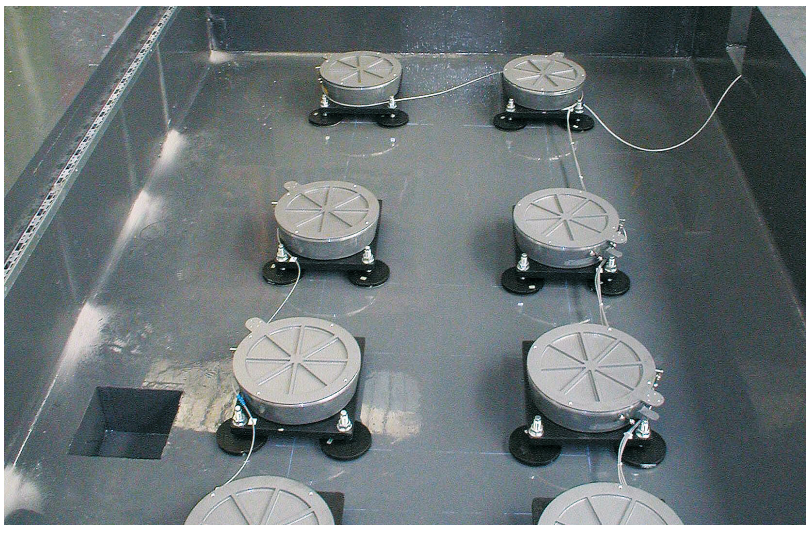
MECHANICAL ENGINEERING/PLANT CONSTRUCTION

A STRONG COMBINATION FOR A COST-EFFECTIVE, LONG-TERM AND TROUBLE-FREE SOLUTION

Successful receiver isolation of a gear grinding machine with BiAir® membrane air springs and oscillating foundation



Gear grinding machine GLEASON PFAUTER P 1200 G, machine weight incl. tool up to 25 t, foundation block approx. 5.2 x 1.9 x 0.7 m, approx. 20 t

KEYFACTS

- Foundation block 25 t

BACKGROUND

With installations where the inherent rigidity is not sufficient for direct isolation, a corresponding, rigidly designed intermediate construction must be attached between the machine and the insulators. Additionally, the positioning of the isolators can be optimised on-site with the customer, depending on the type of application.

TASK

With this application, vibrations from adjacent machines and a crane runway disturbed the functioning of a rolling grinding machine, the GLEASON PFAUTER P 1200 G. The required processing accuracy could therefore not be adhered to. In addition, big displacement paths and workpieces weighing up to 10 t led to large load changes.

Gear grinding machine GLEASON PFAUTER P 1200 G,
machine weight incl. tool up to 25 t, foundation block
approx. 5.2 x 1.9 x 0.7 m, approx. 20 t

SOLUTION

Indirect vibration isolation of a machine or an installation increases the inherent rigidity and leads to significant improvement of the dynamic behaviour with large load changes and displacement. We designed a foundation insulation with the help of low-frequency BiAir® membrane air springs with level control which we implemented with the help of a prefabricated concrete block.

The advantage: in contrast to pad sets or steel springs, the level of the foundation block resets itself automatically after load changes- with a reset accuracy of ± 0,1 mm.

A far-sighted solution, as the exact design of the foundation guarantees a cost-effective solution for the long-term and disturbance-free operation of the installation.

A STRONG COMBINATION: BIAIR® AND SWING FOUNDATIONS

BiAir® membrane air springs in combination with swing foundations result in effective swing insulation in precision laboratories, when mounting sensitive measuring and test machines, precision machining machines, laser systems and optical and electronic devices. Their use has many advantages:

- INCREASED PRECISION (RECEIVER ISOLATION) OR PROTECTION OF THE MACHINE ENVIRONMENT (SOURCE ISOLATION)
- REDUCTION OF VIBRATION AMPLITUDE DUE TO ADDITIONAL MASS OR MOMENT OF INERTIA AS WELL AS LOWERING THE

CENTRE OF GRAVITY

- SIGNIFICANTLY LESS STRESS ON ELECTRONIC COMPONENTS, CONTROL, MOUNTING, ETC.
- HIGHER QUALITY OF RESULTS, ESPECIALLY FOR LEVEL-CRITICAL APPLICATIONS