Principle and implementation example

Foundations are for making a machine rigid or for gathering several machine components onto a common load-bearing ground. The additional weight of the foundation has a positive effect on the vibration behaviour. However, there are limits to this positive effect. Only by using vibration isolation and the resulting decoupling from the building ground can the area be reliably protected against disturbing vibrations.

AirLoc has many years of experience in designing foundation isolations. From the first vibration analysis to the site inspection of the laid foundation, we are your one-stop supplier.

The basic principle of foundation isolation
The machine foundation is placed in a concrete tank for vibration isolation. Between foundation block and tank there is a layer of vibration isolation material. The calculation of this isolation layer requires considerable know-how and many years of experience in the vibration engineering.

Key parameters are:

- Total weight of foundation and machine
- Dynamic forces and moments of the machine
- Natural frequencies of the system
- Vibration isolation efficiency

AirLoc isolation system for foundation isolation
The AirLoc foundation isolation has the following characteristic properties:

- Complete isolation of the machine block in vertical and horizontal directions
- Tuning the isolation frequency through project-specific design (number and distribution of the isolation pads) based on the effective load bearing mass, i.e. the customer-specific conditions

In contrast to full surface isolations, the AirLoc isolation pads are adapted in terms of variable dimensions and number to the particular project. The AirLoc foundation isolation is calculated based on the effective load and laid according to the specific area. This permits tuning the full area of the installed foundation isolation to the current conditions.

Two isolation layers for best performance
Fast and precise levelling of a machine is provided by AirLoc Wedgmount® Precision Levelers equipped with AirLoc vibration-isolation pads. The Isolation pad is adapted for the individual vibration characteristic of the machine and provide structure borne noise isolation.

AirLoc Foundation isolation systems consider the dynamic behavior of the AirLoc Wedgmount® Precision Levelers and AirLoc vibration-isolation pads. This is important to provide best vibration isolation results and a reliable long term behavior.

AirLoc Foundation isolation systems, AirLoc Wedgmount® Precision Levelers and AirLoc vibration-isolation pads work perfect together as the best vibration isolation system.

Implementation example for a web rotary press for newsprint
The implementation of a foundation isolation system for a web rotary press documents the large-scale dimensions that are involved.

Figure 1: The foundation pit is prepared ready to install the vibration isolation system.

Figure 2: Installation of the isolation system is complete. The green AirLoc isolation pad sets are shown. Between them are the specially designed KombiRoc pads for filling the remaining space.
Figure 3: To protect the isolation system, cover pads are installed, and preparations are made for pouring the foundation block.

Figure 4: After completion of the machine installation, the vibration-isolated foundation can hardly be seen.