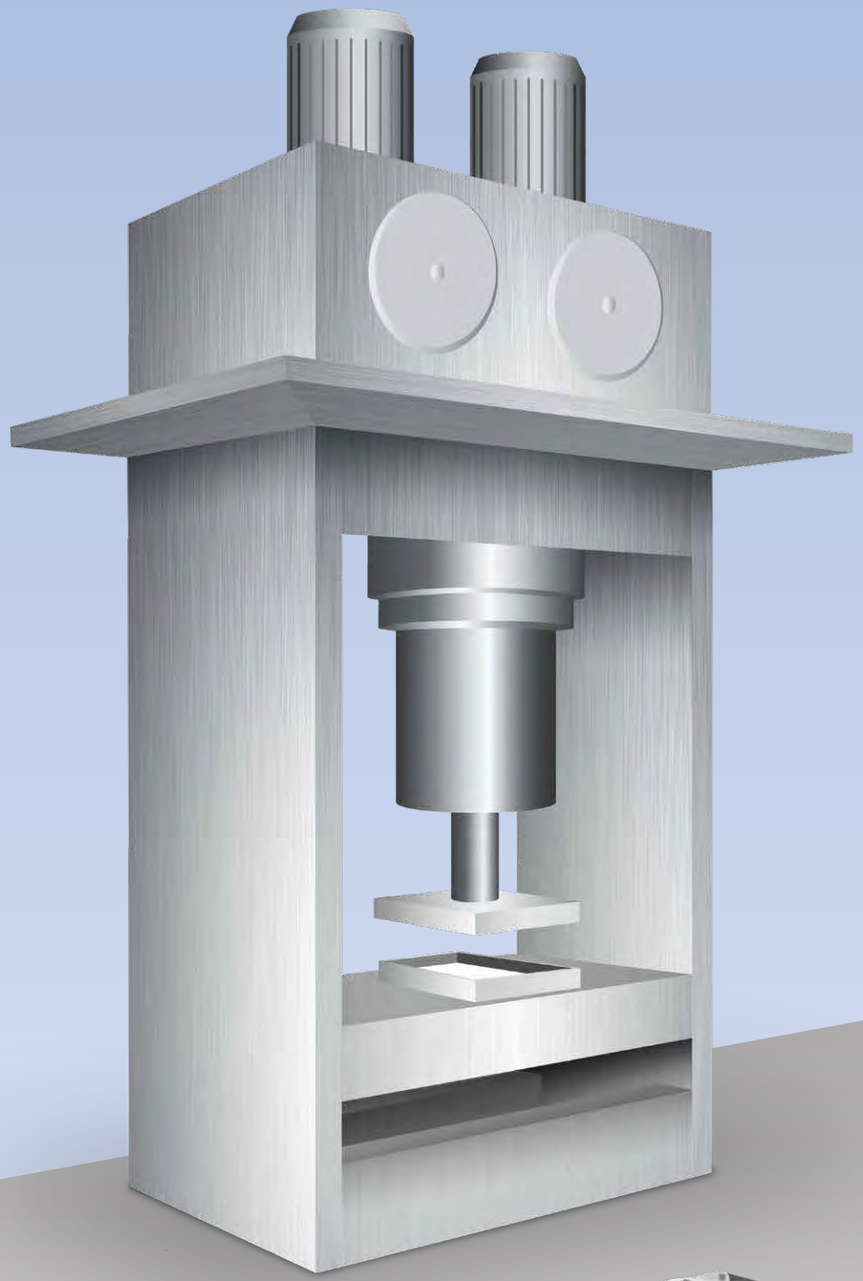
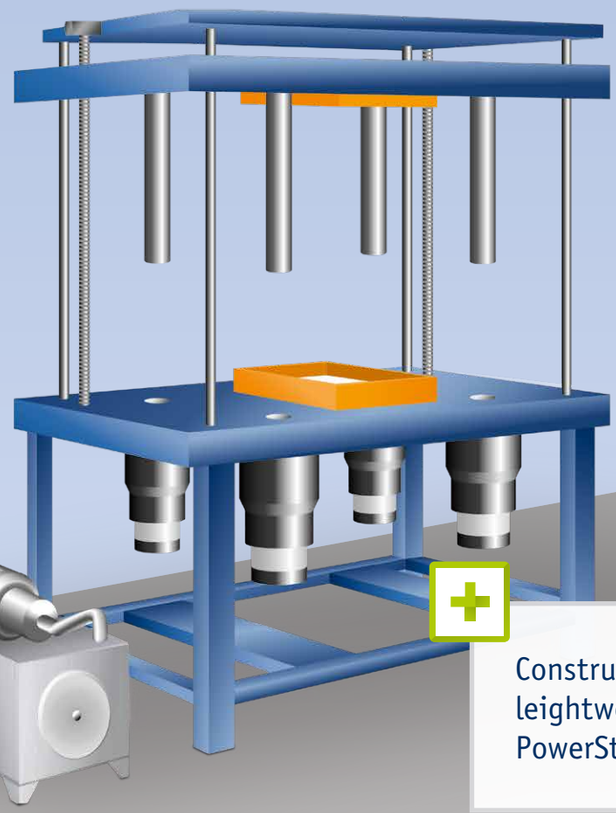
Fast stroke and power stroke: 2 features, 2 drives

Clamping head with integrated short stroke cylinder

The PowerStroke mold closing device has been designed to hold and pull a clamping rod in one direction - the closing direction. It can be used in all applications that require powerful forces in a short working stroke. A single unit can apply forces of up to 180 metric tons; with the force being proportional to the applied pressure. This can be hydraulic (FSK series) or pneumatic (FSKP series).



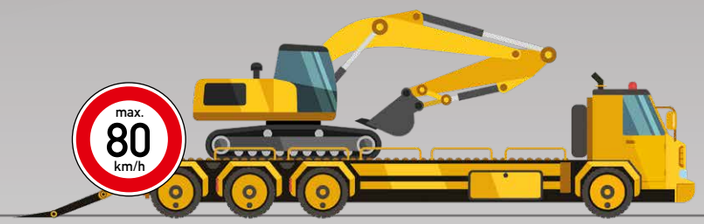


Split functionality is superior!

Generate fast and powerful movements with just one system? A weak compromise. The PowerStroke takes on the hardest work with forces of up to 1800 kN. So you can use an efficient, compact, fast, and economic drive to open, close, and position molds or dies.

Construct your machine in a quick, leightweight, and compact way. The PowerStroke takes care of the rest.

Would you drive your excavator all the way to the construction site...

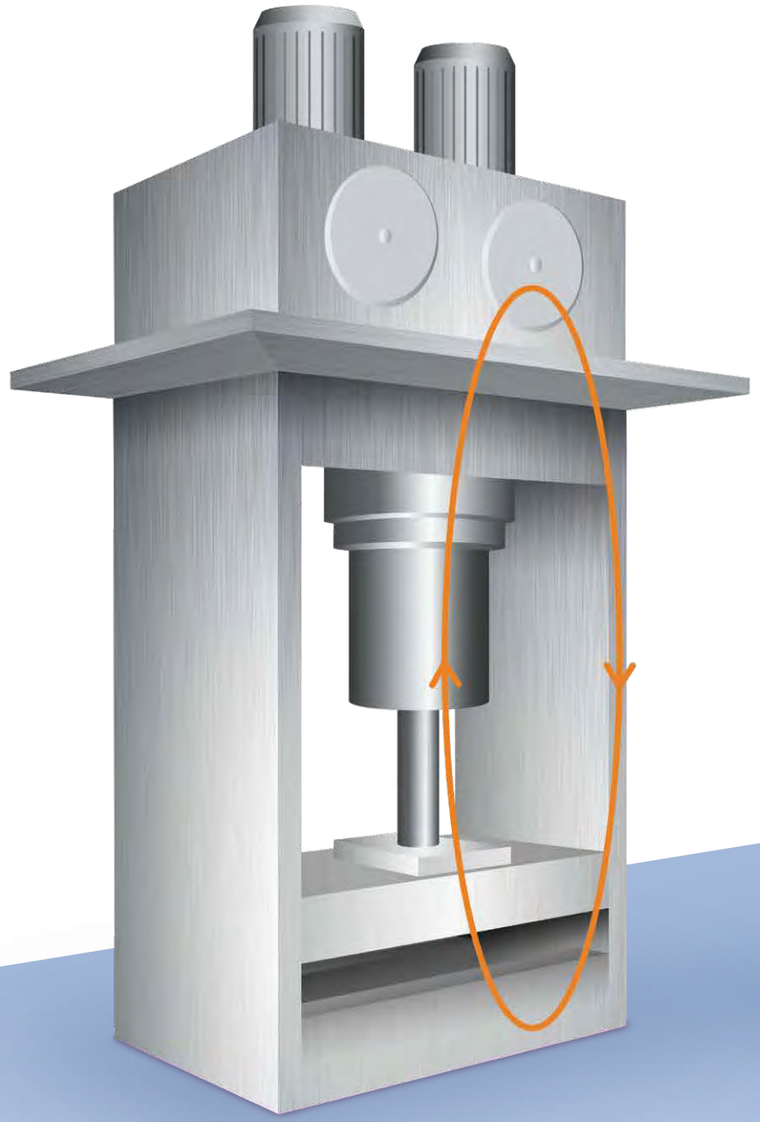


...or wouldn't it be better to carry it on a truck?

Advantages at a glance

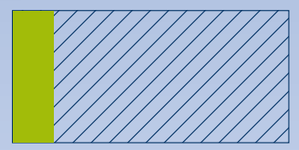
A common press

A press usually has a central press cylinder which generates both the power stroke and the opening and closing strokes. The same system generates the short power stroke on the one hand and the long opening and closing strokes which need only little power. As a consequence, the opening and closing strokes consume a lot of energy and are rather inefficient. Also the design of the machine frame is subject to significant limitations: The force the cylinder uses to press down has to be absorbed at the other end of the machine, i. e. the crosshead. As a consequence, this force affects the complete frame and machine portal; both have to be designed and built accordingly.



Is this what a press must look like? Think twice!

Oil consumption

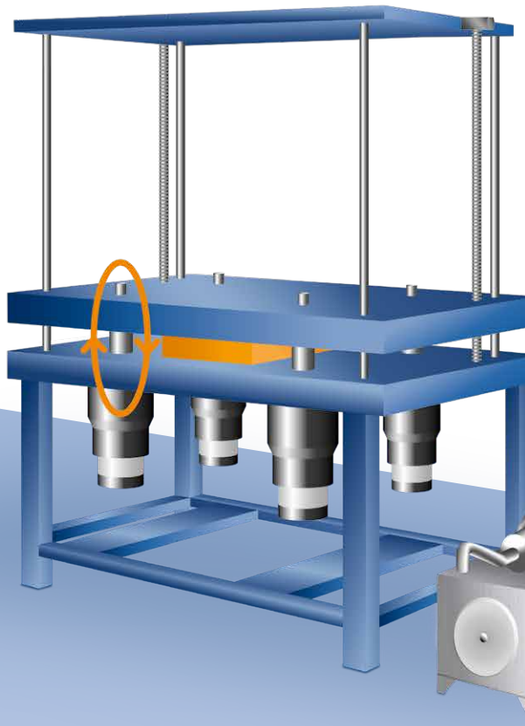


Common press
Press with PowerStroke

Press with PowerStroke

The PowerStroke is the smarter and better solution! It generates the short power stroke rigth there where it is needed. As a consequence, the opening and closing strokes can be carried out by a compact, specialized drive system. Quickly and efficiently. Due to its intelligent design, the PowerStroke closes the mold by pulling instead of pressing as a press cylinder would do. Therefore the closing force only affects the mold not the complete machine frame. The press can be designed in a more compact way. The compact design of both the PowerStroke and the drive system open new possibilities for construction. Additionally, the rods can exit the PowerStroke (see picture on page 3) and provide a bigger working space. The PowerStroke operates very efficiently; threfore the hydraulic units can be significantly smaller with less oil consumption. Also the power consumption can be reduced considerably.

Force distribution in a confined space >
enables a lean, space-saving design



Low service needs >
due to durable components and easy replacement

Slim drive system >
reduction of costs of materials

Small hydraulic operating volumes >
less energy consumption and costs

Clamping on hardened standard piston rods >
no complicated toothed racks required

The mold closing device with active self-intensifying clamping technology

PowerStroke FSKP pneumatic

- SiForce Technology
- Working forces of up to 3 metric tons with one unit (pneumatics only)

PowerStroke FSK hydraulic

- SiForce Technology
- Working forces of up to 180 metric tons with one unit
- Rod diameters of up to 200 mm

Hydraulic PowerStroke

Type		Rod mm	Working force kN	Release pressure bar	Housing ø mm	Housing length mm	Power stroke mm
Standard	Rod leaves unit						
FSK 45	FSK-SVE 45	45	60	75	160	310	20
FSK 70	FSK-SVE 70	70	110	75	198	353	20
FSK 100	FSK-SVE 100	100	300	100	268	450	20
FSK 125	FSK-SVE 125	125	650	160	328	600	20
FSK 180	FSK-SVE 180	180	1400	160	476	770	20
FSK 200	FSK-SVE 200	200	1800	180	546	865	20

Special sizes and a higher power stroke on request. Subject to modification without prior notice.

Pneumatic PowerStroke

Type		Rod mm	Working force kN	Release pressure bar	Housing ø mm	Housing length mm	Power stroke mm
Standard	Suitable for standard cylinder						
FSKP 16/3-S	FSKP 16/3-Z	16	11.5	6	126	227	12
FSKP 20/3-S	FSKP 20/3-Z	20	19	6	148	228	12
FSKP 25/3-S	FSKP 25/3-Z	25	27.5	6	177	254	12

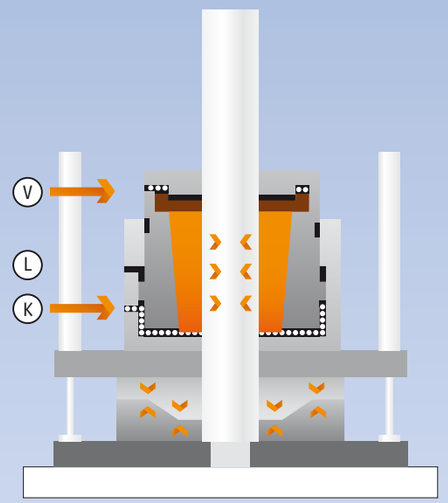
Special sizes and a higher power stroke on request. Subject to modification without prior notice.

The operating principle: ingeniously simple or simply ingenious

- The PowerStroke clamps a smooth, round rod and pushes it with great force at a defined rate of travel (short stroke).
- During the opening and closing of the mold, the PowerStroke is open (pressure at port L) and does not interfere with the movements.
- When the mold halves are in contact, the PowerStroke locks onto the rod using the proven principle of self-intensifying clamping (port L is pressure-free).
- By applying pressure at port K, the powerful working force is generated.
- After the production process, the working force is removed by re-routing the pressure from port K to L: the mold is opened. The opening force of up to 10 % of the working force can be used to overcome any sticking effects.
- The PowerStroke has ports for commercially available proximity switches which allow the constant monitoring of its operation.

SiForce Technology

The self-intensifying clamping system with proven SiForce Technology does not depend on spring force; instead it uses the energy of the descending mass to hold it. In horizontal applications, it uses the drive force which has to be secured. A SiForce clamping head is held open by hydraulic or pneumatic pressure. To close the clamping, it is depressurized.



Power stroke

When port K is pressurized, the PowerStroke closes the mold completely and applies the full working force to the mold halves.

Quick closing stroke

- With a small cylinder or other suitable drive.
- The PowerStroke is open and does not interfere.

Strong power stroke

- The PowerStroke clamps the rod and pulls the two mold halves together.

Advantage for a pneumatic joining station

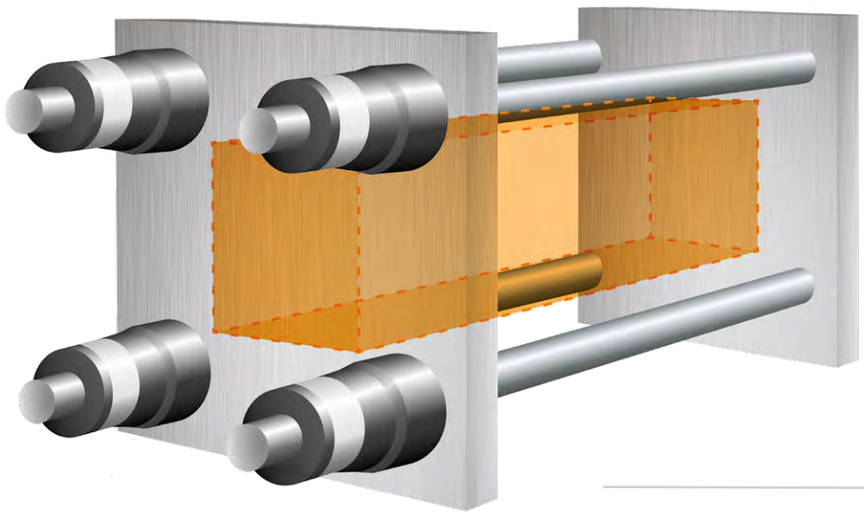
The pneumatic cylinder, which moves the punch, can be very small. The working force will only be applied once the two mold halves are already in contact. At that point it is no longer possible to enter the danger zone.
(pneumatic joining station, see page 10)

What about your project?

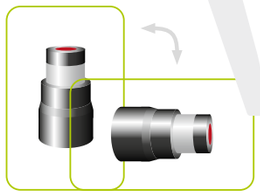
Design with creativity!

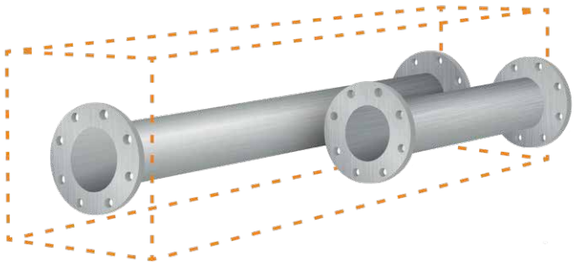
Generate horizontal force? No problem!

The PowerStroke can operate vertically as well as horizontally. In both cases, at first a relatively big stroke has to generated with small forces. Then, for the last millimeters, great force has to be applied. After presenting the PowerStroke to our customers, we often hear: "If only I had known about this earlier!" Now you know. From now on, using the PowerStroke, you can design your machines in a more creative way.



horizontal and vertical

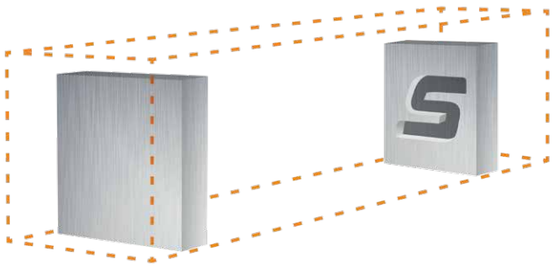




Testing

On one test rig, components of different sizes can be tested, for example:

- Leak testing
- Load test
- Breaking test



Molding

On one machine, molds of different sizes can be used efficiently, for example:

- Castings
- Foam parts
- Injection molding
- Hydroforming
- High-volume presses
- Welding presses

Tasks

Different tasks can be carried out with the same machine, for example:

- Countering
- Holding down
- Fixing
- Boosting

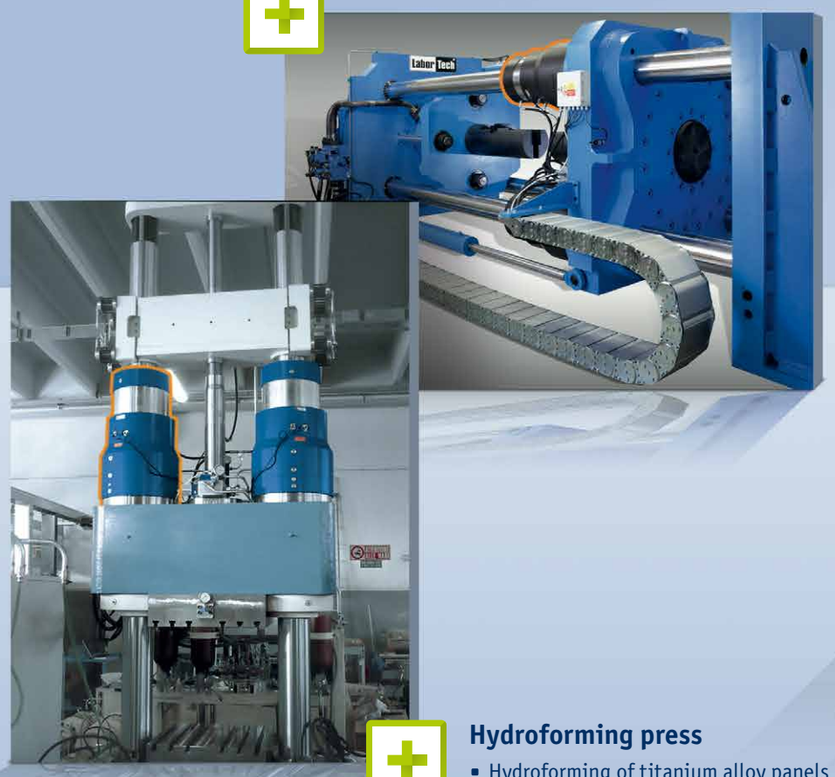
What about your project? Let's talk about it.

Daily operation

Examples of proven applications

Test rig for chains

- Horizontal application
- 4 x PowerStroke FSK 180
- 400 metric tons test force



Hydroforming press

- Hydroforming of titanium alloy panels
- Vertical application
- 2 x PowerStroke FSK 200
- 360 metric tons working force

Pneumatic joining station

- Power stroke from every position
- Working force proportional to pneumatic pressure
- Low energy consumption
- Less space required

Testing machine

- Air leakage test for steel rims
- Vertical application
- 1 x PowerStroke FSKP 25
- 3 metric tons working force

Hybrid injection molding machine

- Production of rubber o-rings
- Horizontal application
- 1 x PowerStroke FSK 45/FSKP 25
- 6 metric tons/3 metric tons working force

Innovation for injection-molding machines and mold presses

The PowerStroke works independently of the drive system; therefore it resolves the conflict between a fast power stroke and a strong power stroke. For opening and closing molds or dies, the drive system can now be optimized to shorter cycle times. The design engineer can choose between mechanical, hydraulic, pneumatic or motor-driven closure! Large, slow machines with high energy consumption are things of the past.

Application areas for FSK and FSKP types

- Mold presses: closing and pressing the mold
- Injection molding machines (horizontal and vertical): closing and generating the working force
- Forming presses
- Hydroforming presses
- Vacuum presses (one/twin sheet)
- Testing machines
- Joining and bending machines
- Special machines
- Special applications

Our know-how for your sustainability

Sustainability and mechanical engineering

In industry, big amounts of resources and energy are consumed; at the same time, there are big possibilities for saving. Realizing this potential not only leads to cost reductions but also demonstrates the ecological awareness of a company and can improve its public perception.
We are very proud that we can make a contribution in this respect - to the benefit of our customers in the mechanical engineering industry and of the machine operators.

SITEMA – Safety Engineering in Machine Manufacturing

Solutions for axially moved loads

SITEMA is the only company in the world who has specialized in the development and production of clamping devices and linear brakes on round rods for the machine manufacturing industry. SITEMA has produced more than 150 000 clamping units; this makes SITEMA an experienced systems supplier for whom functional reliability always comes first. In addition to these safety units, SITEMA offers the PowerStroke with its active drive. It is based on SITEMA's core competence – the principle of self-intensifying clamping: the SiForce Technology.

Clear focus, clear advantages

We at SITEMA focus on our core competence: the self-intensifying clamping. Therefore our products are globally leading. Highly qualified engineers advise you on the basis of their vast experience. No matter whether you need a delivery or repair: Our highly committed, customer-oriented team quickly handles your request. Our competent service and engaged support make sure that SITEMA customers have no loss in productivity.

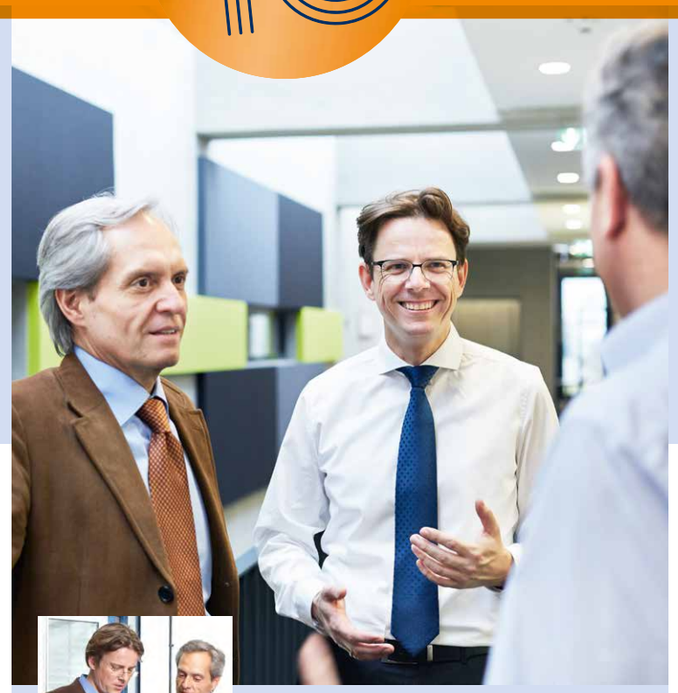
more than 40 YEARS

We are here for you

Our experienced team of experts supports you with guidance and assistance. We are committed to focus on our customers and provide service excellence.

SITEMA always has a solution

Clamping, holding, blocking, braking, or securing – in our standard range there is almost always a suitable product for a wide range of purposes. And if this not the case, we will modify an existing clamping head or develop a completely new one. Even if you need just one unit, we will develop an individual specialized solution. With our support, many of our customers could realize a new solution or an innovative product.



Yesterday, today, and tomorrow: Our service engineers are ready to support you.

Highest standards in quality and function

- Function and clamping force of each product is tested 100 %.
- Compliant with: DIN EN 693, DIN EN 692, DIN EN 12622, DIN EN 201 und DIN EN 289
- Quality management system ISO 9001:2008
- Environmental management system ISO 14001:2004

Picture: Vollack Gruppe

DGUV Test certificate for safety catchers (e.g. for presses according to EN 693)

DGUV Test certificate for locking units KFHS

DGUV Test certificate for safety brakes

Lloyd's Register Certificates for locking units KFHL

Certificate ISO 9001:2008

Certificate ISO 14001:2004

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