

Project Case Study

Coil Dump Protection: Thyssen Krupp Stahl, Bochum, Germany



Coil Dump Protection using Fabreeka Pads

The steel coils produced at Thyssen Krupp in Bochum are positioned by overhead crane on to a walking beam conveyor prior to the pickling line. The constant setting down of the 20 ton coils at the beam positions transmits large impact forces into the support beams on both sides of the conveyor.

The beam was originally designed to have 10 steel plate springs under these beams to absorb some of the energy.

As the released energy can vary with driver care, these springs were requiring replacement on a six monthly cycle.

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Restrictions

The design requested by Krupp was to have something which could occupy the same physical dimensions as the plate springs, with no modification to the existing steel work.

Mass of Steel Coil	36,000 Kg
Maximum speed of Impact	0.24m/sec
Maximum Energy Generated	5760 Joules
Number of Bearing Points	4
Number of Cycles	1 per minute.
Cycles in Design Life	500,000

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Coil Dump Protection:

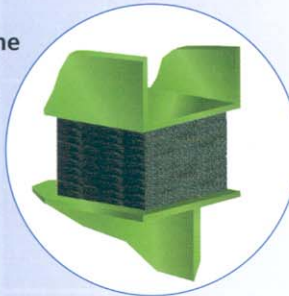
Thyssen Krupp Stahl, Bochum, Germany



Coil Dump Protection using Fabreeka Pads

The Solution

Calculating the maximum available volume of the Fabreeka Pad gave a block dimension of 220 mm by 220 mm by 150 mm high, this would be stressed to 3,000 PSI on a worst case impact scenario.

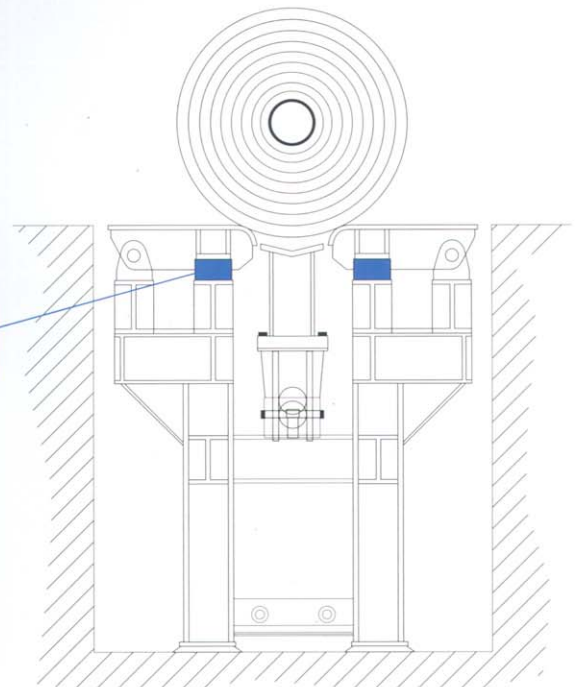


The design allowable stress for this material under these conditions would be 3500 PSI even though the Fabreeka Pad would not break down until 10,000 PSI. To enable the Fabreeka blocks to be easily fitted in the existing location, steel plates were bonded to the base and tapped to accept the fixing screws.

Originally only four blocks were installed to give some trial period. These blocks were visually inspected after ten weeks operation with no signs of wear. Consequently eight more blocks were installed. At the time of writing the blocks have been in service sixteen months and still show no deterioration.

About the Product:

The Fabreeka Pad is a resilient fabric pad composed of layers of tightly woven lightweight fabric. Each layer is impregnated with an elastomeric compound. The properties of the material are exceptionally suited for the reduction of high impact shocks, vibration and structure borne noise.



Profile of mounted Fabreeka Pads

Areas of Application:

Fabreeka Nitrile makes an ideal substitute for heavy gauge steel springs and plate springs where low deflection and high loads are prevalent. The fact the material is elastomeric there is no work hardening which in the case of steel springs will lead to failure.

A further benefit is the fact the elastomeric material can absorb exceptional overload situations without sustaining permanent damage.

For further application details please contact Fabreeka directly.

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