Previous upgrades of existing Fluxo pumps have increased transportation capacities by 47 % and reduced power consumption by 40 %
Fluxo pump gains new lease of life

Key benefits
- Increased conveying capacity
- Reduced power consumption
- Improved operational reliability
- Reduced maintenance costs
- Improved availability

The Fluxo™ pump was first launched in 1927, and some 700 installations are currently in operation worldwide. FLSmidth has developed and tested a new retrofit solution in close co-operation with the Aalborg Portland cement Plant, Denmark.

All the new key parts are of a proven design and offer immediate benefits in terms of easier maintenance and improved reliability. The main improvements concern the two vital parts with high wear concentration; the annular air pipe and nozzles and the vent valve, but also other parts have been improved resulting in extended service life.

A new control set-up ensures lower power consumption and correct valve settings for sequential operation. Feedback from sensors and position indicators fitted on all parts combined with touch-screen control greatly facilitates troubleshooting and maintenance.

The retrofit can be done without changing the existing transport pipe system and compressor installation.

Retrofit scope

New mechanical parts:
- Inlet valve
- Annular air pipe with nozzles
- Outlet bend
- Vent valve (de-dusting)
- Compressed air valves
- Control valve
- Safety valve
- Pneumatic control cabinet with solenoid valves and pressure switches

New electrical parts:
- Electrical local cabinet with PLC including HMI touch screen and CCR interface
- Pressure transmitters
- Level indicators
- Position indicators on all valves

Normally it takes about 7 days to retrofit a Fluxo pump. FLSmidth offers to supervise both installation of the new parts and commissioning of the retrofit. The mechanical and electrical supervisors will not only attend installation and commissioning, but also to thoroughly train both maintenance staff and operators to ensure that they are familiar with the new equipment.

New Fluxo pump retrofit parts

1. Control valve (Y05)
2. Transport air valve (Y03)
3. Vent valve (Y02)
4. Top air valve (Y04)
5. Inlet valve (Y01)
6. New annular air pipe with nozzles
7. New outlet bend
Short payback time

Improvements
At the Set Ankara plant, Turkey a retrofit of Fluxo pump type E-7.5 led to a 47% improvement in transport capacity.

At the Ta Luang plant, Thailand the power consumption of a Fluxo pump type D-13 was reduced by 40% after the retrofit.

The capacity improvements and power consumption savings vary from project to project. Even if, for example, mill throughput cannot be increased, the improved reliability of the pump will result in fewer unscheduled stoppages and thus a higher mill output on a yearly basis.

Each Fluxo pump retrofit should be judged on its own merits, but overall performance so far has been positive. It is our general experience that the longer the conveying pipe, the greater the scope for improvement in conveying capacity.

Short payback time
The initial investment may be quickly recovered due to the savings in maintenance and power consumption. The immediate advantage of a retrofit is the shorter time needed to dispatch a certain quantity of cement. This in turn means lower power consumption. Besides, a retrofitted Fluxo pump remains operational longer.

Whether or not to retrofit?
Retrofitting an existing Fluxo pump system is often a better and cheaper solution than replacing it with for example rubber belt conveyors and elevators.

FLSmidth offers to make a comprehensive evaluation of existing pumps and propose immediate improvements as well as more long term solutions to ensure optimal operation.

Are you considering...
- Increasing your mill capacity?
- Improving operational reliability?
- Reducing maintenance and service stops?
- Reducing mechanical wear?
- Reducing power consumption?

Then you could benefit from upgrading your existing Fluxo pump

New nozzle design: Inclusion of the upwards pointing nozzles ensures aeration of the material
### Dimensioning

**Type selection key** (Diagram is based on a bulk density of 1.0 kg)

#### Example

125 m³/h pulverised material (1 kg/l) to be conveyed pneumatically 680 m with four 90 degree bends (680 m + (4 x 5 m) = 700 m)

#### Solution

FLSmidth Fluxo pump type E13 with and internal pipe diameter of 309.7 mm (code 17).

Air consumption 110 Nm³/min and power consumption 3.7 x 110 = 407 kW