

# The **SOLUTION** You've been looking for

**Solid Solutions for Coal Fired Power Plants**



## Why Larox Flowsys?

### Larox High Performance

**Pinch Valves** are engineered to be the best available pinch valve in the industrial market today. Larox pinch valves dwarf the pressure capabilities of traditional pinch valves. The Larox pinch valve is capable of handling pressures up to 1500 psig (100 bar) and has a completely sealed stem assembly which prevents slurry or particulate to penetrate into the screw mechanism of the stem from both inside the valve and from the external environment. This ensures that when you go to open or close the valve it is as easy as the very first time it was operated.



**Larox High Performance Pinch Valves and Heavy Duty Slurry Knife Gate Valves have been used very successfully by the power industry for several decades.**



### Larox Knife Gate Valves

are ideal for applications that involve abrasive or corrosive slurries, powders or coarse substances. One of the benefits is that the metal parts of the valve are not in contact with the slurry when open, only the easily replaceable rubber sleeves or secondary seals touch the medium. Double seated design provides bidirectional flow and tight shut off.

### Larox Progressive Cavity

**Pumps** are designed for the most demanding abrasive, corrosive and other industrial pumping applications. Due to pump's unique features and patented design, high efficiency and high pressure are achieved in a shorter construction. It requires less energy, is easy to install, requires less maintenance, offers longer servicing intervals, better pumping availability at an expanded temperature range, resulting in very low Total Cost of Ownership (TCO).

### Larox Peristaltic Pumps

are used in cooling water systems and chemical services in the power plants. Highly robust and reliable, these pumps can handle abrasive, corrosive, viscous or crystallizing media and slurries with high solid content. Larox pumps incorporate an advanced design, which eliminates friction, minimizes the hose wear and lower energy consumption. The Eccentric Roller Pump Larox Flowsys introduced in 2002 has gained rapid acceptance by the power industry for applications such as chemical addition to the cooling water system and lime pumping.

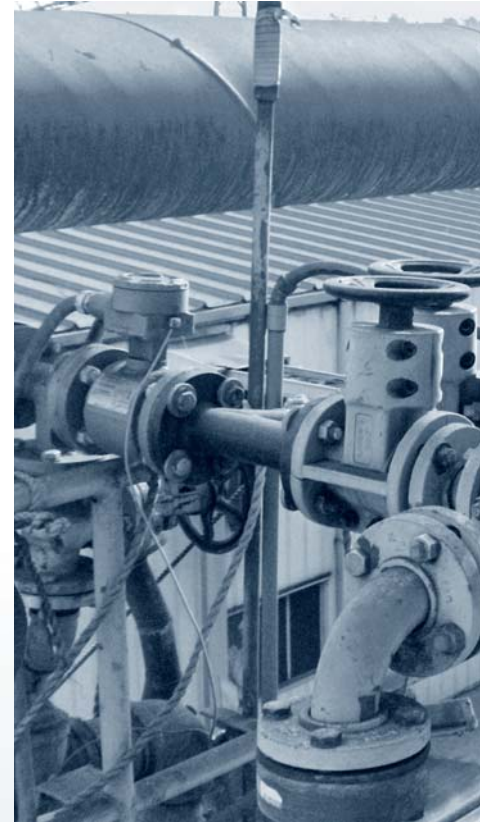
## Reliable solutions for coal fired power plants

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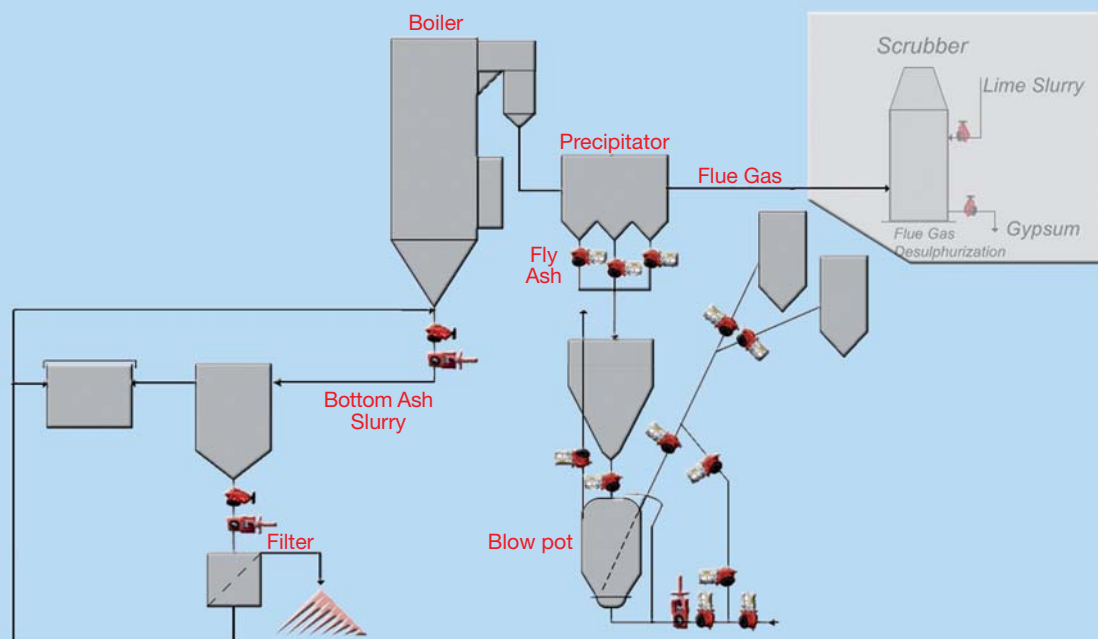
Both Larox valves and pumps have proven to be the very best solution for difficult applications such as bottom ash slurry, dry fly ash, lime slurry handling, river water intake and gypsum handling. Chemical isolation, control and pumping are often difficult for other pumps and valves that have problems with corrosion, sticking, jamming or

complete failures. Vacuum degassing will never occur with Larox pumps and they provide many years of trouble free service. Larox Flowsys valves and pumps offer power plants the utmost reliability, the lowest total cost of ownership and most importantly the greatest up-time.

In power plants waster water treatment is necessary to remove organic matter and heavy metals as well as neutralize acids. In all areas of waste water treatment in power plants Larox valves and pumps are excellent choices due the ability Larox's valves and pumps to handle abrasive materials as well as corrosive materials. With Larox's advanced engineered rubber technology we typically have a solution for most applications that guarantees the lowest total cost of ownership as well as improving plant up-time.



### Ash handling



## Ash handling

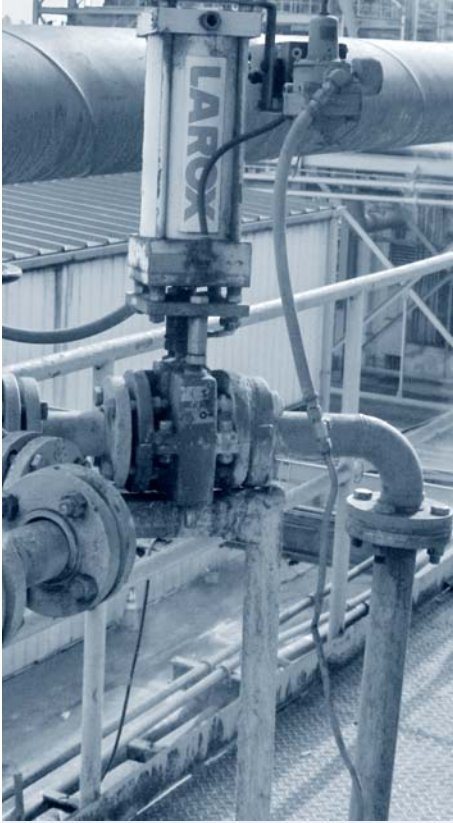
Larox Flowsys takes great pride in its success in handling bottom ash removal. Since bottom ash is a very abrasive slurry with pressures up to 300 psig (20 bar), these removal systems are often a constant source of frustration and high maintenance costs for coal fired power plants. The best valve for bottom ash slurry is the Larox high performance pinch valve. Larox heavy duty knife gates offer the ultimate in abrasion resistance in fly ash systems. The rubber sleeves provide the ultimate abrasion resistance in fly ash shut-off applications as they never leak nor have packing problems associated with conventional knife gates.

## Flue gas desulphurization

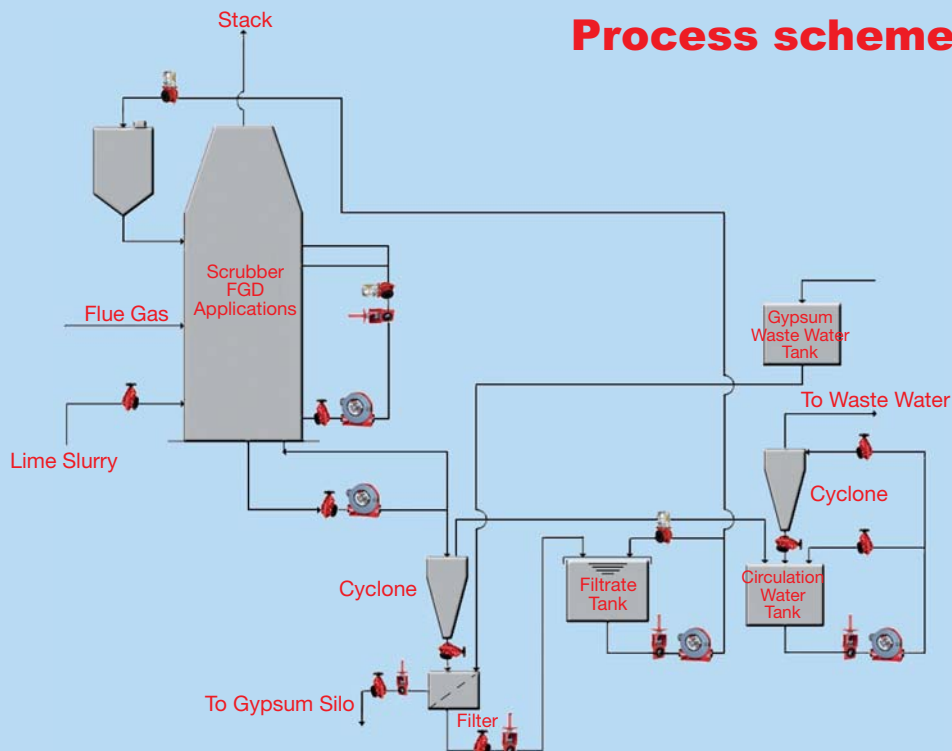
The most popular application for Larox valves are in lime slurry

service. The Larox high performance pinch valve offers one major advantage compared to a conventional pinch valve as it utilizes two pinch bars which squeeze the sleeve from opposite sides closing the valve on the centerline. Having two moving pinch bars which stretch the rubber sleeve creates a significant advantage compared to single pinch type pinch valves.

Advantages: less sleeve wear, better flow control, smaller and lower power actuators for the same service and the dual pinching action cleans the rubber surface with each opening and closing. In those cases where the pinch valve cannot be used due to space, weight or other reasons, the natural selection is the Larox heavy duty knife gate valve. Thousands of power plants globally trust the reliability of the Larox heavy duty knife gates in FGD scrubber systems in especially challenging situations.



## Process scheme FGD



## Low total cost of ownership

Larox Flowsys is a trusted partner for a number of leading technology companies because its products add value and enhance process efficiency in the user's processes. Larox's process and application expertise, certified manufacturing and delivery processes and comprehensive after sales service ensure reliable on-time deliveries regardless of the size of the delivery.

Driven by the will to solve problems, Larox Flowsys is committed to growing together with its customers and partners to understand and help make customers' processes more competitive. As a leading supplier, Larox Flowsys is able to provide reduced total cost of ownership (TCO) through exceptionally high product quality, extended product lifetime, ease of installation, long service intervals, low maintenance costs and superior energy efficiency. Larox valves and pumps are an environmentally friendly and cost effective solution for demanding industrial flow control applications.



Operational Costs (euros/year)	Larox Valve	Traditional metal seated valves
Valve Price (€)	4 900	2 450
Maintenance work costs (€35/hour)	630 *	36 400 **
Needed valve replacements (20 pcs)	–	49 000
Spare parts	350 *	18 200 **
TCO in one year	980	103 600

Coal fired power plant bottom ash slurry lines – total 70 valves.  
Yearly savings when changing to Larox total 102 620 euros.

\*\* Packing replacement every two months.

\* Spare sleeve change. In this application actuated PVE 200 or PVE8" is a typical valve.

## Larox pump cuts maintenance costs in Hamilton

**With thousands of successful installations, Larox Flowsys has provided a solution for demanding shut-off, control and pumping applications in the energy industry. The Hamilton, Ohio municipal power plant chose Larox pumps as they offer substantial savings through improved performance and efficiency, long service intervals and low maintenance costs.**

In a power plant in the city of Hamilton, Ohio, USA, a conventional peristaltic pump was replaced by a LPP-T65 in lime slurry pumping. The LPP-T65 Pump is used in conjunction with a VFD to control the speed of the lime to the header spray system. The customer chose the Larox rolling design due to its numerous benefits compared to the old pressing shoe design.

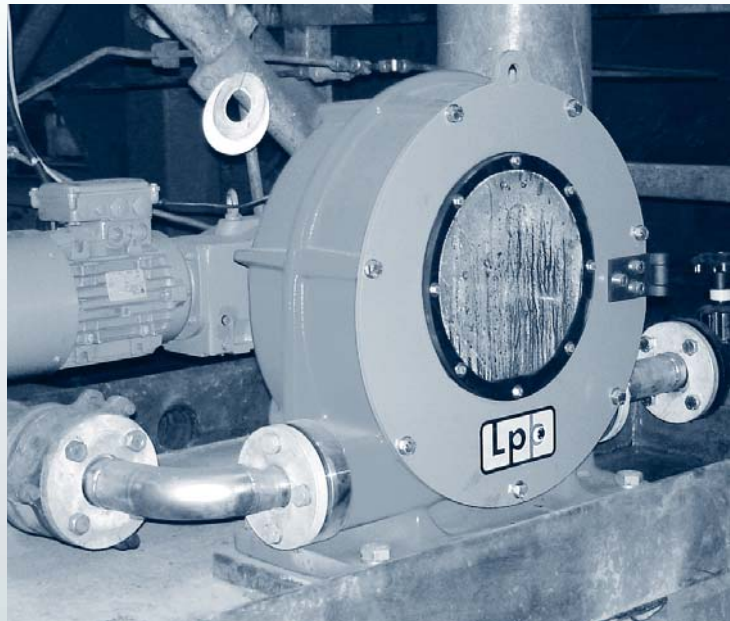
– We purchased and installed a Larox LPP-T65 to replace a conventional 100 mm shoe pump, says Mr. **Jeff Martin** from the City of Hamilton Ohio Municipal Electric Plant.

– The maintenance and spare parts costs were significant enough that we were able to replace a second pump, he continues.

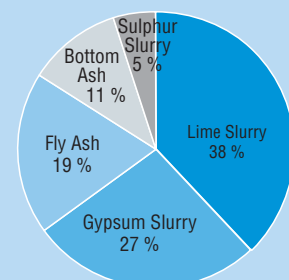
Replacing the competitor's 100 mm hose pump gained the following benefits for the customer:

- Lower energy consumption: smaller pump and 1/2 the motor size

- Extended hose lifetime
- Ease of maintenance and time savings to change the hose
- Maintenance downtime savings
- Lower operating costs: glycerin and hose cost savings



- Water Removal Systems
- Bottom Ash
- Fly Ash
- Scrubber Systems
- Soot Blower Systems
- Sulfuric Acid Disposal





## Solutions for tough duties



**With decades of experience in flow control and elastomer technology, Larox Flowsys has gained deep knowledge about the market as well as about customers' processes. This know-how is continuously used to develop new technologies and thus foster customers' businesses.**

Larox Flowsys' focus is on abrasive, corrosive and other demanding shut-off, control and pumping applications. Larox Flowsys Oy was the first pinch valve manufacturer in the world to receive the ISO9001:2000 Quality Certificate in 1997. Larox Flowsys valves also meet the new ANSI/ISA Pinch valve standard ANSI/ISA 75.10.02.

### Wide variety of applications

Larox high performance pinch valves, heavy duty slurry knife gates and peristaltic pumps have proven their suitability for a wide range of industries and applications in mining and metal industry, non-metal minerals processing, pulp and paper, chemical process industries, cement industry, iron and steel, energy as well as oil and offshore industries. Numerous applications also exist in water, wastewater and effluent treatment, dairy, food and beverage production, and pharmaceutical processing plants.

In addition, Larox Flowsys offers comprehensive after-sale service solutions for progressive cavity pumps in many process applications.

### Global reach, local service

Larox Flowsys Oy was established in 1993 as a subsidiary of Larox Oy. Today Larox Flowsys Group employs some 90 people and have over 600 factory trained personnel in more than 60 countries. Headquartered in Lappeenranta, Finland, Larox Flowsys has subsidiaries in Linthicum, Maryland USA and Anjalankoski, Finland.

The company is the global leader of pinch valves and has the most technologically advanced peristaltic pump designs in the world.





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