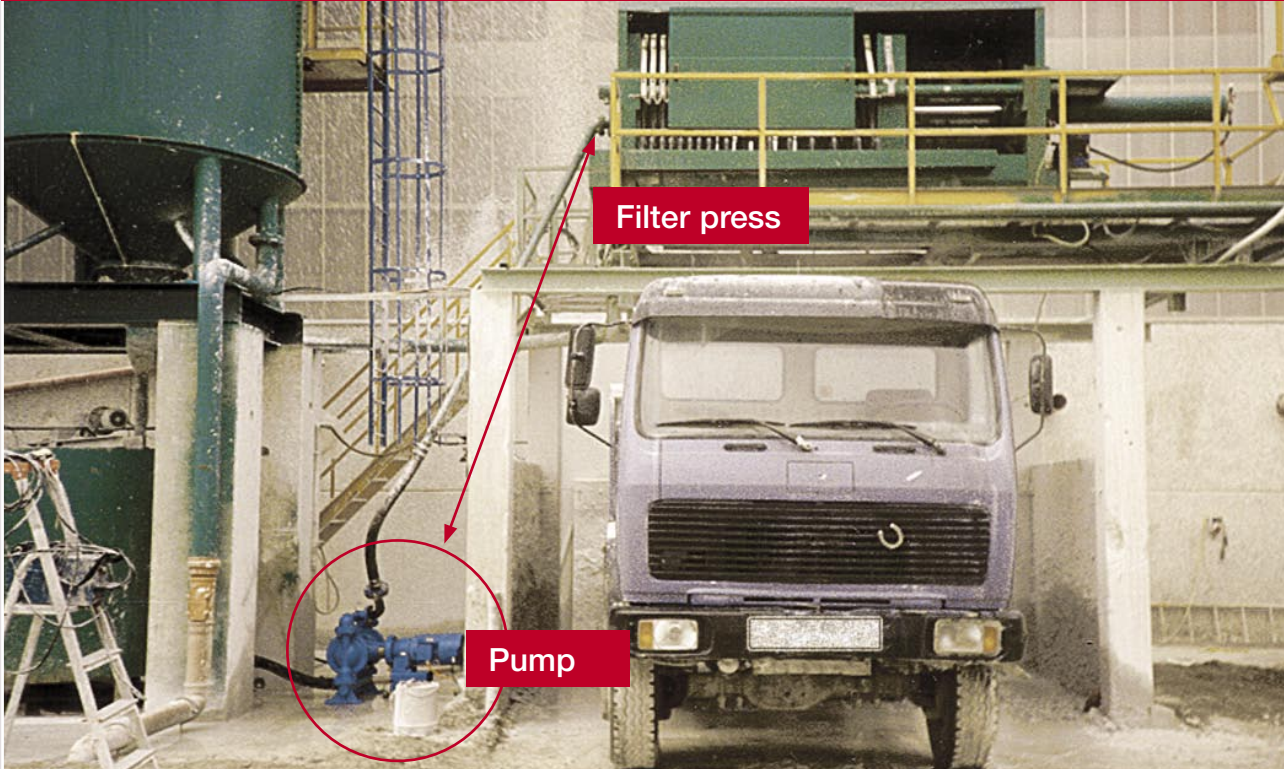


ABEL EM for the transfer of abrasive media and feeding filter press for excellent filtration results

Busse Marmor & Beton Werk GmbH, Rehburg, Germany



The application

Busse, Marmor & Beton Werk GmbH is a marble and cement plant located in Rehburg, Germany. The cutting, grinding and polishing of marble are included in its line of activities.

Fine mineral slurries with a solids concentration of 35 – 40 % accumulate during these processes.

The finest particles are up to 20 µ m in size. Dewatering of the slurries is essential in order to minimize waste volume.

The Task

A filter press with a volume of 0.7 m³ is installed for dewatering. Up to 1997 a centrifugal pump was used to feed it.

This solution proved unsatisfactory for several reasons. The dewatered quality of the filter cake was not up to the standard Busse required. Moreover, operating costs had soared due to heavy wear from the abrasive medium and the high energy demand caused by the relatively poor efficiency.

There was no conventional solution available to improve the situation and so the company looked around for a more innovative system that would significantly reduce operating costs and also produce a better filtration result.

The ABEL solution

The existing centrifugal pump was replaced by an ABEL Electromechanical Pump, EM 40, which is designed for a flow rate of 10 m³/h at maximum 0.6 Mpa.

An innovative control technique provides for short cycle times, good dewatering results and economical energy use. The membrane pump technology is clearly marked out for the transfer of abrasive media and reduces wear part costs considerably.

ABEL[®]
Pump Technology

The ABEL Technic

The ABEL EM has two opposing pump housings. Each is equipped with a fabric-reinforced, premolded membrane to assure complete separation of the drive side and the medium to be pumped.

The linear drive between the pump housings converts the motor's rotating motion into a reciprocating movement of the membranes by means of a crank configuration.

The Control System

In this particular application ABEL uses an innovative speed control technique that requires no pressure sensor, bypass or additional and expensive PLC:

The torque of the drive motor increases with the filter resistance and is therefore analogous to the build-up of filter cake. The frequency converter with integrated torque control receives

the information on the change in torque and converts this into speed regulation corresponding to its filter press program.

With this technique, it was possible to reduce the cycle times to 15 minutes, with excellent filtration results.

Flexibility

The program used in the frequency control system can be easily adapted to new conditions when slurries of different consistencies are handled. This makes the pump/filter press system highly flexible in application.

The Result

The ABEL solution has proved itself in daily, heavy duty operation. The installation meets all the specified requirements. By concentrating on essentials, the scope of investment could be kept to a reasonable limit and the operating cost advantages speak for themselves.

Advantages of the ABEL Solution

- Short filter cycles
- First-class filter cake quality
- Can run dry without damage
- No complicated auxiliary electronic devices
- No bypass required
- Simple and reliable torque control
- Few wear parts
- High efficiency
- Patented in the US and other countries

