

# Turbo-Flow™

## Solution Advantages

- Clean preheater walls mean better burning efficiency and increased production
- Drastically reduces, even eliminates, the need for water-jet procedure; higher safety, less expenses, less damage to refractory, less stoppages
- Allows using lower quality and alternative fuels with higher chlorides and sulfur content
- Main fan electricity consumption is reduced as internal pressure is not increased
- Allows diverting less gases into the by-pass, thereby increasing energetic efficiency
- Significantly reduces the potential of large lumps falling into the kiln, causing kiln stoppage
- Enables increasing the temperature in the Calcliner, leading to better energetic efficiency as more calcination can be done at the Calcliner.

Turbo-Flow™ System Specifications	TF-6
TFD diameter (mm)	142
Length (mm)	845
Weight (not including mounting socket) (kg)	48
Working pressure (min, psi / bar)	300 / 25
Working pressure (max, psi / bar)	3000 / 200
Firing frequency (pulse/min)	16
Pulse energy (at 3000 psi) (Joule/pulse)	105,000
Gas volume per discharge (at 3000 psi) (Liters)	360
Maximum effective distance (m)	6
Minimum required air supply (Liters/min)	250

#### Each Turbo-Flow™ system includes:

- Turbo-Flow™ Device (TFD)
- Turbo-Flow™ Controller (TCP)
- High pressure air compressor (supports several TFD units)
- 2 high pressure air cylinders (per TFD unit)

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## The Complete Solution for Cement Plant Preheater Build-up & Cooler Snow-Man



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## Turbo-Flow™ - The most effective solution for preheater build-ups and clogging

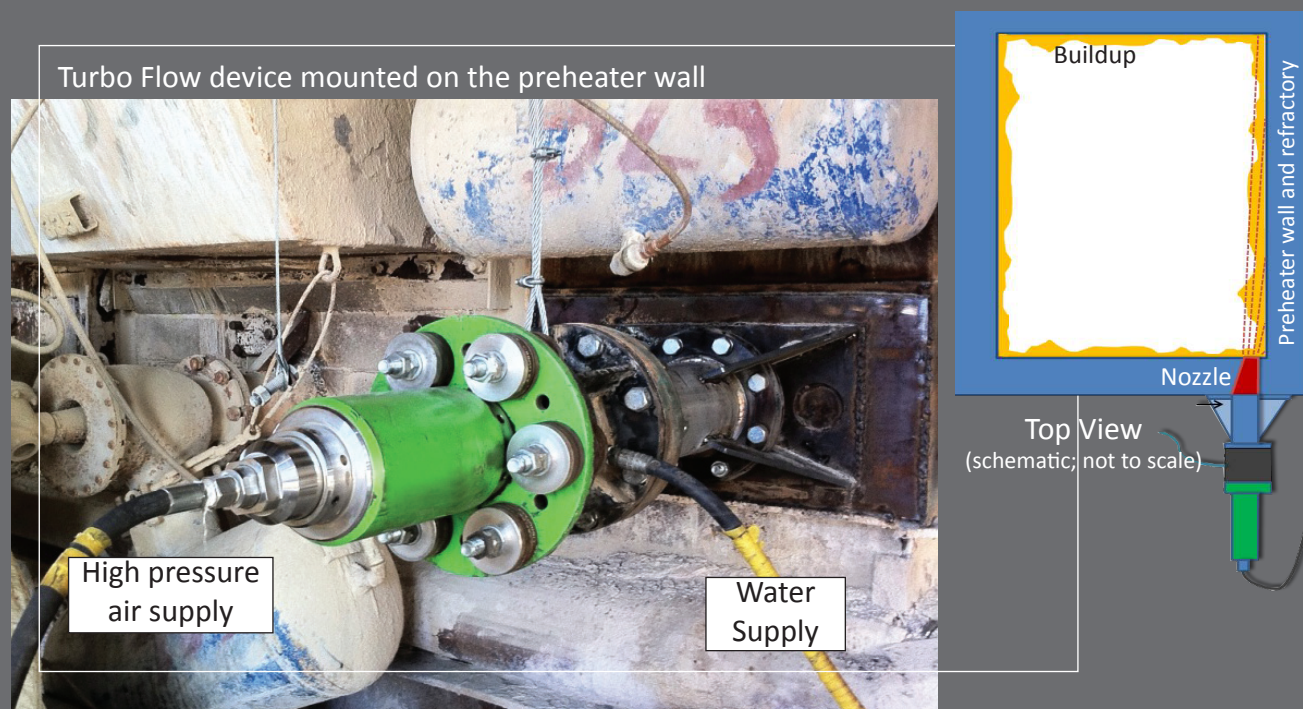
Cement kiln operation, a highly complex and sensitive process, suffers from recurrent preheater build-ups and cooler “snow-men”. These problems lead to reduced clinker production, increased operational costs, and can even cause full kiln shut-downs.

To make things worse, the quest for cheaper and more readily available alternative fuels means that cement plants are using fuels rich in sulfur and chlorine, which only adds to the preheater build-up problem.

Turbo-Flow™, a unique new system developed by Flow Industries Ltd., finally provides cement producers with a complete and effective solution to these problems. Now, for the first time, there’s no longer any need for cleaning teams dressed in protective gear and using dangerous water-jet equipment, or for hundreds of low-pressure, limited-range air-cannons that only provide a partial solution.

### Innovative and powerful, Turbo-Flow™ is today’s only complete solution

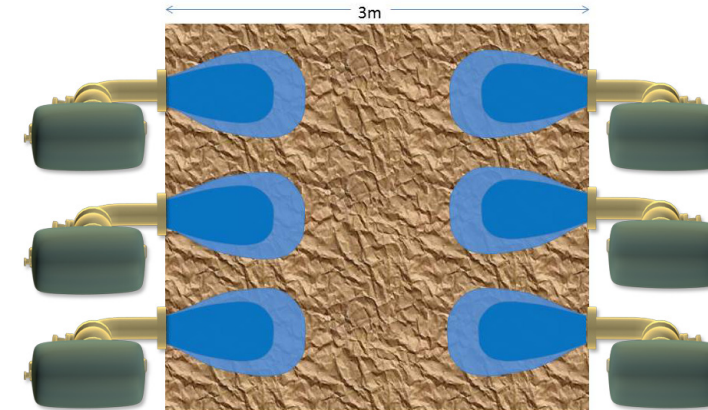
Turbo-Flow™ is an innovative, patented and automatic impulse system. It works by combining compressed high-pressure air up to 200 bar (3000 psi) with water. The combination of high-pressure air + water creates a very powerful spray that keeps large preheater walls or cooler areas clean and build-up free. One Turbo-Flow™ system may keep an entire one floor preheater wall build-up free. Two units will prevent snow-man formation in any cooler.



## Nesher Cement Case Study - Severe Riser-duct Build-up

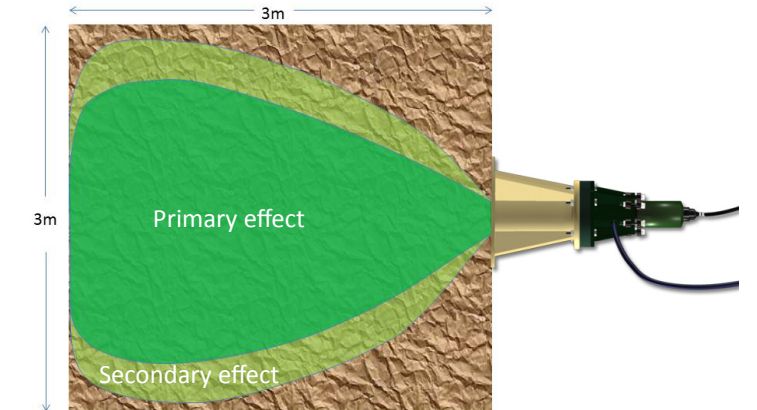
### Before Turbo-Flow™

- 6 air-cannons on one preheater wall (floor above Kiln entrance)
- Severe build-ups causing internal pressure to rise quickly
- Daily usage of water-jet manual cleaning, sometimes twice per day
- High grade Petcoke used
- Occasional Kiln stoppages



### After Turbo-Flow™

- 1 Turbo-Flow Device on wall
- Water-jet cleaning discontinued on Turbo-Flow™ wall
- Zero operation disruptions
- High sulfur content Petcoke used



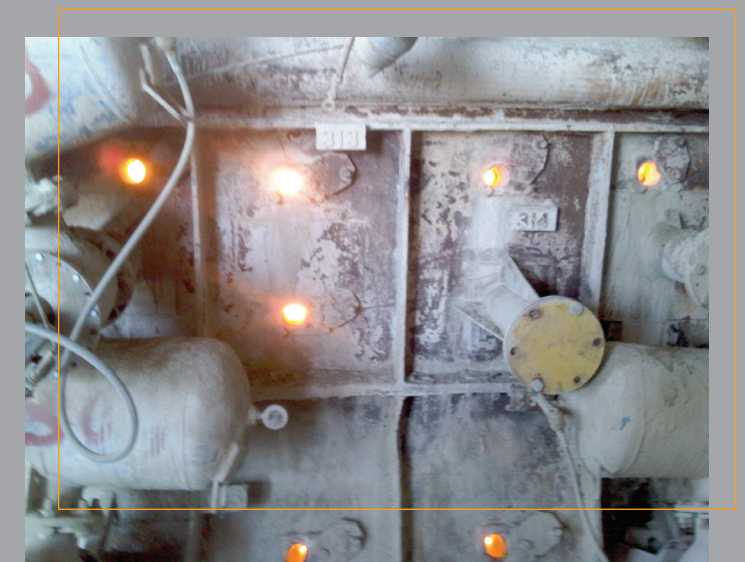
## Lower maintenance, greater control & quick return on investment

Turbo-Flow™ is activated either automatically, manually or remotely. Offering complete flexibility with full control of its operating parameters, such as air-pressure and frequency of activation, Turbo-Flow™ provides a complete solution to any build-up situation.

With such a large wall area covered by each Turbo-Flow™ unit, few units provide with a complete solution and space becomes far less of an issue, while maintenance and energy consumption are dramatically reduced.

In addition, the system is designed to enhance control with local or remote control options, readily available information on device operation, and simple modification of operating parameters for immediate response to changing production conditions. The Turbo-Flow™ device may be installed instead of existing air-cannons or as a new installation, connecting to a wall-mounted “duck” nozzle.

Turbo-Flow™ offers operators peace of mind that this critical part of the cement production process is now fully under control.



The clean riser wall showing all peek-holes open