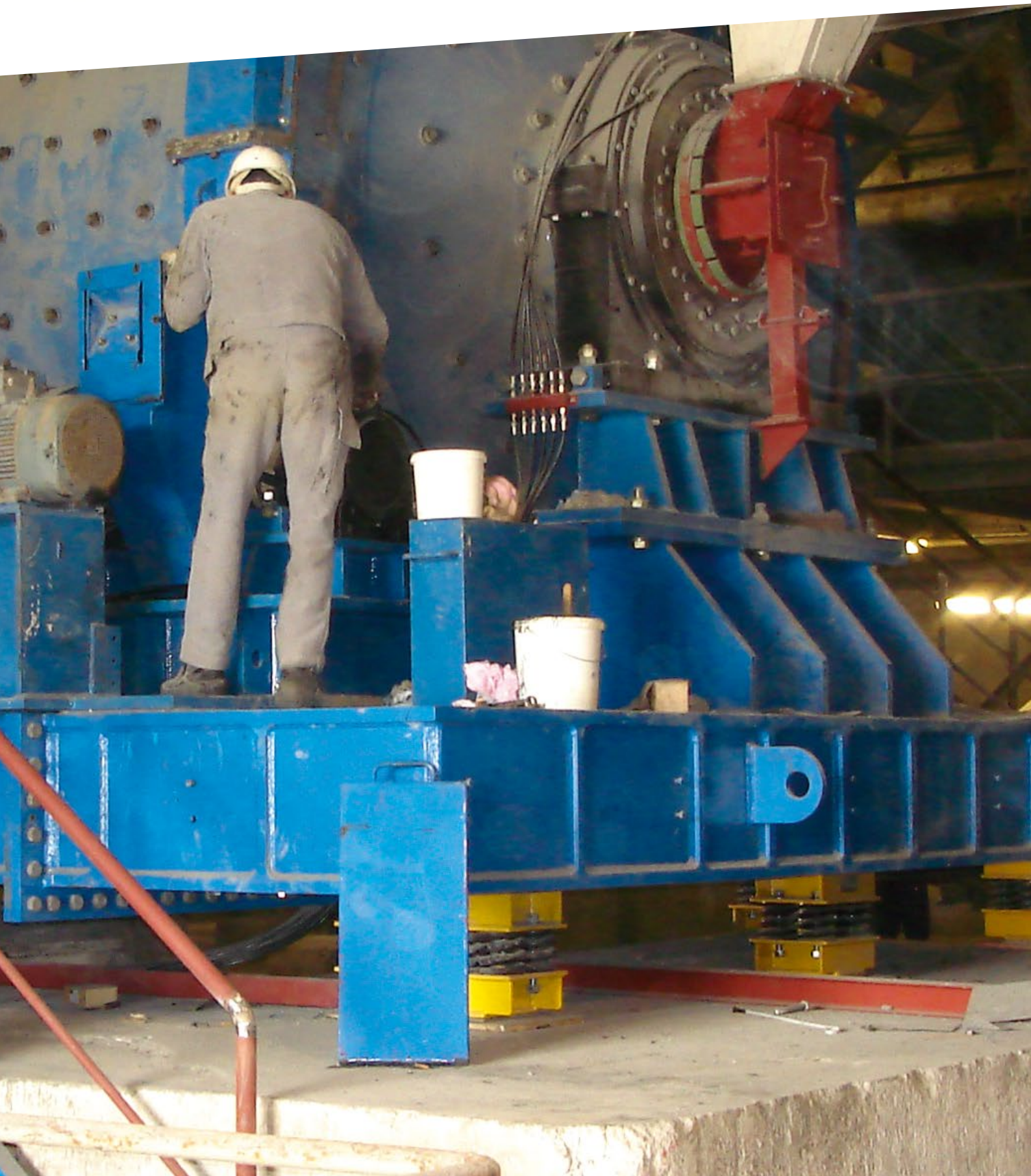
MACHINE FOUNDATIONS

GERB



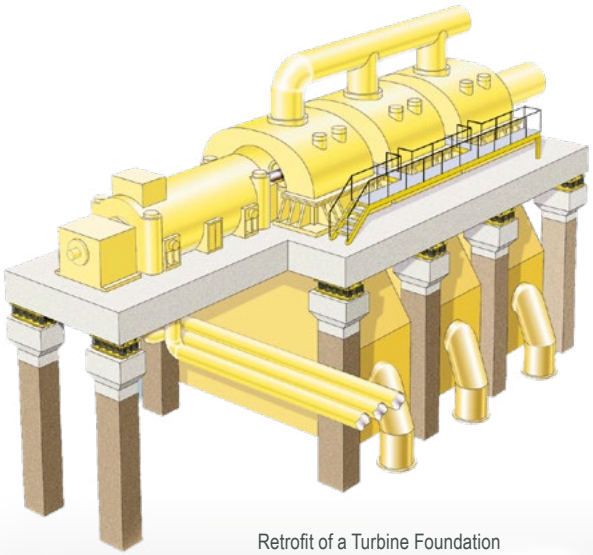
RESTORING AND UPDATING MACHINE FOUNDATIONS

Typical GERB Spring Unit

GERB – The Expert for All Your Foundation Needs

More than one third of all power plants worldwide are older than 30 years of age. Many of these plants operate equipment that will require updating with newer, higher capacity turbine-generators, coal pulverizers and mills, pumps and fans. Large machine foundations in other industries have also been updated successfully. The automobile industry, paper, printing, and chemical industry alike, have found a need for the restoration and GERB retrofit of their foundation systems. Problems that arise with machine foundations are typically caused by:

- **Settlement of the foundation due to poor soil conditions**
- **Vibration and structure born noise problems in the plant or surrounding area**
- **New requirements for seismic protection of sensitive equipment**
- **Installation of new or larger machinery on existing foundations.**



Retrofit of a Turbine Foundation

For more than 50 years, GERB has up-dated machine foundations for many leading groups in power generation and other industries. GERB offers complete civil engineering services, including:

- **Soil assessment**
- **Foundation assessment**
- **Proposals for new machine foundation systems, with full documentation (i.e. dynamic and static analysis, general arrangement and reinforcement drawings, re-bar lists)**
- **Construction, supervision, and startup assistance.**

The GERB Technology

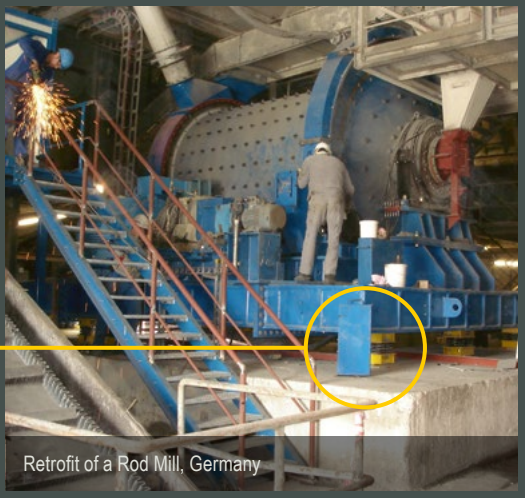
In the last four decades, GERB has repaired and upgraded over 200 machine foundations, in many cases using elastic support systems to increase the load carrying capacity and to protect adjacent equipment and the surrounding neighborhood. GERB has gained considerable experience in the area of power generation, especially in renewing turbine generator foundations.

For turbines and machines like them, GERB incorporates the existing sub-structure to keep down the cost of the machine foundation restoration. At the same time considerable analysis is prepared to ensure suitable and secure foundation for the new equipment. GERB is your expert for the restoration and updating of existing substructures.

The following established options, especially for turbine-generator foundations, are offered by GERB:

- Set a new spring-supported machine deck on the existing deck.
- Remove the old machine deck and set a new elastically supported deck on the existing, adjusted columns (see drawing on the left).
- Remove the existing machine deck and columns, and construct a new system of slender columns and spring supported machine deck on the existing base mat.

Retrofit of a Turbine Table, Germany



Retrofit of a Rod Mill, Germany

Retrofit of a Rubber Mill Foundation, Germany

The GERB Service

GERB is experienced in the restoration and updating of machine foundations in power plants and other industries.

Let our engineers review the suitability of your existing equipment foundations and prepare a timely analysis and proposal for your foundation systems. GERB will coordinate with your equipment suppliers to insure that your systems are secure and reliable.

Your Benefits:

+ More than 100 years of machine foundation design experience

+ One stop shopping for all your civil engineering needs – planning engineering, construction and startup

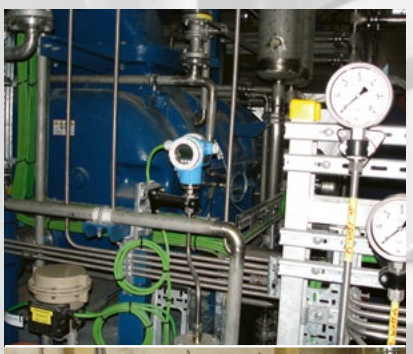
+ Alternative proposals to ensure the most cost effective use of plant space and construction time.

Retrofit of a Printing Hall, Switzerland

Reference List (Selection)

Restored and Updated Machine Foundations

Country	Machine	Capacity (MW) or total weight (t)	Project
Austria	Screw Press	2,390 t	Kapfenberg
China	Coal Mills	6 x 410 t	Chao Yang
	Hydraulic Press	1,000 t	Shanghai
	Press Line	1 x 2,000 + 4 x 1,000 t	FAW
	Mechanic Press	2 x 1,400 t	FAW-VW Changchun
	Hydraulic Press	1 x 1,250 + 1 x 1,600 t	Harbin Electric Motor
Germany	Screw Press	1,088 t	Buderus
	Turbine	2 x 7.8 MW	Dotternhausen
	Turbine	25 MW	Neumünster
	Turbine	5 MW	Ludwigshafen
	ID-Fan	2 x 480 t	Buschhaus
	Rubber Mill	150 t	Aachen
	Rod Mill	140 t	Luenen
	Turbo Compressor	65 t	Bernburg
Great Britain	Turbine	11.4 MW	Bolton
India	PA-Fan	55 t	Talcher
	Coal Crusher	90 t	Singrauli
	Coal Crusher	90 t	Parli
	Coal Crusher	90 t	Korba
	Coal Crusher	90 t	Ramagundam
	Coal Crusher	90 t	Wanakbori
Italy	Mechanic Presses	3 x 120 t	Embraco
Macedonia	6 Fans	650 m^3/h	HKW Bitola
Czech Republic	Turbine	2 x 110 MW	Prunerov 1
	Turbine	10 MW	Kladno
	Turbine	31 MW	Ceske Budejovice
	Turbine	8 MW	Tabor
	Turbine	41 MW	Karvina
	Turbine	2 x 20 MW	Trmice
	Turbine	25 MW	Otrokovice
	Turbine	25 MW	Nova Hut TG 5
	Turbine	44 MW	Nova Hut TG 9
Portugal	Turbine	9 MW	Madeira
Russia	Fan		Miass
	Turbine	65 MW	Saransk
	Turbine	65 MW	St. Petersburg
	Turbine	115 MW	Jushno Kusbass
Switzerland	Turbine	10 MW	Fribourg
	Printing Hall		Fribourg
USA	Turbine	27.5 MW	Potlach



Retrofit of a Turbo Compressor Foundation, Germany

Babcock Pipe Mill, Germany

GERB WORLDWIDE

» Made in Germany. Since 1908. Worldwide.

To take advantage of the GERB offer, simply let us know the name of your plant and the person responsible for machine foundations.

We will do the rest.

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