Exmo SpeedLock OptiFlow

OptiFlow

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When a factory grows or new machines needed to be added, a conventional ducting system usually needs to be recalibrated and further suction needs to be added. Further suction equates to further power consumption.

OptiFlow is a square sectioned, ducted channel that incorporates a chain drive and scraper blades that are drawn along the floor of the channel. Once the air enters the OptiFlow, its speed is considerably reduced, so that heavy dust falls to the bottom of the channel to be conveyed out by the chain driven scraper blades to a rotary valve and then gravity fed into a hopper bin.

Only the very fine dust (ca. 10% of the dust volume) is sucked out of the top of the OptiFlow to the filter system.

The use of chain driven scraper blades considerably reduces the suction effort required and the power consumption.

OptiFlow is of modular design and can be made in lengths of 10-100m, with a suction span of 30m to each side. A 50m OptiFlow can reach a factory of 5000m^2 floor area. All machines at the factory floor are connected to the OptiFlow either individually or in clusters. The dust is extracted from the wood working machines at speeds of 25-35m/s.

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Dimensional specifications are given in the table below

OptiFlow

Comparisons between OptiFlow and a Conventional System

Power (KW) = 0.5 x Static Pressure (mmWG) x Volume (m3/h) $x10^{-6}$

Static Pressure = Side Span Pressure Loss + Filter + Fan +Main Ducting Losses
= 210 +100+130
= 440mmWG

Power = 0.5 x 440 x 240000 $x10^{-6}$
= **528KW**
= **700hp**

Option 1

There is only one OptiFlow component which is 65 meter in length. It covers across the three factory complexes, which will take about 240,000 m3/h at maximum capacity. The power consumption is calculated as follows:

Power (KW) = 0.5 x Static Pressure (mmWG) x Volume (m3/h) x 10^{-6}

Static Pressure = Side Span Pressure Loss + OptiFlow Pressure Loss + Filter + Fan + Main Ducting Losses

Static Pressure = 210 + 6.5 + 100 = 316.5mmWG

Power (KW) = 0.5 x 316.5 x 240000 x 10^{-6}
= 380KW
= 505hp

Option 2

Power (KW) = 0.5 x Static Pressure (mmWG) x Volume (m3/h) x 10^{-6}

Static Pressure = Side Span Pressure Loss + OptiFlow Pressure Loss + Filter + Fan + Main Ducting Losses

Static Pressure = 100 + 8.5 + 100 = 208.5 mmWG

Power (KW) = 0.5 x 208.5 x 240000 x 10^{-6}
= 250KW
= 335hp

*Note : Power consumption accuracy depends on fan efficiency and all the above calculation is based on basic estimation

General Supply All Time (Low Voltage)
Effective from 1 July 2004
Energy: cents/KW
The first 2,500 kilowatts per quarter (90 day period) price is $10.65 incl GST per kilowatt hour.
The calculation is based on 310 working days of 10 hours and total consumption per year.

	Power Consumption (KW)	Value in $ Inc GST (Energy Australia)	Saving in $ Inc GST
Conventional System	528	56,110	
Option 1	380	40,360	13,750
Option 2	250	26,790	29,320

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