

DENV-AIR - BLUE LINE



DENV-AIR SERIES

SILVER LINE - RED LINE - CARBON LINE



SILVER LINE



RED LINE



CARBON LINE

BLUE LINE - Oil-Free Compressors



DENV-AIR BLUE LINE - Oil-Free Compressors

For application where it really matters !



10-340 HP



Where would I find the right customer?

Small number of industries accounts for a large % of business

- Food & Beverage
- Pharmaceutical
- Chemical
- Power Generation
- Automotive
- Petrochemical
- Technology
- Medical
- Laboratory
- and many more...



Where would I find the right customer?



SIEMENS



St Orbis Hospital



The Hyperbaric Medical Centre
(Diving Diseases Research Centre)



Boston Scientific



belovo



Rolls-Royce



AGRIBIOTICS Inc

Jägermeister

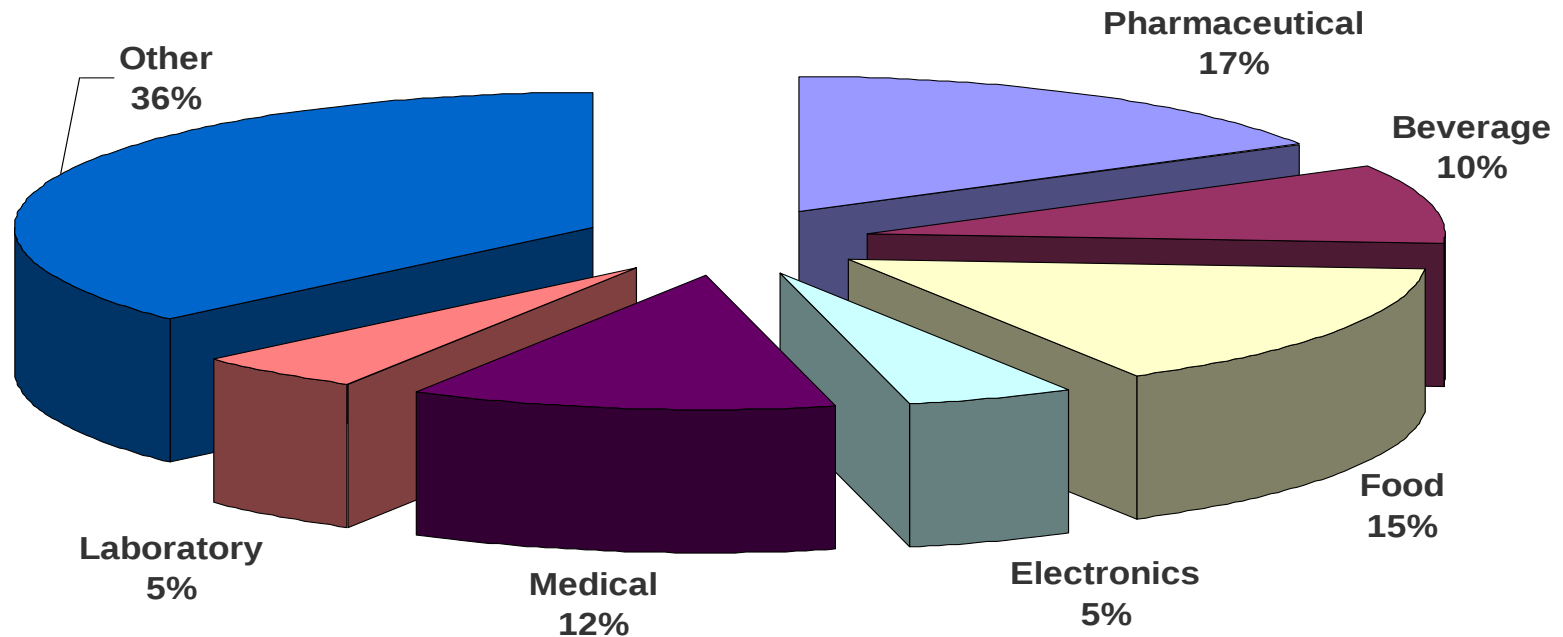


GRACE



Where would I find the right customer?

Typical OIL-FREE sales



Fixed Speed Models



Variable Speed Models



The Complete Range

Model	Capacity (m ³ /min)	Pressure (MPa)	Noise dB(A)	Power (KW/HP)	Outlet Diameter (Inch)	Dimension (mm)	Weight (KG)
TSC-100F	1.2	0.7	58	7.5/10	G1"	1120×750×1000	450
	1.1	0.8					
	0.9	1.0					
TSC-150F	1.6	0.7	58	11/15	G1"	1120×750×1000	470
	1.5	0.8					
	1.2	1.0					
TSC-200F	2.4	0.7	61	15/20	G1"	1400×1000×1200	500
	2.3	0.8					
	2.0	1.0					
TSC-250F	3.1	0.7	61	18.5/25	G1"	1400×1000×1200	520
	2.8	0.8					
	2.5	1.0					
TSC-300F	3.7	0.7	61	22/30	G1"	1400×1000×1200	560
	3.4	0.8					
	3.0	1.0					
TSC-400F	5.2	0.7	64	30/40	G1-1/2"	1850×1150×1400	1050
	4.7	0.8					
	4.3	1.0					
TSC-500F	6.1	0.7	64	37/50	G1-1/2"	1850×1300×1500	1050
	5.6	0.8					
	5.0	1.0					
TSC-600F	7.5	0.7	66	45/60	G1-1/2"	1850×1300×1400	1610
	6.8	0.8					
	6.0	1.0					



The Complete Range

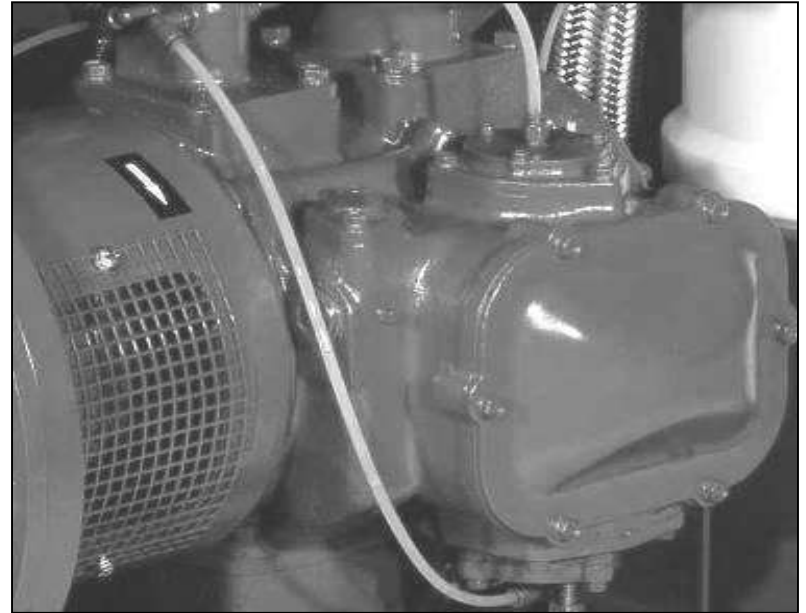
Model	Capacity (m³/min)	Pressure (MPa)	Noise dB(A)	Power (KW/HP)	Outlet Diameter (Inch)	Dimension (mm)	Weight (KG)
TSC-75OF	10.0	0.7	66	55/75	G2"	1850×1300×1400	1610
	9.0	0.8					
	7.8	1.0					
TSC-100OF	13.0	0.7	70	75/100	G2"	1850×1300×1400	1880
	12.0	0.8					
	10.0	1.0					
TSC-125OF	15.5	0.7	70	90/125	DN80	2600×1480×1700	2700
	14.0	0.8					
	12.5	1.0					
TSC-150OF	20.0	0.7	72	110/150	DN80	2600×1480×1700	3100
	18.0	0.8					
	16.0	1.0					
TSC-180OF	25.0	0.7	72	132/180	DN80	2600×1480×1700	3250
	23.0	0.8					
	20.0	1.0					
TSC-215OF	27.0	0.7	72	160/215	DN100	2800×1850×2000	4500
	25.5	0.8					
	24.0	1.0					
TSC-250OF	30.0	0.7	74	185/250	DN100	2800×1850×2000	4500
	28.0	0.8					
	25.0	1.0					
TSC-270OF	36.0	0.7	74	200/270	DN100	2800×1850×2000	4500
	33.0	0.8					
	27.0	1.0					



Compression Element

Single stage, single screw water injected compression

= Element configuration is
ideally suited to water injection

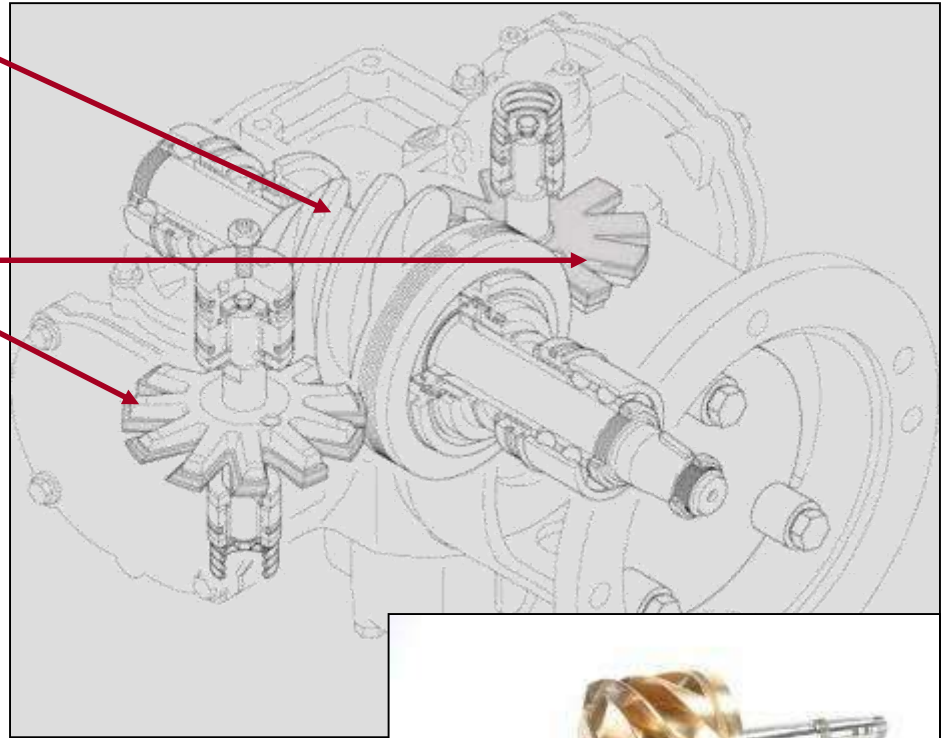


Compression Element

Bronze single 6 flute main rotor

Carbon fibre composite 11 tooth gate rotors (2)

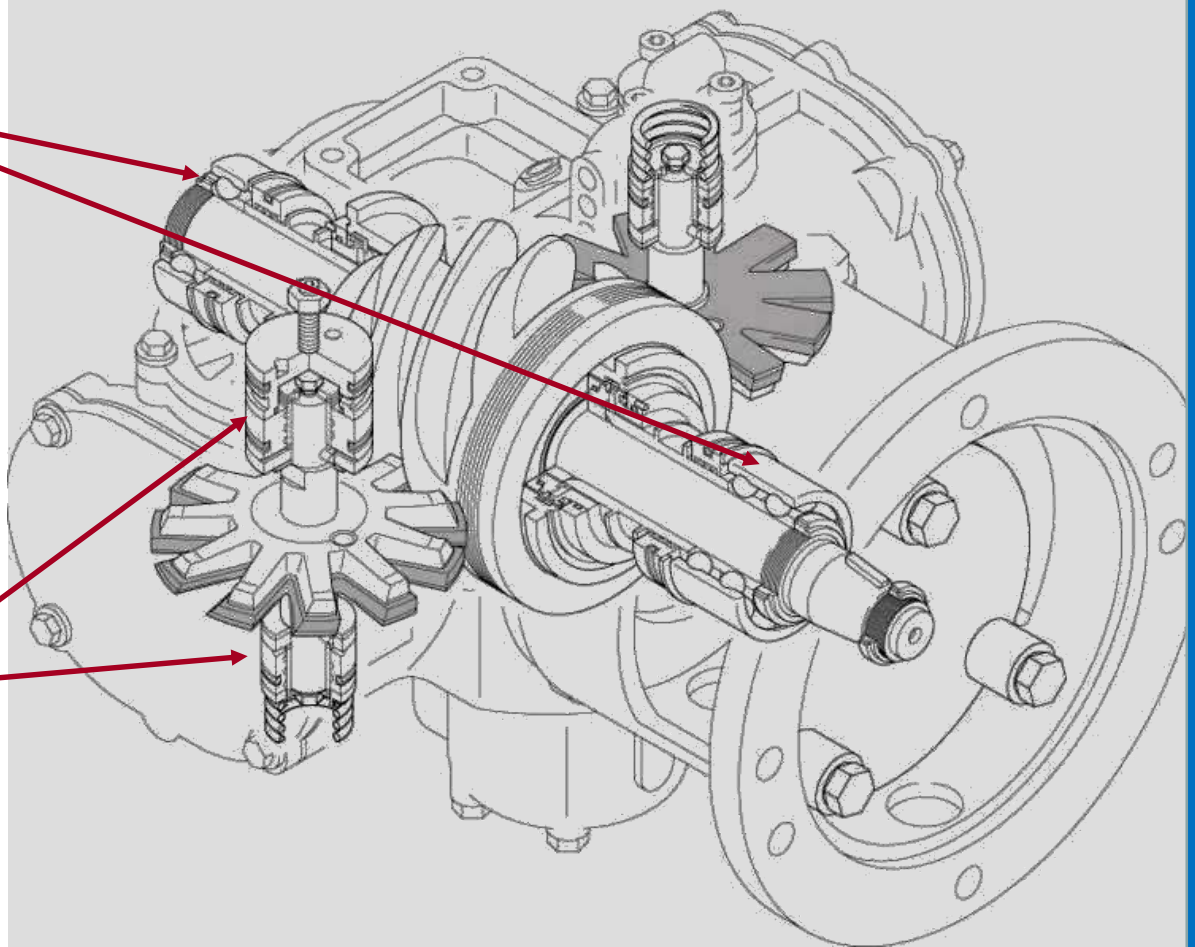
- ★ Delivers 12 pulses of air per revolution compared with 6 pulses for a conventional screw.
- ★ No metal to metal mating parts and low pulsation levels equate to low vibration and noise levels



Compression Element

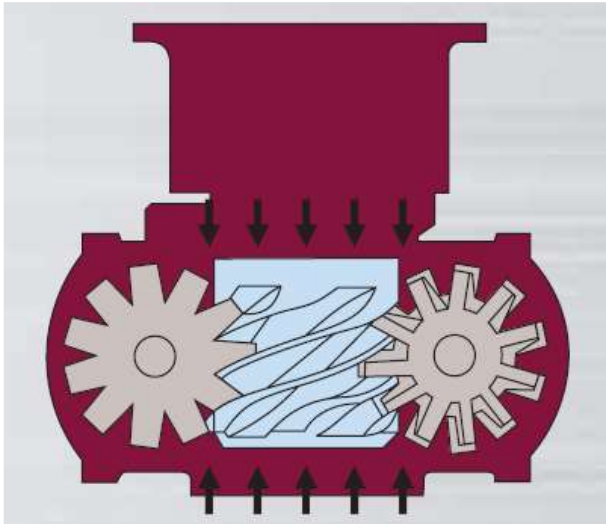
Sealed grease lubricated
main rotor bearings (3)

Water lubricated gate
rotor bearings

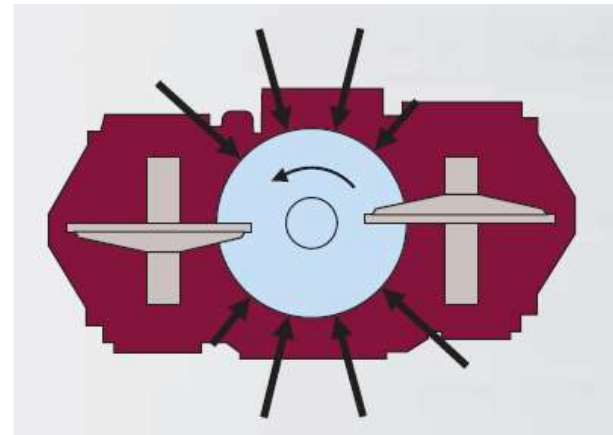


Extended Compression Element Life

Low speeds and greatly reduced bearing loads extend bearing and compression element life



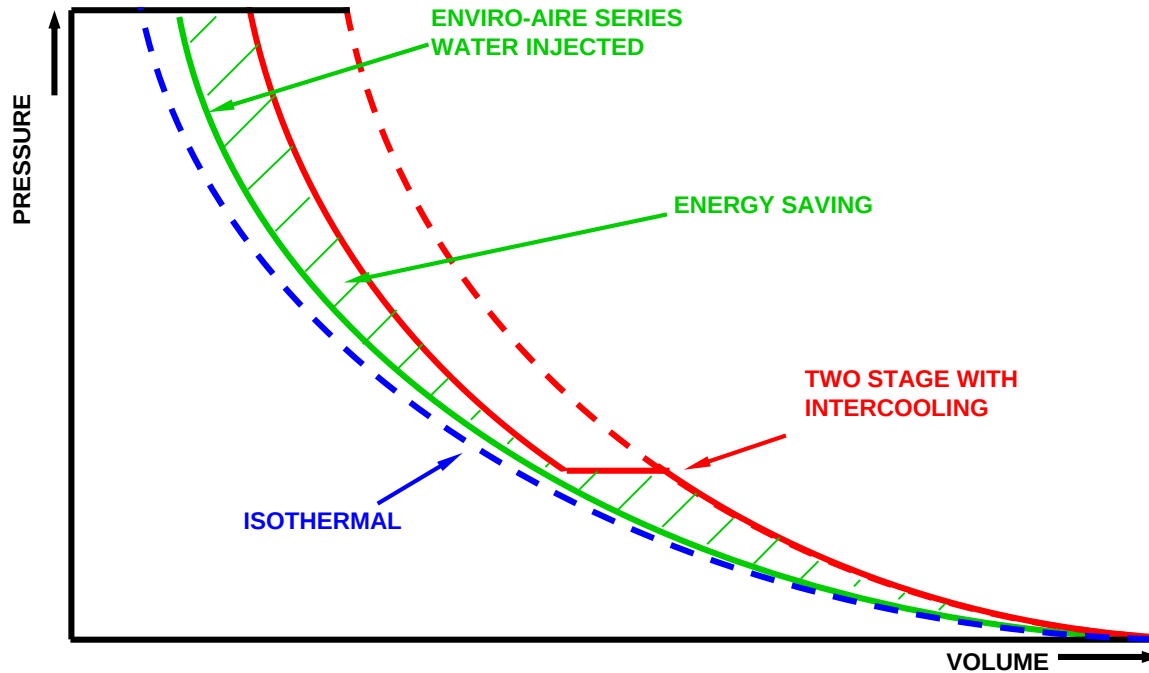
Axial loads are balanced within the rotor flute



Radial loads are balanced either side of the main rotor



Near Isothermal Compression



COMPRESSION DIAGRAM

Temperature rise in other compressor technologies are as follows:

Water injected screw compressors - 60°C (108°F)

Oil-free hook or screw compressors - 135°C (241°F)



How it works



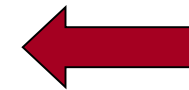
Compressed air

Water in and out

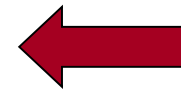


Air Cooling System - How it works

Air flow



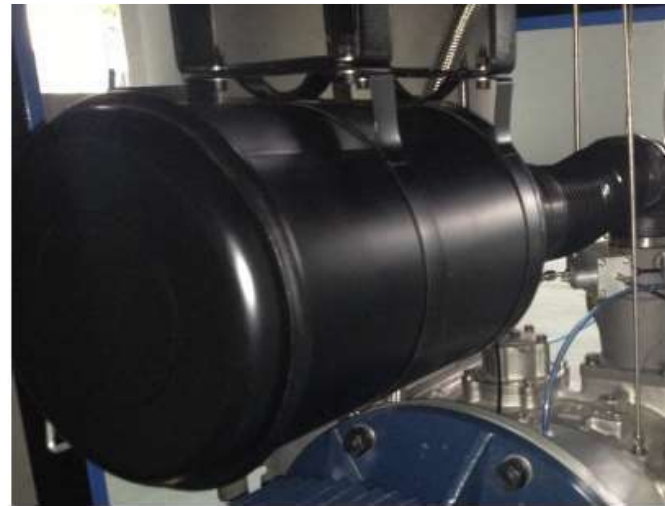
Air flow



How it works

Compact air filter

- Protect water, protect components of air end
- Dedusting
- Easy to change by hand, no tools required.



How it works

Direct driven

- Different brand motor available
- Direct driven make higher transmission efficiency



How it works

High efficient unloading valve

- No spring
- Easy to maintain
- Easy to adjust
- Smooth unloading



How it works

Solenoid valve, sensor and heat exchanger

- Denmark imported **DANFOSS** solenoid valve and Italy imported **ODE** solenoid valve
- Denmark imported **DANFOSS** pressure sensor and temperature sensor
- Denmark imported **DANFOSS** plate heat exchanger



How it works

Water filter

- Water filter is the standard configuration of water cycle system, it keeps the water cycle system clean, provides clean and fresh water for lubricating screw
- Full flow water filter, it always keeps 10um filter fineness through its 1000H service life



How it works

Pipelines

- Stainless steel pipelines
- Tidy
- No corrosion
- No pollution
- Reliable



How it works

Cooler

- Made by copper
- High cooling ability ensure isothermal compression
- Ensure machine to work normally in high temperature environment



Maintenance

- **Daily:** Check water level before starting and during operation, Check intake and discharge temperature, Check loading and unloading pressure.
- **Weekly:** Check if water leakage, Clean machine, Check resistance of water filter element.
- **Every 3 month:** Check safety valve, Check cooler or clean it if necessary, Check and clean air filter element
- **Yearly:** Check contact thermometer/electric system/safety valve, Change air filter element, Check flexible coupling, Change water filter element, Feed motor with grease.



After Market: Reduced Maintenance

- Control system monitors service intervals and provides warnings of service requirements
- Servicing limited to changing filter elements
- No oil, oil filter or oil disposal maintenance costs

Every year 2,000 - 4,000 hours	Replace air inlet filter, replace water filters and replace RO pre-filter
Every 8,000 hours	Check water level switch and service discharge check valve
Every 16,000 hours	Replace RO membrane, service inlet valve, and service water solenoid valves
Every 36,000 hours	Replace airend



After Market: Minimising Maintenance

Simplicity of Construction

- Significantly fewer moving parts
- Less to maintain
- Less can go wrong

Robust & Reliable Construction

- Balanced bearing loads
- Main rotor change at 36-48,000 hrs
- Competition 24,000 - 40,000 hrs

Component	EnviroAire	2 Stage Screw
Compression Elements	1	2
Gears	0	7
Bearings	7	19
Seals (air/oil/water)	2	17
Oil Pump	0	1
Oil Cooler	0	1
Oil Filter	0	1
Oil	No	Yes
Interstage Cooler	0	1
Water Filter	1	0
Water Cooler	1	0
RO Filter	1	0
Temperature	60	more than 140
Rotational Speed	less than 3,700	10,000 - 20,000
Pressure Transducers	2	3
Temp Sensors	1	4



SELLING THE BENEFITS

True oil-less design; even an oil-free designed machine can have oil issues!



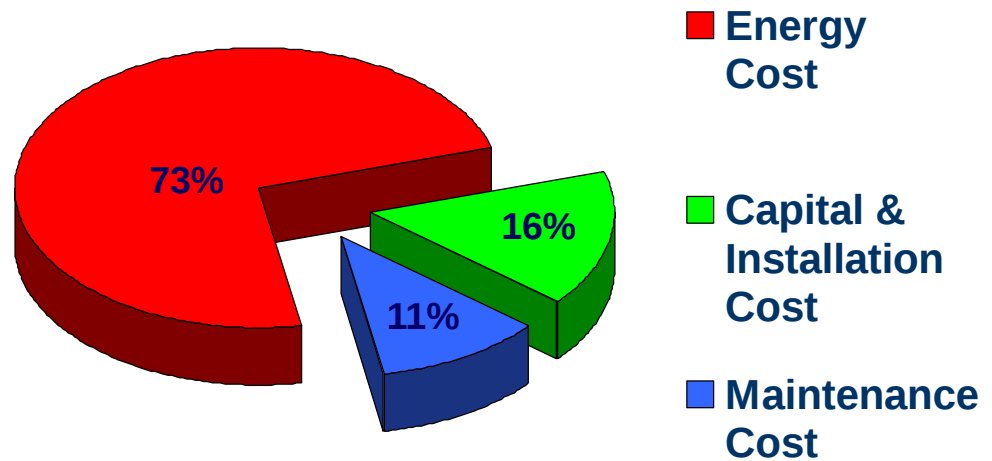
SELLING THE BENEFITS

Component	Two Stage Oil-Free Dry Screw	EnviroAire Series Water Injected
Compression Elements	2	1
Gears	7	0
Bearings	19	7
Seals (air / oil / water)	17	2
Oil Pump	1	0
Oil Cooler	1	0
Oil Filter	1	0
Oil	1	0
Water Filter	0	1
Oil Pressure Regulator	1	0
Interstage Air Cooler	1	0
Final Air Cooler	1	0
Water Cooler	0	1
Rotational Speed - rpm	10,000 to 20,000	2960 or 3580
Pulsation Dampeners / Silencers	2	0
Blowdown Silencer	1	0
Pressure Relief Valves	2	1
Moisture Separators	2	1
Condensate Drain Traps	2	0
Pressure Transmitters	3	2
Temperature Sensors	4	1

SELLING THE BENEFITS

Sell this product on the basis of lower life cycle costs than our competitors

- Energy Cost
- Maintenance Cost
- Capital Cost
- Installation Cost



Cost of ownership based on 60,000 operating hours



THANKS FOR YOUR ATTENTION !

