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Ajax™ Integral Engine-Compressors

October 13, 2017

Ajax Integral Engine-Compressors

- Products range from 147 to 845 hp (110 to 630 kW), compressor cylinder pressure up to 5,500 psig (379 bar).
- Offers up to six ratios per stage, high compressor rod loads and large variable clearance pockets for a wider range of flexibility and applications.
- Integral design, conservative operating speed (440 rpm), large compressor cylinder valves and low gas velocities allows Ajax integrals to move *more gas per horsepower* than any competitive product.

Ajax is the premier product for UPSTREAM and MIDSTREAM applications.

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Versatile Applications

Gas Boosting

Gas Gathering

Coal Bed Methane

Gas Storage & Transmission

C_3H_8, He, C_2H_4, H_2, CO_2

Gas Lift & Reinjection

Fuel Gas Boosting

Ajax Integral Engine-Compressors

- Ajax is the only integral engine-compressor on the market today. Overall it will lower operating costs and maintenance expenses by being robust and simple.
- Improvements over the years have added to the strength and simplicity of the original design. Our purpose is to help fuel the future by understanding your business, anticipating industry needs, and improving your net outcome.

With Ajax, we will lower production cost while increasing quality and availability

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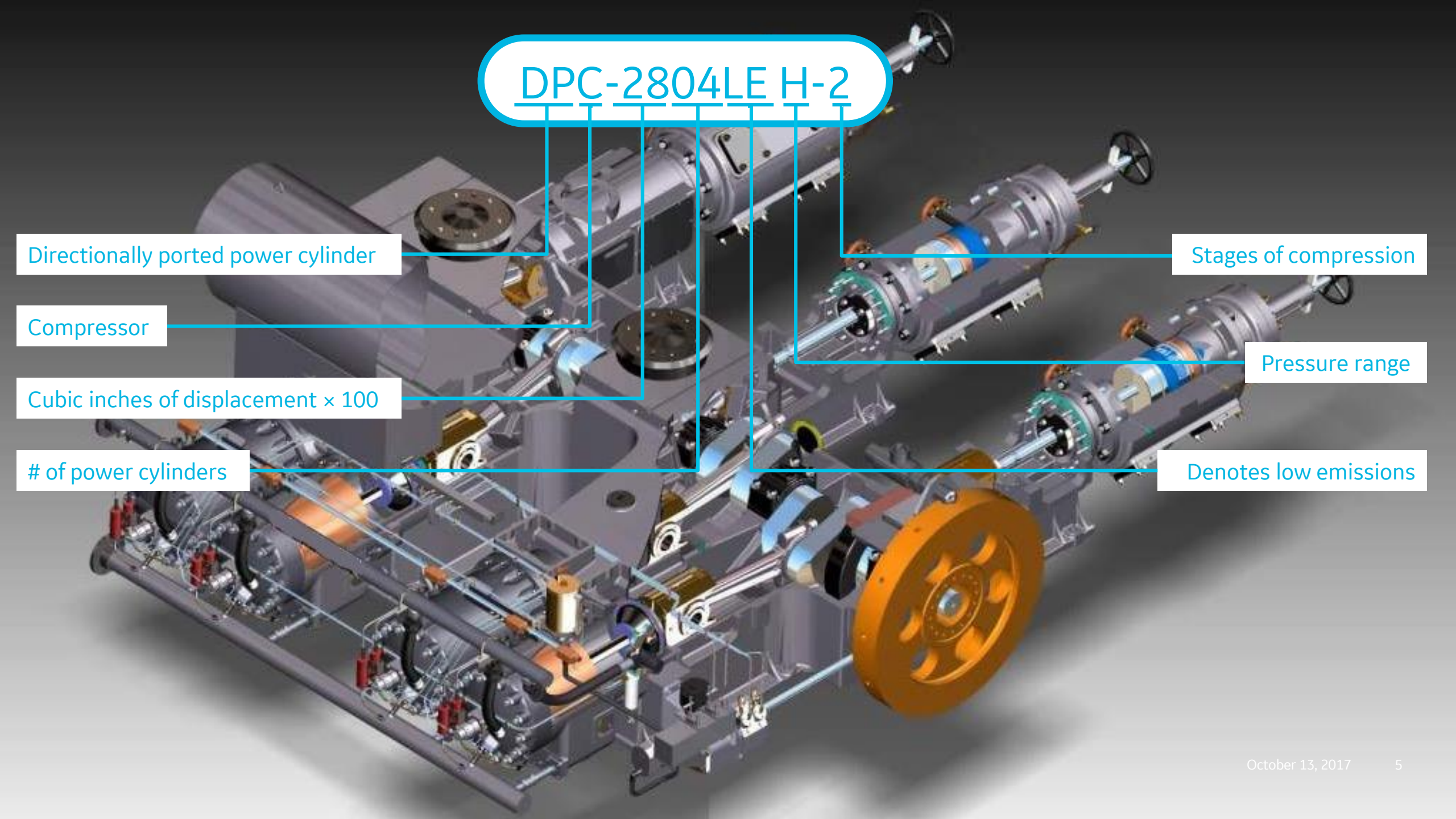
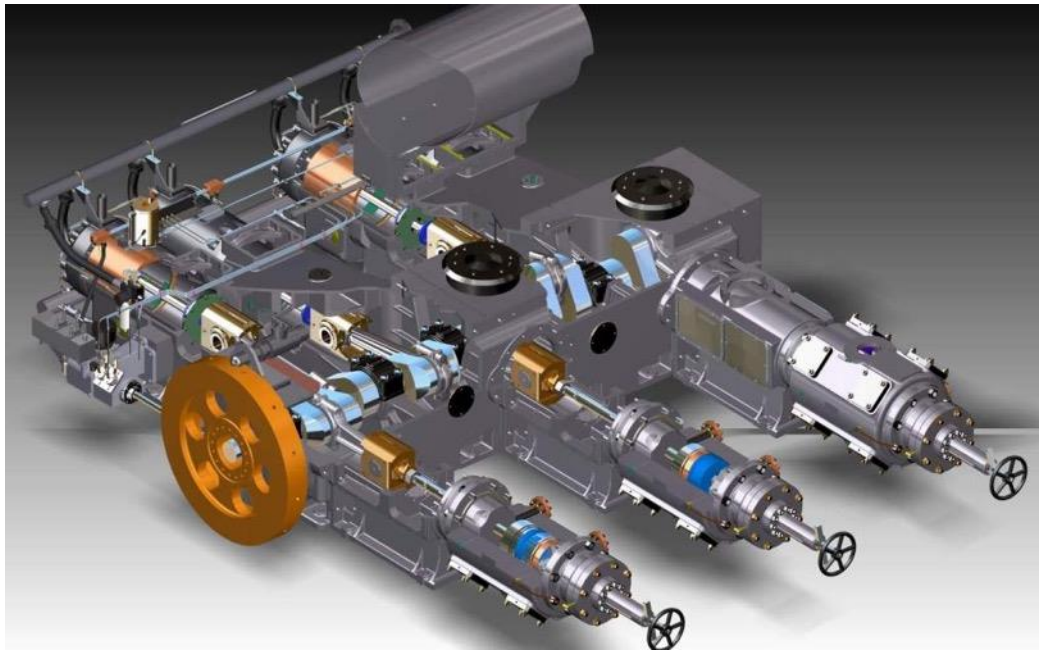

DPC-2804LE H-2
Directionally ported power cylinder
Compressor
Cubic inches of displacement × 100
# of power cylinders
Stages of compression
Pressure range
Denotes low emissions

Ajax Advantages

- Integral engine-compressor designed with crossheads on engine & compressor ends
- High rod-load, high cylinder working pressure for flexibility
- Choice of 42 different compressor cylinders
- Standard poppet valves offer low gas velocities for long life & high performance
- Complete OEM package
- Discharge pressure to 5,500 psig (379 bar)
- Portable package solutions



Ajax Integral Engine-Compressor Line

Overview






		DPC-2201	DPC-2202	DPC-2801	DPC-2802	DPC-2803	DPC-2804
Model							
Power[a] bhp (kWb)							
BSFC Btu/bhp-hr							
NOx g/bhp-hr							
Speed Range rpm							
Minimum Speed rpm							
Maximum Speed rpm							
Power Cylinders number							
Compressor	Number of Throws						
	Rod Load lb (kN)						
	Rod Diameter in (mm)						
	Stroke in (mm)						

Why Ajax

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Advantages of Two vs. Four Stroke Engines
2 Cycle Offers:

Fewer parts

- Camshafts
- Intake and exhaust valves
- Push rods
- Valve springs
- Rocker arms
- Tappets
- And more…

Sealed crankcase

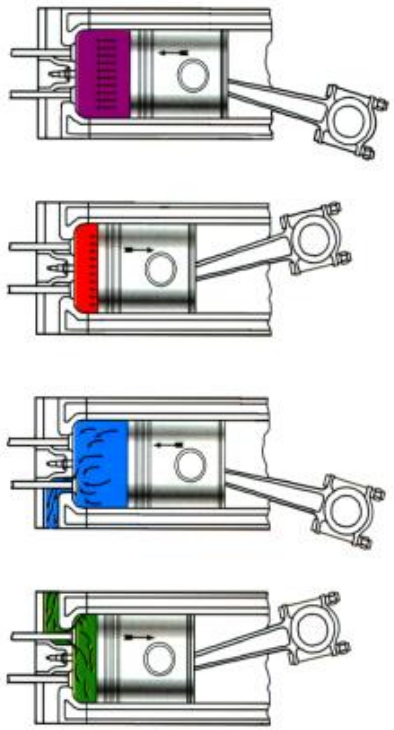
- Longer bearing life
- Annual vs monthly oil changes
- H_2S fuel gas tolerant
- Full warranty available to 3%
- Hard iron power cylinders

Advantages of Two vs. Four Stroke Engines

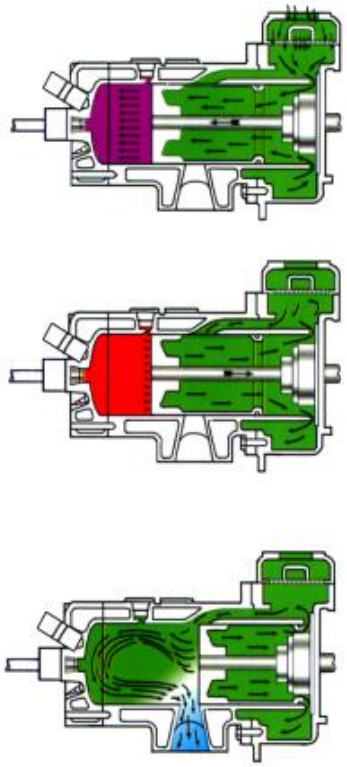
Benefits

- Power stroke every revolution
- Simple design with fewer moving parts
- Less “side loading” of piston
- Less contamination of crankcase
- Low maintenance cost
- | cost for oil change

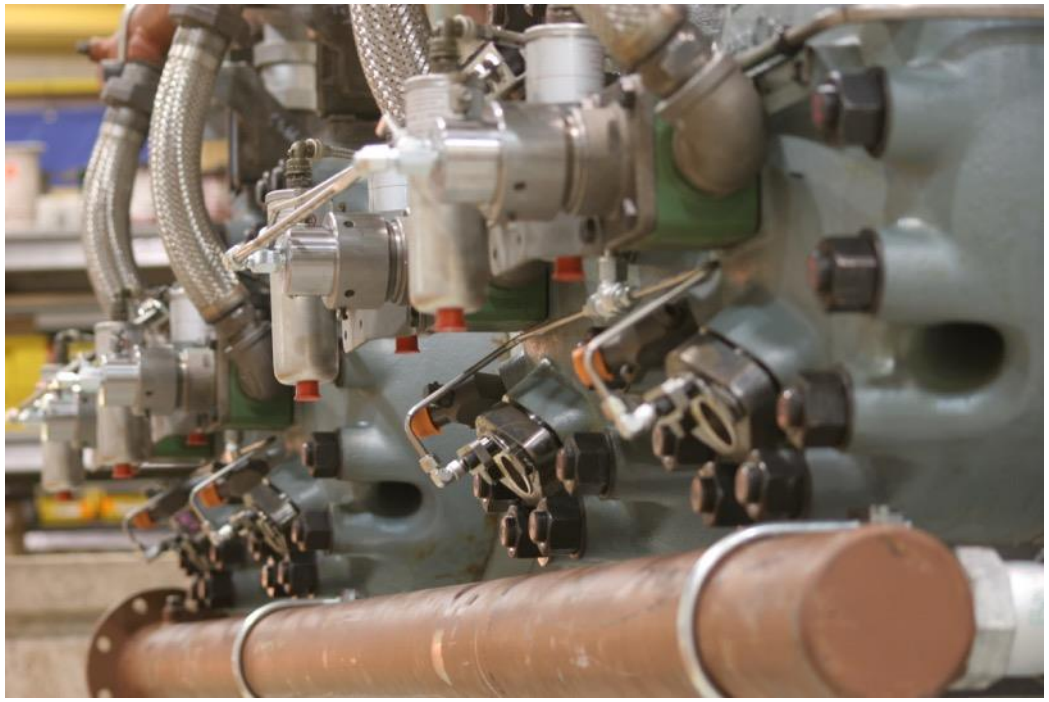
Four cycle



Two cycle



Advantages of Two vs. Four Stroke Engines



Benefits

- Less internal component stress (BMEP) parts last longer
- Lower exhaust temperatures
- Lower formation of NOx emissions
- Increased fuel tolerances

Lowest RPM & BMEP in the industry

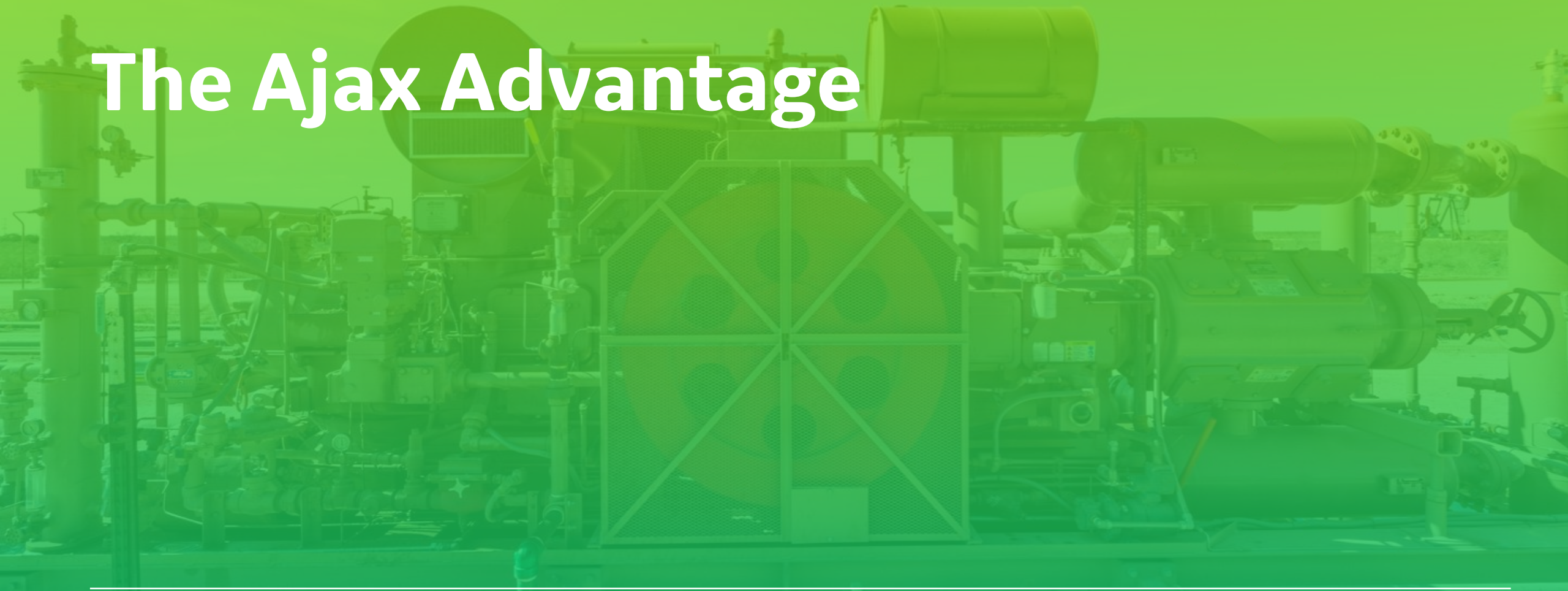
	RPM	BMEP
Ajax	440	63
Caterpillar	1,200-1,800	160-170
Waukesha	1,200-1,800	137-139

Advantages of Integrals vs. Separables

Highest parts interchangeability between models in the industry

- All units DPC-2200, DPC-2800 share common crossheads, compressor guides, pins, bushings.
- All units share same power cylinder components among bore sizes.
- DPC-2201/02 STD & LE use common power cylinder.
- DPC-2801/02/03/04 STD & LE use common power cylinder.
- Common power pistons, heads fuel systems for LE models.
- Common power pistons, heads fuel systems for STD models.
- All units share same class compressor cylinders.
- All units share interchangeable poppets and springs.
- Interchangeable list = **lower stocking levels**

The Ajax Advantage



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Oil Maintenance Comparisons

Manufacture		CAT | ARIEL Separable Engine – Compressor	Ajax Integral Engine – Compressor
Model:	CAT Engine	G3512LE	**DPC-2804LE**
	ARIEL Compressor	JGE/4	
Engine Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	89	95
	Lube Oil Cost (USD/gal)	$17.11	$13.84
	Oil Change Per Year	8	2
	Cost Per Change	$1,522.79	$2,629.60
Yearly Cost: Five Year Cost:		$12,182.32 $60,911.60	$2,629.60 $13,148.00
Compressor Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	37	-
	Lube Oil Cost (USD/gal)	$13.47	-
	Oil Change Per Year	2	-
	Cost Per Change	$498.39	-
Yearly Cost: Five Year Cost:		$996.78 $4,983.90	$0 $0
Total Annual Costs: Total Five Year Costs:		$13,179.10 $65,895.50	$2,629.60 $13,148.00

DPC-2804LE
Mobil Pegasus Special CF:
$761.41/drum
55 gal/drum
4,320 hr/service

CAT 3512LE
CAT Engine Oil:
$941.21/drum
55 gal/drum
1,000 hr/service

ARIEL JGE/4
Mobil Pegasus 805:
$740.79/drum
55 gal/drum
4,000 hr/service

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Ajax Saves You…

Oil changes for an 800 hp

- 2 stroke engine vs. 4 stroke engine
- Annually = **$10,550**
- Over 5 years = **$52,748**

Oil Maintenance Comparisons

Manufacture		CAT | ARIEL Separable Engine – Compressor	Ajax Integral Engine – Compressor
Model:	CAT Engine	G3508LE	**DPC-2803LE**
	ARIEL Compressor	JGE/4	
Engine Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	61	58
	Lube Oil Cost (USD/gal)	$17.11	$13.84
	Oil Change Per Year	8	2
	Cost Per Change	$1,043.71	$1,605.44
Yearly Cost: Five Year Cost:		$8,349.68 $41,748.40	$1,605.44 $8,027.20
Compressor Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	37	-
	Lube Oil Cost (USD/gal)	$13.47	-
	Oil Change Per Year	2	-
	Cost Per Change	$498.39	-
Yearly Cost: Five Year Cost:		$996.78 $4,983.90	$0 $0
Total Annual Costs: Total Five Year Costs:		$9,346.46 $46,732.30	$1,605.44 $8,027.20

DPC-2803LE
Mobil Pegasus Special CF:
$761.41/drum
55 gal/drum
4,320 hr/service

CAT 3508LE
CAT Engine Oil:
$941.21/drum
55 gal/drum
1,000 hr/service

ARIEL JGE/4
Mobil Pegasus 805:
$740.79/drum
55 gal/drum
4,000 hr/service

Ajax Saves You…

Oil changes for a 600 hp

- 2 stroke engine vs. 4 stroke engine
- Annually = **$7,741**
- Over 5 years = **$38,705**

Oil Maintenance Comparisons

Manufacture		CAT | ARIEL Separable Engine – Compressor	Ajax Integral Engine – Compressor
Model:	CAT Engine	G3412C (LE)	**DPC-2802LE**
	ARIEL Compressor	JGE/2	
Engine Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	45	30
	Lube Oil Cost (USD/gal)	$17.11	$13.84
	Oil Change Per Year	11	2
	Cost Per Change	$769.95	$830.40
Yearly Cost: Five Year Cost:		$8,469.45 $42,347.25	$830.40 $4,152.00
Compressor Sump Capacity Lube Oil Replacement:	Crankcase Capacity (gal)	15	-
	Lube Oil Cost (USD/gal)	$13.47	-
	Oil Change Per Year	2	-
	Cost Per Change	$202.05	-
Yearly Cost: Five Year Cost:		$404.10 $2,020.50	$0 $0
Total Annual Costs: Total Five Year Costs:		$8,573.55 $44,367.75	$830.40 $4,152.00

DPC-2802LE
Mobil Pegasus Special CF:
$761.41/drum
55 gal/drum
4,320 hr/service

CAT 3412LE
CAT Engine Oil:
$941.21/drum
55 gal/drum
750 hr/service

ARIEL JGE/2
Mobil Pegasus 805:
$740.79/drum
55 gal/drum
4,000 hr/service

Ajax Saves You…

Oil changes for a 400 hp

- 2 stroke engine vs. 4 stroke engine
- Annually = **$7,743**
- Over 5 years = **$40,216**

Performance @ Same Flow

	Compression Horsepower	Unit Flow	MAX Flow Rate	Natural Gas Prices
DPC-2804LE	766.1 chp	119.7 chp/MMscfd	6.4 MMscfd	$4.53 /Mscf
High Speed Compressor	816.6 chp	127.6 chp/MMscfd	6.4 MMscfd	$4.53 /Mscf

Fuel Consumption Cost @ Constant Flow Rate	$232,929/yr	Ajax
	$246,368/yr	HSC

Mscf (Thousand Standard Cubic Feet)
MMscfd (Million Standard Cubic Feet a Day)
(standard = 14.7 psia @ 60°F)

Pressure Suction 40 psig
Pressure Discharge 350 psig
Ambient Temp 100°F

Ajax Saves You…

Fuel consumptions at same flow

- Annually = **$13,439**

- Over 5 years = **$67,195**

Performance @ Same Flow

	Compression Horsepower	Unit Flow	MAX Flow Rate	Natural Gas Prices
DPC-2803LE	573.2 chp	157.5 chp/MMscfd	3.6 MMscfd	$4.53 /Mscf
High Speed Compressor	602.7 chp	167.4 chp/MMscfd	3.6 MMscfd	$4.53 /Mscf

Fuel Consumption Cost @ Constant Flow Rate	$172,396/yr	Ajax
	$192,164/yr	HSC

Mscf (Thousand Standard Cubic Feet)
MMscfd (Million Standard Cubic Feet a Day)
(standard = 14.7 psia @ 60°F)

Pressure Suction 25 psig
Pressure Discharge 450 psig
Ambient Temp 100°F

Ajax Saves You…

Fuel consumptions at same flow

- Annually = **$19,768**

- Over 5 years = **$98,840**

Performance @ Same Flow

	Driver Compression	Unit Flow	MAX Flow Rate	Natural Gas Prices
DPC-2802LE	368.3 bhp	131.5 bhp/MMscfd	2.8 MMscfd	$4.53 /Mscf
High Speed Compressor	395.2 bhp	141.1 bhp/MMscfd	2.8 MMscfd	$4.53 /Mscf

Fuel Consumption Cost @ Constant Flow Rate	$112,395/yr	Ajax
	$128,057/yr	HSC

Mscf (Thousand Standard Cubic Feet)
MMscfd (Million Standard Cubic Feet a Day)
(standard = 14.7 psia @ 60°F)

Pressure Suction 20 psig
Pressure Discharge 250 psig
Ambient Temp 100° F

Ajax Saves You…

Fuel consumptions at same flow

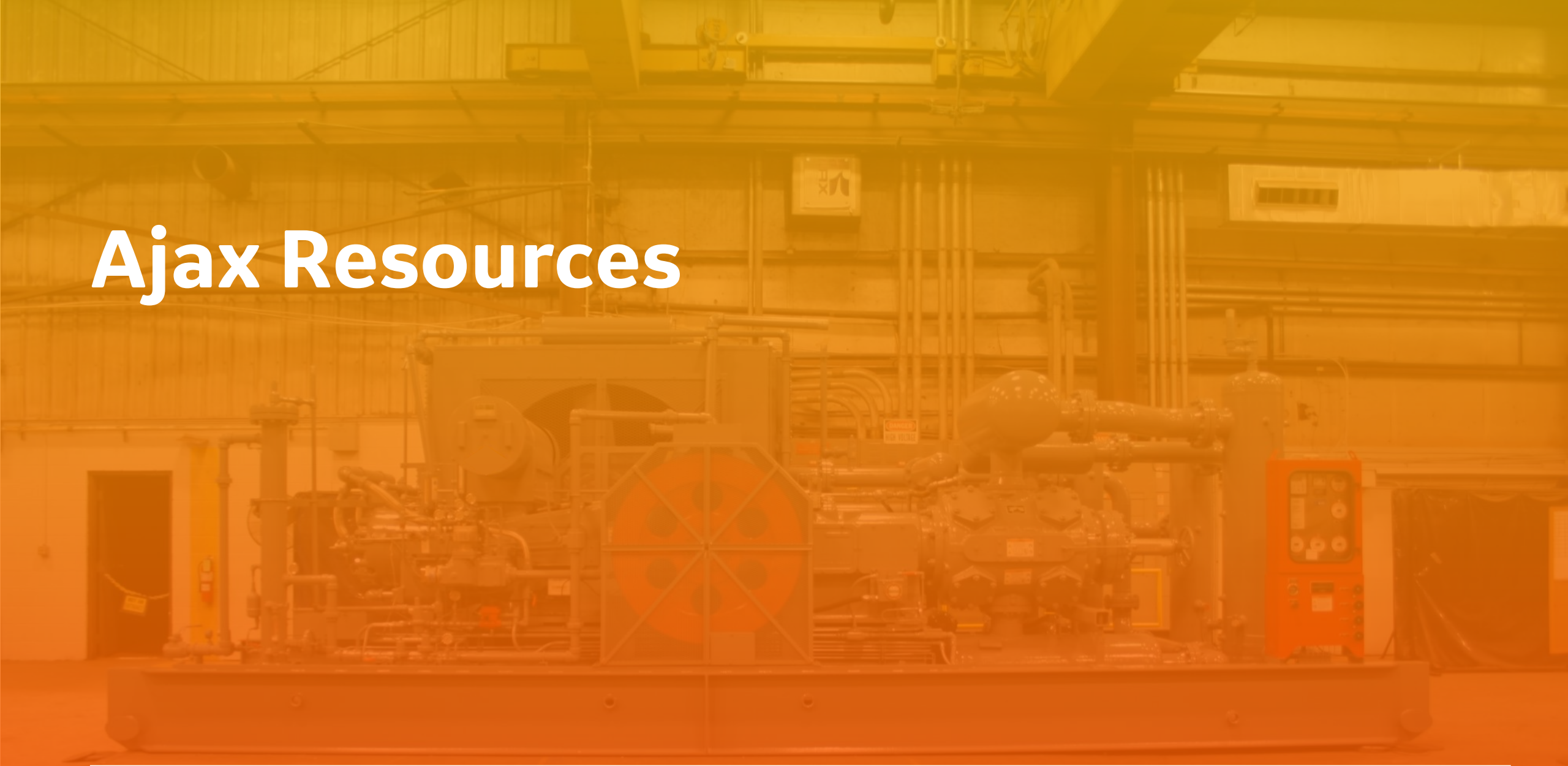
- Annually = **$15,662**

- Over 5 years = **$78,310**

Total Savings Summary

Model	2804	2803	2802
Oil Changes	$10,550	$7,741	$7,743
Fuel Savings at Same Flow	$13,439	$19,768	$15,662
Annual Savings	$23,989	$27,509	$ 23,405
5 Year Savings	$119,945	$137,545	$117,025

Ajax Resources



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Ajax Resources

- Product page
  www.bhge.com/ajax
- Brochure
  Paragraphics http://www.para-inc.com/POSN/Login.aspx
- Fact sheets
  www.bhge.com/ajax and Paragraphics
- Value calculator
  TBD
- PowerFlow
  www.engageрecip.com


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