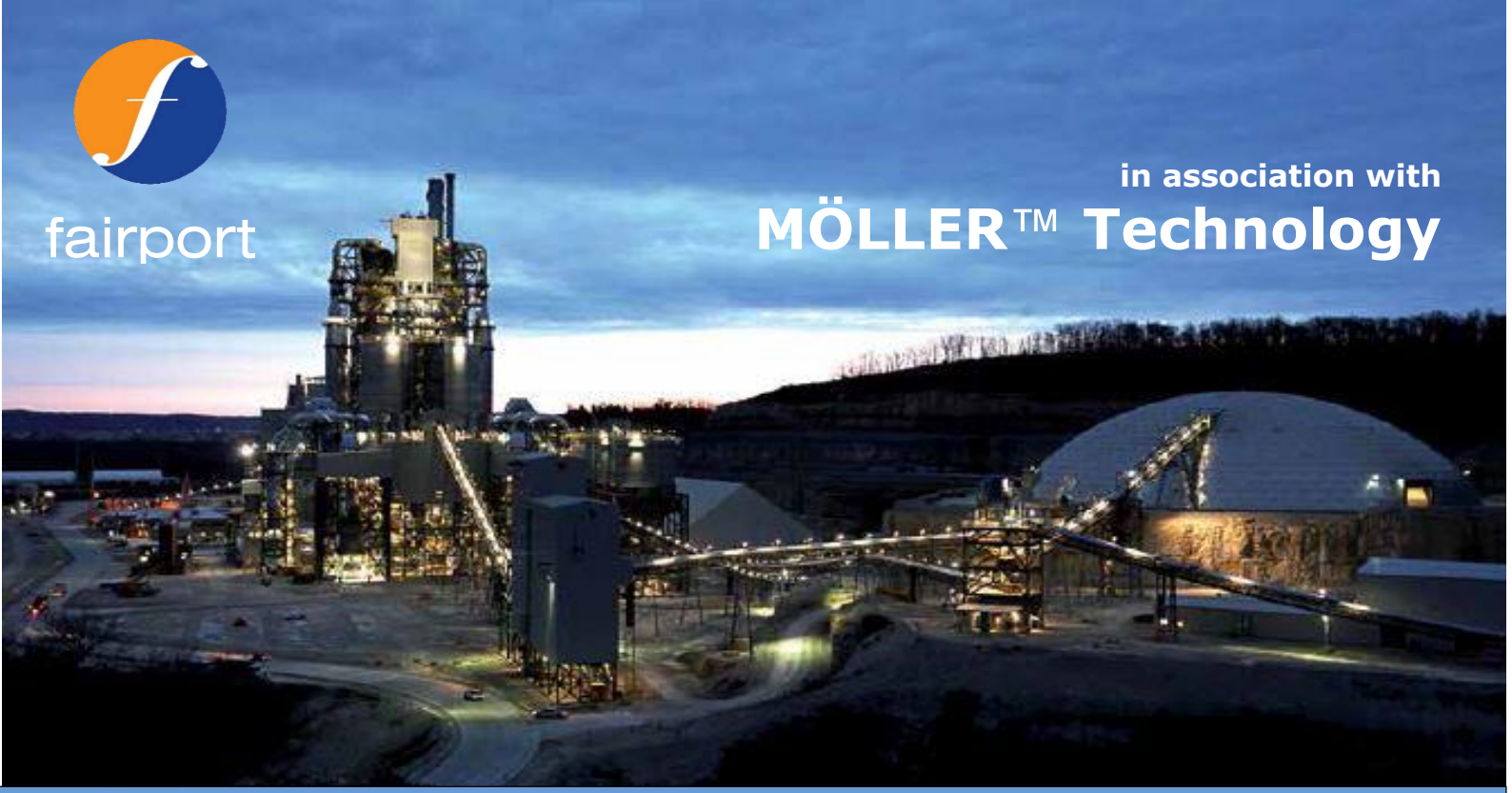
fairport

in association with
MÖLLER™ Technology



Fairport TURBUFLOW Conveying System upgrade

Saves Energy and Reduces Plant CO_2 Emissions

- Projected to save in the region of £300,000 to £400,000 per annum per cumulative Km of conveyor.
- Reduces maintenance costs due to low material velocities
- Very low particle segregation during conveying
- Projected to save 1,400T to 1,800T CO_2 emissions per year per cumulative Km of conveyor.
- Zero Dust Emissions

A pneumatic conveyor upgrade by Fairport Engineering using FL Smidth's Dense Phase TURBUFLOW conveying system can result in energy savings of up to 30% with payback on the investment anticipated to be well under three years, subject to survey.

Typically cement powder is conveyed across cement plant in Dilute Phase conveying systems. Blockages are avoided but this type of transportation is considered inefficient in both the use of compressed air and wear & tear within the pipework. This is because Dilute Phase transportation requires high material velocity.

A network of TURBUFLOW conveying systems can also include the transportation of by-product additives for blending into the ground clinker and to move cement product to silo's in preparation for despatch to road, rail and bagging plant. The cumulative pipework can extend to 100's of metres. Existing systems using Dilute Phase will rely on hefty air compressors and coolers with their attendant power demand, all of which can be replaced by smaller units when using the Turbuflow system, or subject to review, down rated.

The TURBUFLOW system has been used successfully throughout the world for over 20 years. Under failure of compressed air, the system can be restarted without any problem, even with material filled lines. There are no plugged pipes in the TURBUFLOW dense phase conveying system and very little wear, if any, is experienced.

Further information overleaf, or to arrange for a discussion please contact:

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Cement companies in the UK have used Fairport Engineering for over 30 years and the Möller name can be traced back to 1934. Equipment such as Möller Pumps and Fuller Kenyon Pumps are highly respected in the market. Together both organisations offer a unique mix of local experience and product innovation.

The TURBUFLOW dense phase pneumatic conveying system is particularly suitable for fine grained bulk materials such as cement, lime and fly ash, including highly abrasive cements with Mohs values over 8 and Blaine values over 10,000. The slower conveyance of material reduces wear and therefore increases operational reliability. So how does it work?

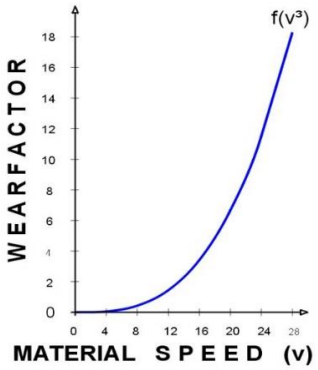
Dilute Phase – a low product to air ratio, with high product speed

TURBUFLOW Dense Phase – a high product to air ratio with low product speed

Dense phase conveying can lead to blockages with costly downtime and is often associated with shorter runs. The TURBUFLOW system overcomes this by using an air carrier pipe within the conveying pipe using a port and diaphragm arrangement. This fluidises the material along the pipe enabling high material loads whilst prohibiting blockages. This is why a material filled line can be restarted and material conveyed over distances in excess of 1000M.

Wear Factor

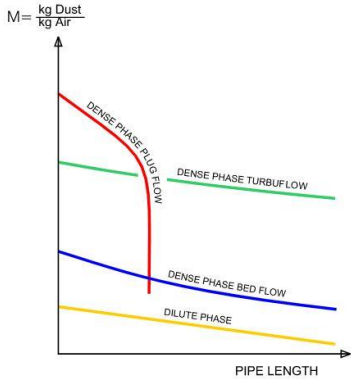
Dilute phase speeds can be 25-34m/s at the end of a pipe, TURBULFOW speeds are typically 10-16m/s



The very low air to bulk material velocity at the beginning and end of the conveying pipe results in very low pipe and bend maintenance. In fact in most installed systems no maintenance on these parts is necessary. No conveying pipes have been renewed in any TURBUFLOW system since 1984.

Efficiency and Energy Consumption

The use of an internal air carrier pipe enables long pipe runs, in excess of 1000M with little reduction in material load.



Summary Comparison between Dilute Phase and Turbuflow Dense Phase

Parameter	Dilute Phase	Turbuflow-System
Velocity at beginning of pipe	10-12 m/s	4-6 m/s
Velocity at end of pipe	25-34 m/s	10-16 m/s
Power Consumption	8-9 kWh/t·km	3-6 kWh/t·km
Grain Size distribution	100% < 200 µm 50% < 20-30 µm	
Bulk Density	0,6-1,4 t/m³	

The marginal difference in power consumption is notionally considered to be in the region of 4KWhrs per Tonne.Km. So if it is assumed a typical plant will pneumatically convey 1,000,000 tonnes of material per year, across a cumulative 1 Km length of pipework, where electricity is assumed to cost £0.1 per KWhr then plant power consumption savings in the region of £300,000 to £400,000 per year per Km are entirely possible.

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