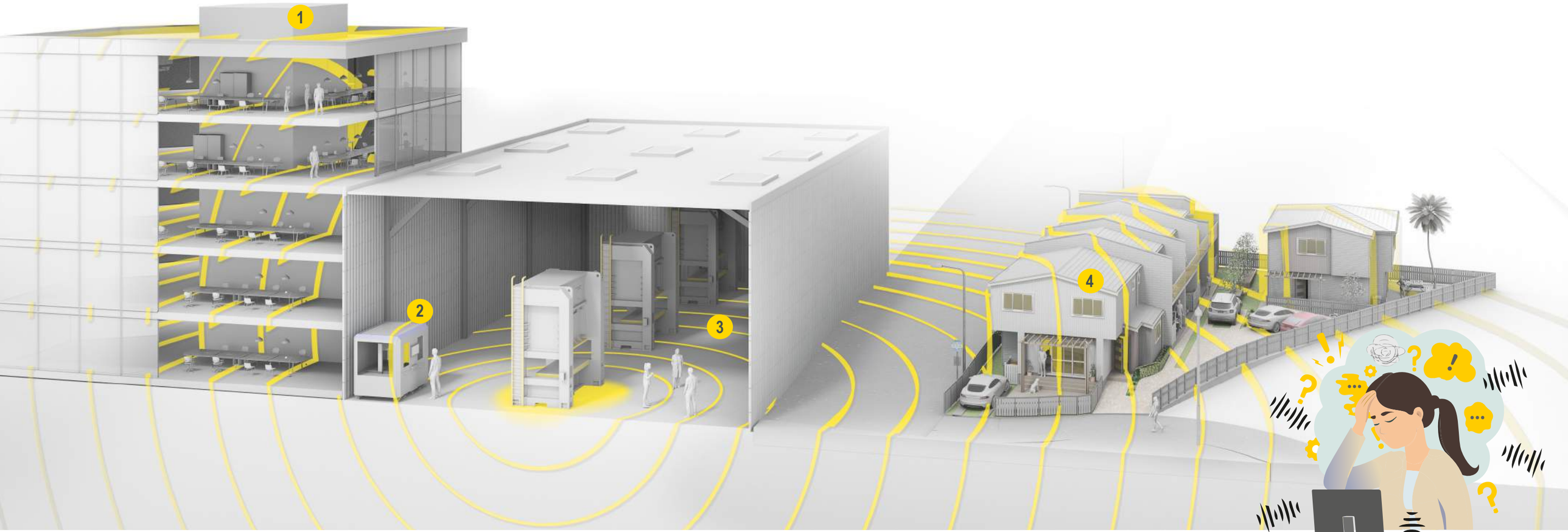
VIBRATION ISOLATION OF PRESSES

GERB

Elastically Isolated Presses with GERB Anti-vibration Technology



Causes and effect of structure-borne noise in presses:

During press operation, significant vibrations are generated due to changes in the speed of moving components, impacts from the ram, and especially during cutting operations. These vibrations can cause unacceptable disturbances and inconvenience to neighboring areas. Additionally, high-frequency vibration components contribute to structure-borne noise in adjacent rooms.

Vibration transmission to:

1. **Office buildings / disturbance to employees**
2. **Sensitive equipment in the surrounding area**
3. **Factory employees**
4. **residential buildings**

Effective vibration protection for presses of all kinds:

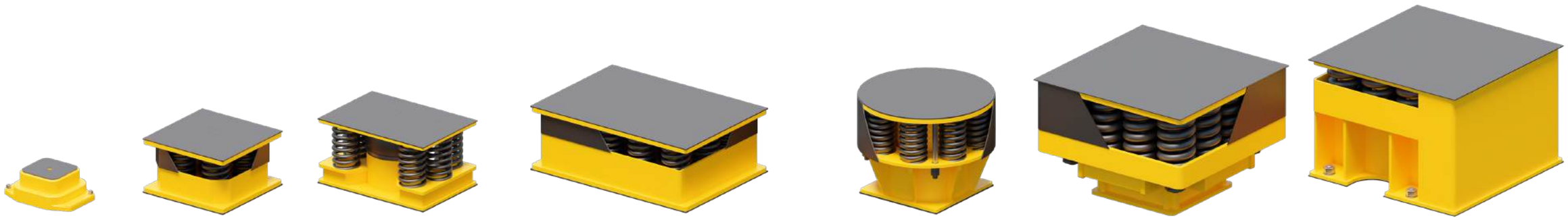
An important factor in designing the elastic support for presses is the nature of the vibration excitation. For example, in single-crank and double-crank presses, imbalances in crank operation and the resulting inertial forces at the crankshaft can induce severe tilting motions of the machine.

In such cases, it may be necessary to incorporate a foundation block acting as a vibration-damping mass or to use an enlarged base frame to improve rotational stability and keep system movements within acceptable limits.

In four-point crank presses, transfer presses, and hydraulic presses, vibrations are primarily caused by vertically accelerated or decelerated masses.

Elastic support systems provided by GERB spring units can substantially mitigate these vibrations. Vibration reductions of approximately 80% or more are achievable when assessing the vibration velocity as a key parameter.

Solutions for Presses of any Scale and Performance



< 1 kN LOAD CAPACITY — **> 2800 kN LOAD CAPACITY**

About our solutions:

» SPRING UNITS

+ Spring units with high-quality cylindrical helical compression springs in rigid housing shells.

» VISCODAMPER®

+ VISCO® damping integrated in parallel to spring units ensures machine stability and enhances its efficiency. However, the damping also means that the machine quickly comes to rest or returns to its idle state after each stroke.
  We are pioneers in viscous damper technology and develop innovative solutions that set new standards. As inventors, we are actively shaping the future of this groundbreaking technology.

About our services:

» BLOCKING DEVICES

+ For a streamlined operation, it is essential to transfer the tool between the fixed foundation and the elastically supported press easily. GERB has developed different blocking devices for this purpose. These blocking devices can be supplied as separate supports or even as blocking systems that are integrated into the spring Viscodamper® combinations.

» VIBRATION MEASUREMENTS

+ Advance measurements can be conducted to determine whether a press will cause impermissible or unreasonable levels of vibration in the vicinity, just as the options for reducing the vibrations can be specified prior to installation.

» INSTALLATION

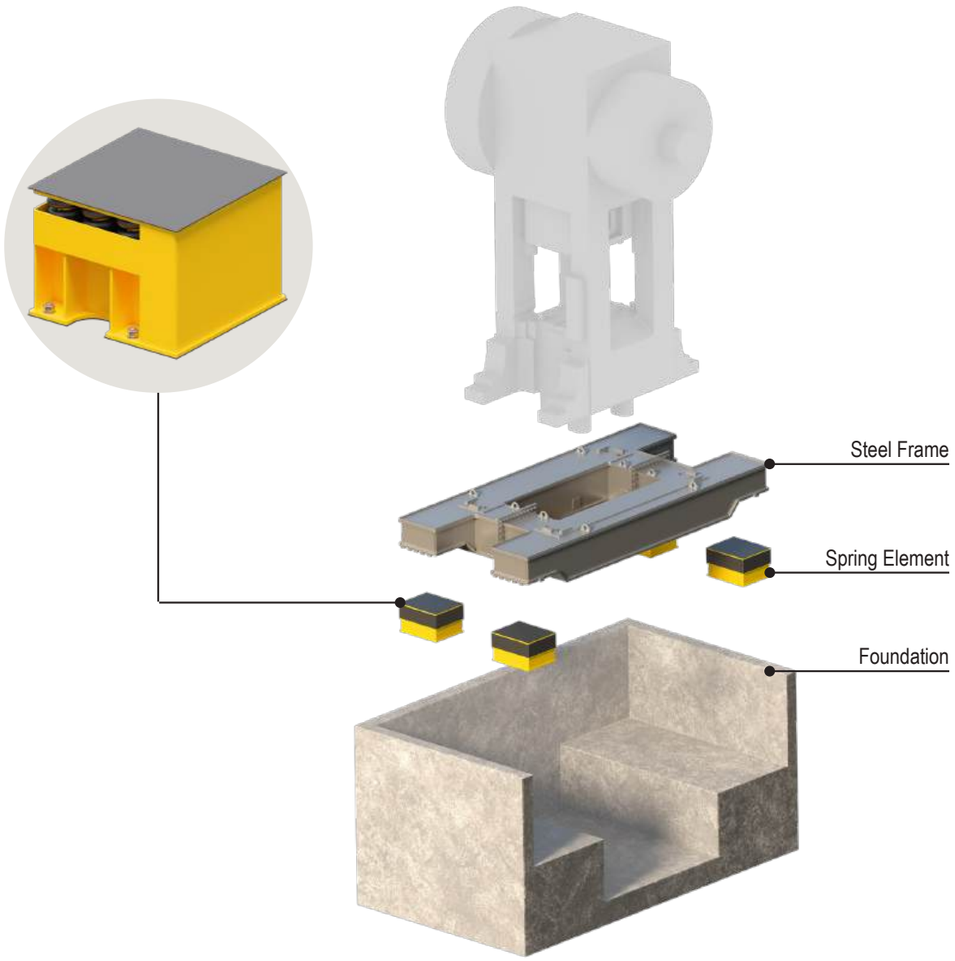
+ GERB offers installation and supervision services for the elastic support systems. In the event of unexpected subsequent settlement of the of the foundation soil, GERB technicians realign the press within a short period of time.

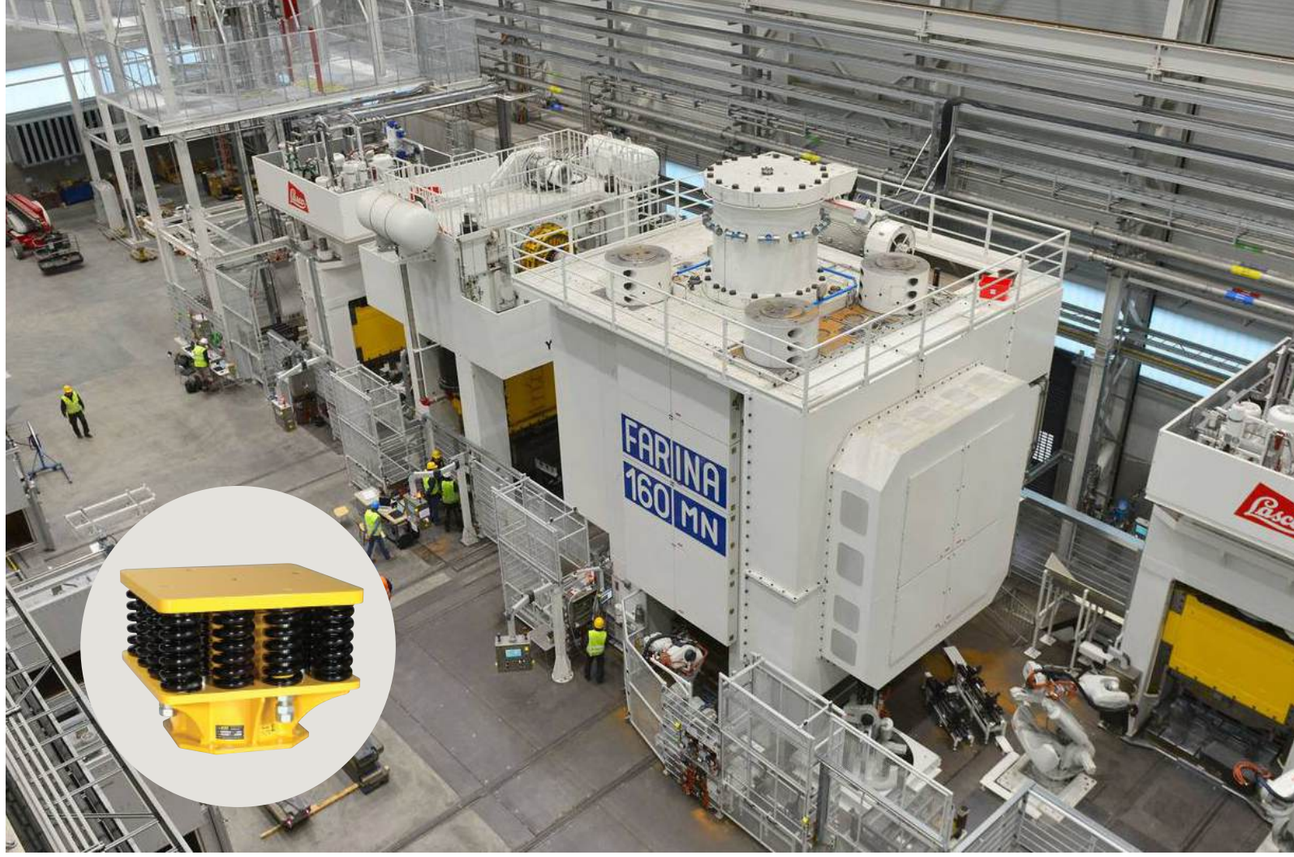
» ENGINEERING

+ In addition to the engineering and supply of spring units and Viscodamper®, GERB offers overall planning and complete civil engineering for the press foundations.

Please consult our project engineers for assistance.

In-House Engineering for Precise Foundation Design Tailored to Your Individual Project





We are driven by your goals and requirements

We design the necessary substructure for your press to ensure optimum stability and peformance. We also develop all the necessary vibration-mitigating products to ensure that your systems work reliably and efficiently.

Put your trust in our experience and expertise - we will ensure that your production runs smoothly!

Forging Press
Homburg | Germany

Performance: 16,000 t
Press weight: 1,780 t

Elastically mounted with GERB spring elements on a GERB designed steel frame.

Challenge

Vibration isolation of a Farina Forging Press Type GLF 16.000 taking into account the surrounding residential development.

Solution

Engineering support for foundation pit and steel frame as well as vibration consulting with a vibration prognosis.

An elastic support of the press with 24 x VL425-12.0-4420/32-650 elements on a steel frame with 11 x 8.8 x 1.4 m, 151 t weight and 3.9 Hz vertical natural frequency was integrated.

Result

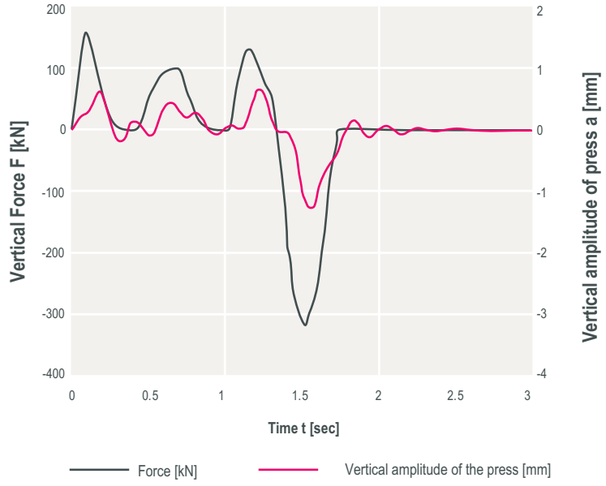
Peak vibration velocity in 10 m distance:	**1.5 mm/s**
Vertical amplitude:	**+ 2.1 / -1.5 mm**
Damping ratio: (Results from the test operation)	**D = > 0.1**

Advanced Vibration Support for all Types of Presses

When supporting larger hydraulic presses, as well as mechanical car body and transfer presses, low-frequency vibrations need to be considered. These vibrations may occur either as a result of moving masses or as pillar vibrations, which can resonate with the natural frequencies of the building structure or the bending frequencies of wide-span floors. Such resonance canamplify vibration levels significantly.

Due to their high flexibility, presses equipped with servo drives pose additional challenges for elastic support systems. Such presses require specially adapted support solutions to accommodate their unique dynamic behavior.

Force and motion history of a servo press



GERB has developed special support systems that meet these demanding requirements in close collaboration with leading manufacturers of servo presses.

Press installation on prestressable GERB spring units ensures that the press can be aligned and even realigned easily. Typically, no mechanical fasteners are required for fixing of the spring units, but is done with self-adhesive resilient pads supplied by GERB.

Acceleration levels, which serve as a benchmark for assessing vibration and wear in presses, are consistently lower in installations with vibration isolation compared to rigid installations..

BURKHARDT press

SMS forging press

SCHULER BEUTLER press

YANGLI | 7000 t synchronized automatic press line for automotive coverings


YANGLI | GERB PSG spring elements underneath press line

KOMATSU press line

DIEFFENBACHER press line

YADON press line

SCHULER press line

Excerpt of Supported Presses by GERB:

Country	Client	City	Manufacturer	Capacity (kN)
Forging Presses				
Austria	Böhler	Kapfenberg	SMS Eumuco	132,000; 144,000
	Bernhofer	Höhnhart	Müller-Weingarten	7,000
China	Wuxi Turbine Blade Fact	Wuxi, Jiangsu	SMS Meer	224,000
	Wendeng Tianrun Forg.	Wendeng, Shandong	Müller-Weingarten	128,000
	Shaanxi Fastgear Co.	Xian, Shaanxi	Müller-Weingarten	35,000
	Quanzhou HengLiDa	Quanzhou, Fujian	Voronezwh	25,000
France	Snecma	Gennevilliers	Müller-Weingarten	80,000
	Kuhn Huard	Chateaubriant	Schuler	64,000
Germany	Buderus	Wetzlar	Müller-Weingarten	63,000
	Thyssen-Umformtechnik	Remscheid	Lasco	8,000; 10,000
	Gerlach	Homburg	Eumuco	120.000
	ThyssenKrupp Gerlach	Homburg	Farina	160 000
	VDM	Unna	SMS Meer	45,000
India	Sona Okegawa	Gurgaon	Enomoto, Lasco	4,000; 8,000; 12,500; 16,000
	Happy Forging	Ludhiana	Farina	63,000
	CIE-Mahindra	Bangalore, Coimbatore, Pune	Voronezh, Massey, Erfurt	13,000; 18,000; 20,000; 25,000
	Honda Motors	Bhiwadi	Sumitomo	45,000
Italy	Valseccheia Giovanni	Valmadrera	Manzoni	2,500
	Berco	Copparo	Müller-Weingarten	144,000
	Molla	Solbiate Arno	Voronezh	80,000
Mexico	Forjamex		Eumuco	5,000
Slovenia	Unior	Zrece	Müller-Weingarten	3,200
Taiwan	Yung-Tai	Taichung	Müller-Weingarten	10,000
	OZE Industrial		Chin Fong	10,000
USA	Thyssen Krupp Gerlach	Denville/Illinois	Eumuco	120,000
	Utica	Utica/New York	SMS Hasenclever	80,000
Presses for Sheet-Metal Processing				
Austria	Welser	Gresten	Andritz Kaiser	
China	VW	Shanghai	Schuler	
	GM	Shanghai	Müller-Weingarten	
	BMW-Shanghai	Shenyang, Liaoning	Schuler	
	Dong-Feng Nissan	Guangzhou, Guangdong	Komatsu	
	Great Wall Auto	Boading, Hebei	Fagor Arraste	
	Chery Auto	Wuhu, Anhui	Jier Machine-tool Group	
	INA	Taicang	Gräbener	
Czech Republic	Skoda	Mlada Boleslav	Müller-Weingarten	
France	Renault	Sandouville	AIDA	
Germany	AUDI	Ingolstadt	Müller-Weingarten	
	BMW	Dingolfing	Schuler	
	Daimler Chrysler	Sindelfingen	Müller-Weingarten	
	Opel	Rüsselsheim	Schuler	
	VW	Mosel	Müller-Weingarten	

Country	Client	City	Manufacturer	Capacity (kN)
Presses for Sheet-Metal Processing				
Germany	ElringKlinger		ebu	
	Heinrichs	Lennestadt	ebu	
	Tesla	Brandenburg	Schuler	
	Franz Pauli	Ense	Raster	
	Schwarz	Preußisch Oldendorf	Mossini	
	Schütz	Selters	AIDA	
	Brose	Coburg	Schuler	
Great Britain	IBC Vehicles	Luton	Müller-Weingarten	
	Rover	Swindon	Müller-Weingarten	
	Nissan Motors	Newcastle	Komatsu	
Hungary	Rejlek	Mór	Helmerding	
India	Caparo	Gurgaon/Jamshepdur	Isgec/Kaushico	
	JBM	Gurgaon/Manesar	Isgec/HMT/Erfurt/Schuler	
	SKH	Gurgaon/Manesar/Pune	Kieserling/HMT/Emco Pr	
	Tata Motors	Sanand	Schuler	
Italy	Iveco-Fiat	Brescia	Clearing	
Japan	Kikuchi Press	Hamura	AIDA	
Korea	Sung Woo Coil Center	Yang San	Ssang Yong Press	
	Samsung Motor	Pusan	Kojima, Fukui Kikai	
Malaysia	Proton	Petaling Jaya	Komatsu, Hitachi Zosen	
Mexico	Benteler de Mexico	Puebla	Umformtechnik Erfurt	
Netherlands	Volvo Car	Bunschoten	Müller-Weingarten	
	Polynorm		Dieffenbacher	
Poland	HMT	Środa Śląska	Helmerding	
Portugal	VW Autoeuropa	Palmela	Schuler	
Saudi Arabia	Ceer	Riyadh	Schuler	
Slovakia	Volvo Cars	Kosice	Schuler	
Spain	Opel	Zaragoza	Müller-Weingarten	
	SEAT	Barcelona	Umformtechnik Erfurt	
	VW	Barcelona	Arrasate	
Schweden	Volvo Car	Olovström	Müller-Weingarten	
Switzerland	Hoppe	Müstair	Helmerding	
USA	Ford	Dearborn/Michigan	Eumuco	
	Radar	Warren/Michigan	Schuler Brazil	
	BMW	Spartanburg	Schuler	

About GERB
– Your single source of expertise

With locations worldwide, GERB is a full-range provider and your professional partner for engineering, manufacturing and supplying vibration isolation solutions. Our service covers all phases of your project, from structural dynamic analyses, dynamic measurements, project-specific product development, to the installation of our products and inspections.

Consulting

We offer comprehensive consulting: from simplified dynamic calculations and measurements to complete calculations with numerical models.

Engineering

Our **GERB Engineering** division is at your disposal for further structural dynamic analyses. Our specialist engineers deal with all problems of vibrational dynamics: From feasibility studies to execution design, drawings, planning and construction supervision.

Research & Development

In addition to a wide range of standard elements, our products are tailor-made to project- or customer-specific requirements. New developments are constantly advanced and project-specific tests are carried out. We also accompany you in the approval process through in-house or third-party testing.

Manufacturing

We maintain the highest quality standards in all of our 5 production facilities. We are able to produce according to various standards and requirements and hold the necessary quality certificates.

Installation Supervision & Assembly

We offer installation of our elements and on-site supervision, as well as inspections of existing installations.

GERB

Made in Germany.
Since 1908.
Worldwide.

The following information is required for the design of elastic support systems of presses:

- Type and manufacturer of the press
- Arrangement drawing (Installation plan)
- Total weight of the press
- Weight of the unbalanced moving masses
- Stroke
- Number of strokes/min

In addition, for screw presses:

- Screw diameter

GERB Schwingungsisolierungen GmbH & Co. KG

Roedernallee 174 – 176
13407 Berlin, Germany

+49 30 4191-0
info@gerb.com

Ruhrallee 311
45136 Essen, Germany

+49 201 26604-0
info@gerb.com

GERB.COM

Certified to: ISO 9001 ISO 14001 DIN EN 1090 BS OHSAS 18001

VIBRATIONS CAN BE CONTROLLED – WHEREVER THEY OCCUR