Case study 3.Energy Saving Turbo Blower

Compare energy savings

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Turbo Blower cost comparison resulting from the application (compared to Roots blower)

Contents	Roots Blower 		Turbo Blower HC50-06 		Results
Specification	For use	Aeration	For use	Aeration	Energy saving ratio 27% (±5%)
	Quantity[per unit]	1	Quantity[per unit]	1	
	Air flow[㎥/min]	29.56	Air flow[㎥/min]	29.56	
	Dis'Pressure[mmAq]	5'000	Dis'Pressure[mmAq]	5'000	
	Shaft Power[HP]	61	Shaft Power[HP]	42	
	Power Consumption [kW]	43.5	Power Consumption [kW]	31.9	
Cost (Initial investment)	Total	฿112'900	Total	฿944'000	Compressor + motor + control panel + soundproof equipment
	Amount (per unit)	฿112'900	Amount (per unit)	฿944'000	
Power Ratio (years)	Total power consumption[kW]	43.5	Total power consumption[kW]	31.9	Savings Cost (years) ฿405'396 (24 hours operation / day)
	Year Power Ratio	฿1'523'162	Year Power Ratio	฿1'117'767	
	Year power cost = Total power consumption*4฿/kw/h*24*365				
Maintenance costs (years)	Total Cost	฿50'000	Total Cost	฿17'280	Savings Cost (years) ฿32'720
	Maintenance information	V Belts / Pulleys Bearing / Oil Seal main shaft sleeve Timing Gear O/Haul	Maintenance information	Suction filter replacement	
Flow Control	VWF Control	Add extra cost of the control panel	Built-in Inverter (Integration and Separation)	No additional costs	
Noise Prevention	Extreme noise	Noise prevention equipment of the need to separate	85dB or below	No need for separate equipment	
Total savings	Power Ratio + Maintenance (years)				฿438'116
Initial investment payback period (years)	Additional initial investment (Turbo - Roots) = ฿831'100				Payback Period (years) 1.9
	Initial investment payback period = Initial investment / year savings				
Remarks	1. Vibration: vibration requires additional equipment to		1. Vibration: 0.1mm/sec or below (based 2.0mm/sec)		
	2. Noise: 90dB or more		2. Noise: 85dB or below		
	3. Additional equipment: vibration, sound equipment		3. No additional equipment required		
	4. Backwash air inlet of the oil concerns		4. NO OIL SYSTEM (Air bearing)		
	5. Unfiltered contaminated air inlet		5. High Efficiency Filters		
	6. High power consumption		6. Energy-saving products (inverters used)		
	7. Requires regular maintenance		7. Maintenance: The Filter replacing		
	8. Power and drive of the external exposur		8. Eco-friendly compact design		