

# Innovative Blower Technology

Energy & Noise Benefits for the Milling Industry

# Positive Displacement – Twisted Tri-Lobe

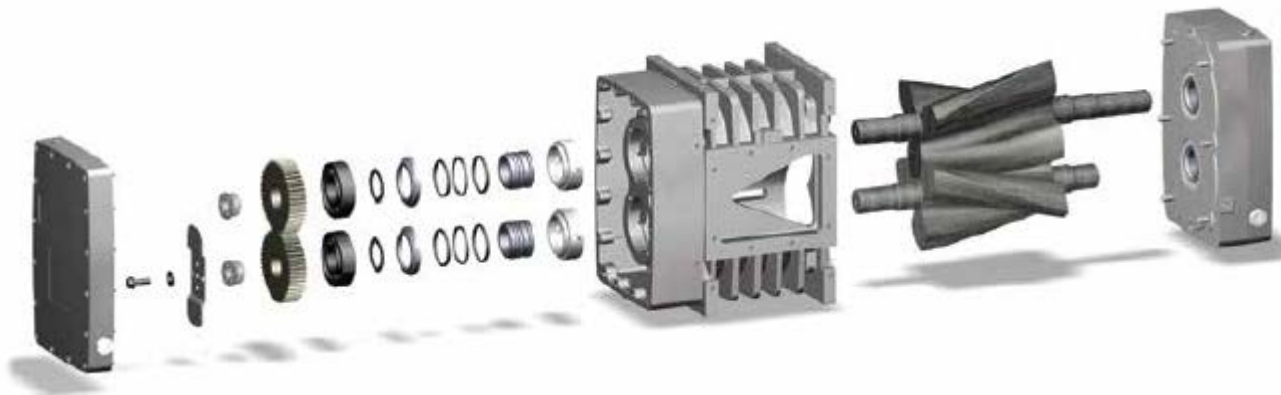
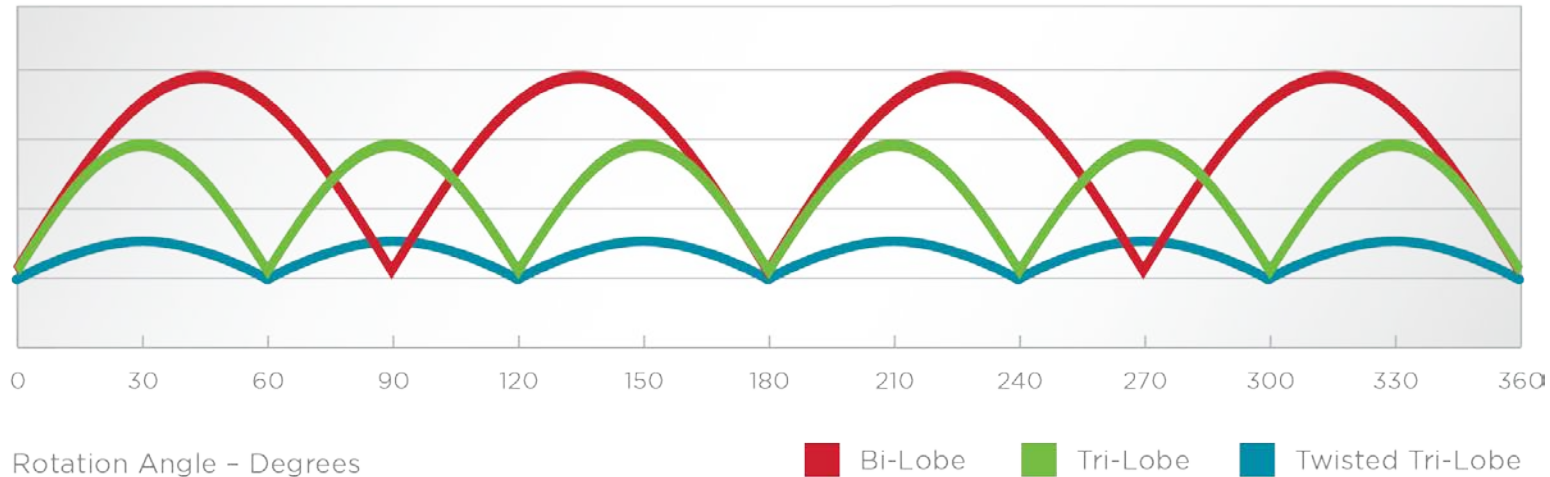
- Better performance for higher revenue
- Durable, rugged construction reduces maintenance and down time
- Greater efficiency lowers operating cost
- Triangular tuned ports reduce noise
- Noise reduced by 4-7 dBa



Technology	Specifications		
Twisted Tri-Lobe	UP TO		
	4,800	CFM	<div></div>
	15	PSI	<div></div>
	17	inHg	<div></div>

# Positive Displacement – Twisted Tri-Lobe

REDUCED PULSE = LOWER NOISE = QUIETER OPERATION

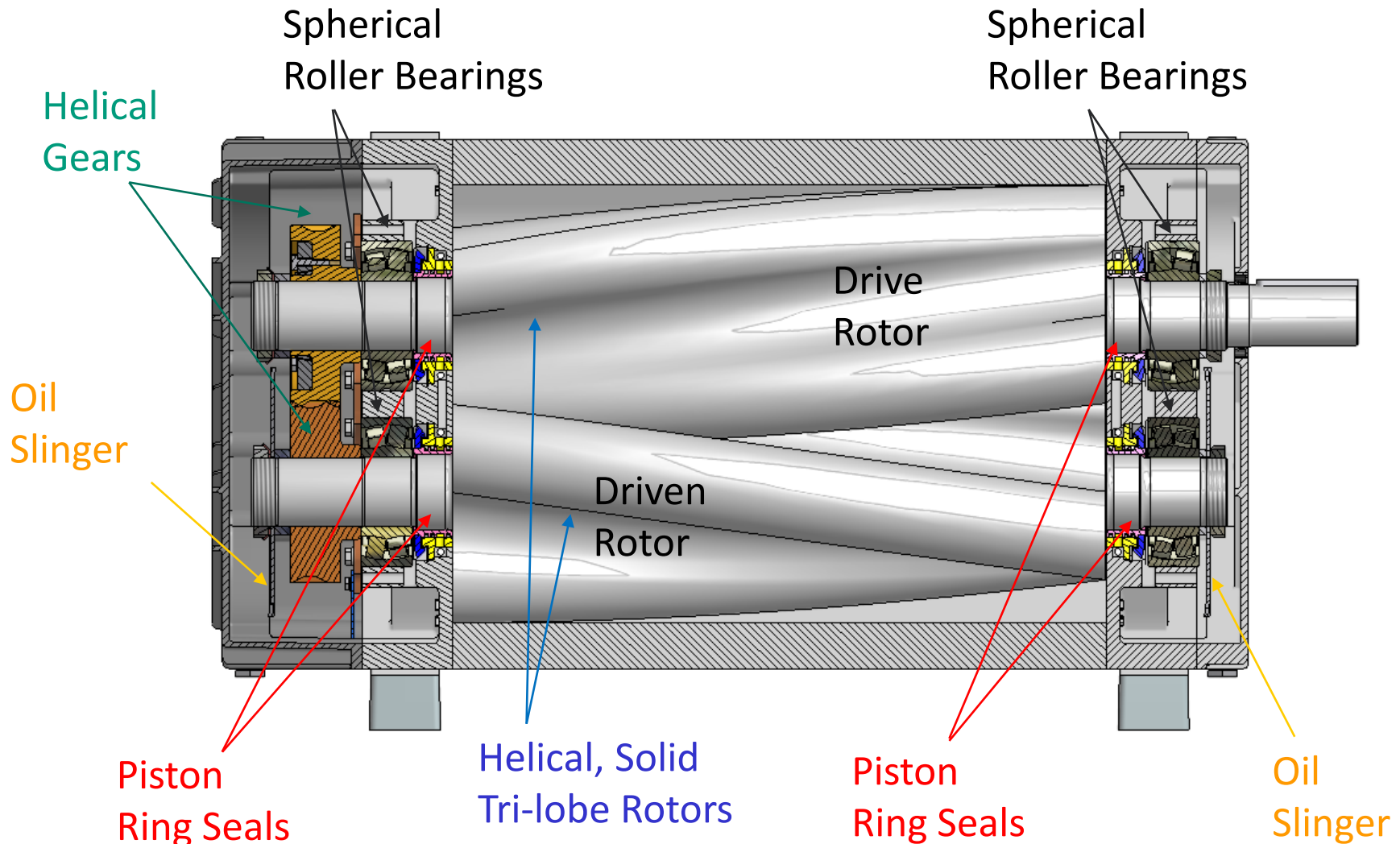


# A Quieter, Safer Work Environment

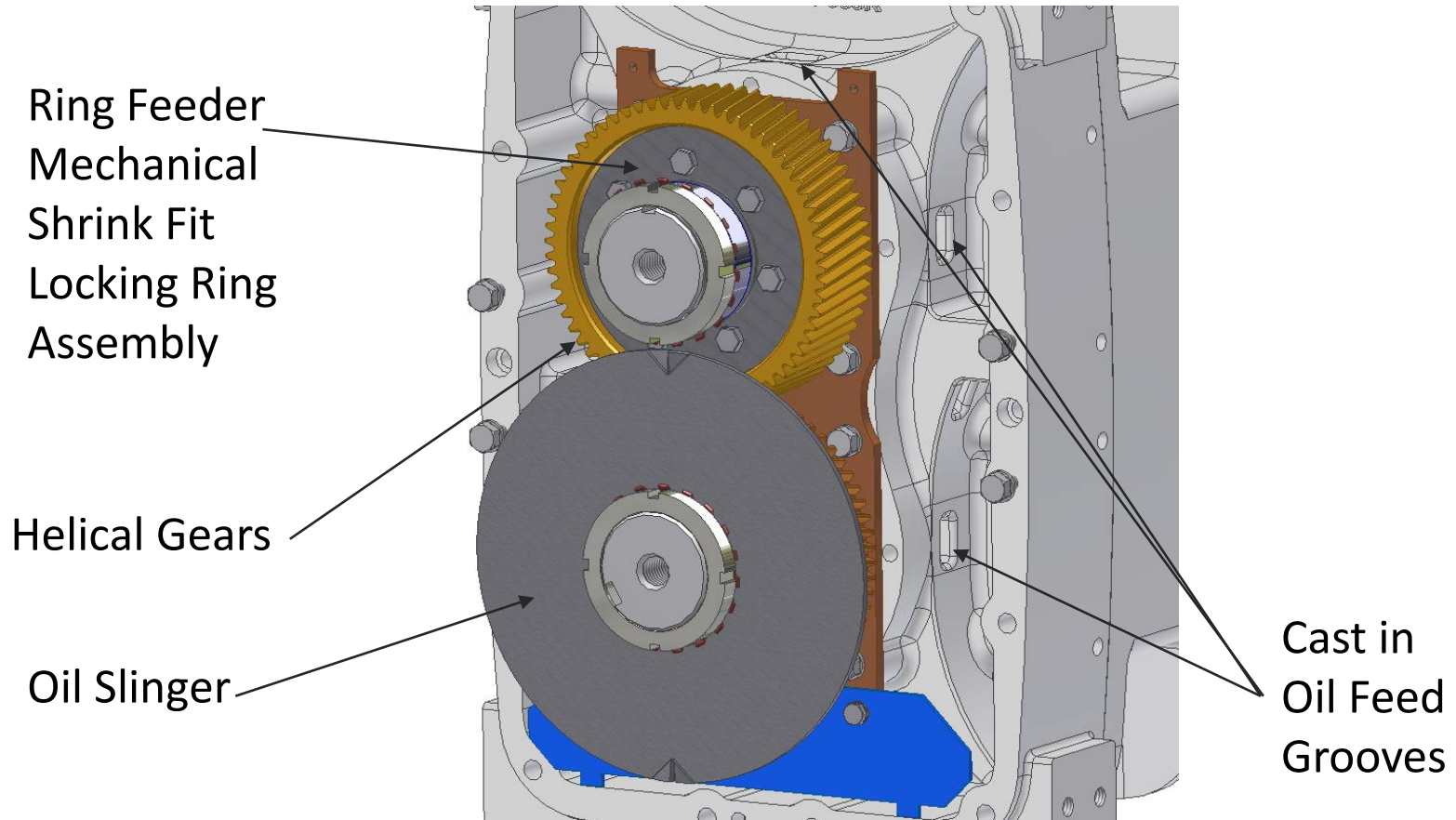
- Customer – JM Huber Corp. - Huber Engineered Materials
- Location – Quincy, Illinois
- Application – Noise Reduction
- Technology – Twisted Tri-Lobe
- Customer Benefits
  - Significant Noise Reduction
  - Better Efficiency
  - Innovative Design
  - Increased Performance
  - Superior Durability & Longevity



# 6" Twisted Lobe Cross Section



# 6" Twisted Lobe Timing Gear Assembly





# Twisted Tri-Lobe vs Traditional Bi-Lobe

## Payback Calculator

### Enter Data in Yellow Cells

Client / Project:

Date:

July, 1 2019

### Blower / Vacuum Pump Data

#### Existing / Option A

#### Proposed / Option B

Quantity	1	1
Model	Solid Lobe Bi-Lobe	Twisted Tri-Lobe
Unit Cost	\$6,396	\$9,694

### System Operating Data & Costs

#### Average kWh Cost-->

\$0.10

Hours per Day	24	24
Days per Week	7	7
Weeks per Year	52	52
Operating Hours per Year (Existing vs Proposed)	8,736	8,736
Unit BHP	63	60
Power (Kilowatts)	47	45
Total Kilowatt Hours / Total System	411,712	391,518
Annual Energy Costs	\$41,171	\$39,152
Annual Operation and Maintenance Costs	0	0
Annual Operating Costs	\$41,171.23	\$39,151.75

### Project Implementation Costs

Total Equipment (premium for Option B)	\$3,298
Installation Estimate (extra required for Option B)	\$0
Rebate (from utility companies)	\$0
Total Project Cost Adder for Option B	\$3,298.00

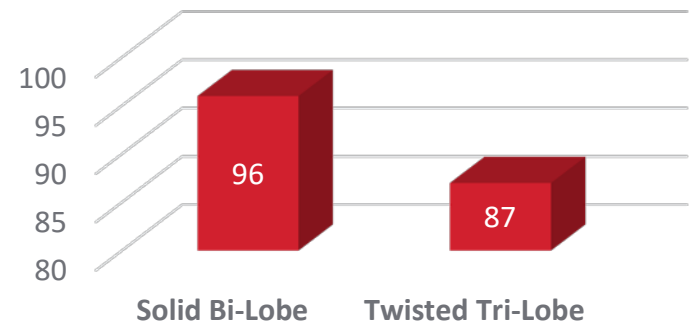
### Project Payback Analysis

Annual Operating Costs Savings	\$2,019
Annual Depreciation <input type="text" value="0%"/> of equipment	\$0
Annual Cost Savings after Depreciation	\$2,019
<b>Simple Payback in Years</b>	<b>1.63</b>
Life Cycle Savings based on <input type="text" value="10"/> Years	\$20,195

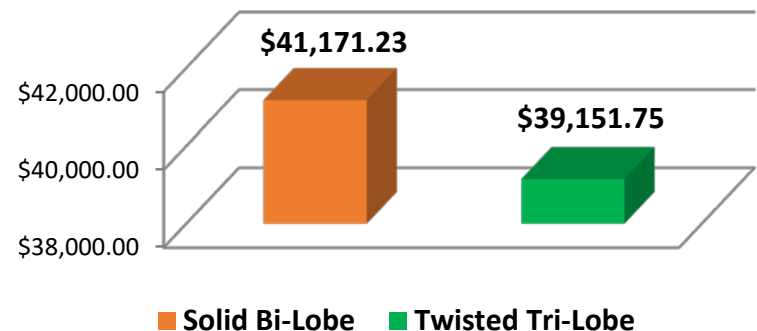
836 ICFM

12 PSI

DBA



## Annual Operating Costs

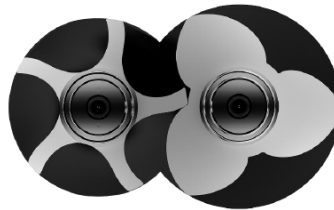


# What's more efficient than Twisted Tri-Lobe technology?

- Traditional Rotary Screw for PD Blowers – 2x4 Rotor Profile



- Rotary Screw with 3x5 Rotor Profile



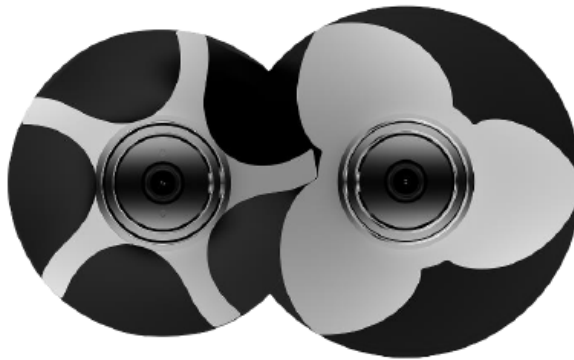
- 3x5 Variable Helix Rotor Profile





# High Efficiency Rotary Screw

- 3x5 Fixed Helical Rotor Profile
  - Higher efficiencies vs 2x4
  - Food Grade PTFE Teflon coating
  - Pressure capabilities up to 36 psig, 22 Hg
  - Flow rates up to 6200 cfm



# Performance Comparison – 160CDL480

	CFM	7.5 PSIG		15 PSIG		20 PSIG	
		POWER HP	POWER SAVINGS	POWER HP	POWER SAVINGS	POWER HP	POWER SAVINGS
160CDL480	1650	58.3	-	108.6	-	139.8	-
7CDL17		66.5	12%	126.7	14%	170.1	18%
ROOTS 715J		73.7	21%	150.7	16%	-	-
160CDL480	1400	50.4	-	94.4	-	122.5	-
7CDL14		56.3	10%	108.7	13%	147.0	17%
ROOTS 715J		63.3	20%	132.5	29%	-	-
160CDL480	1050	40.0	-	74.7	-	98.6	-
7CDL11		44.7	11%	90.2	17%	123.1	20%
ROOTS 715J		49.6	19%	107.6	31%	-	-

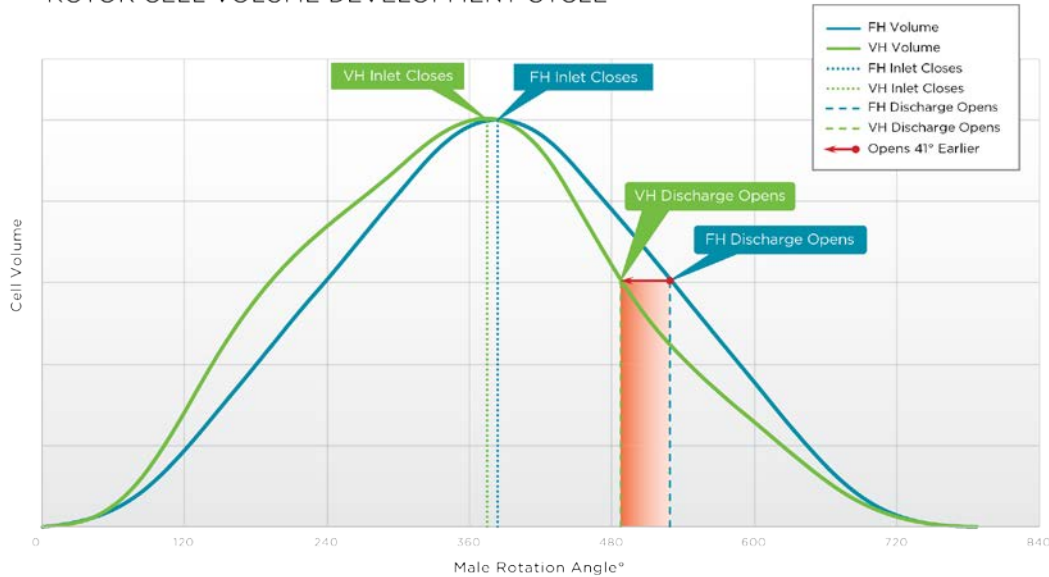
# Variable Helix Rotary Profile

- 3x5 Variable Helix Screw
  - Airflow to 775 cfm
  - Pressure to 20 psig
  - Vacuum to 18 in. Hg
- **Why Variable Helix?**
  - Faster Internal Compression
  - Significantly Larger Discharge Port
  - Eliminates Air Losses
  - Higher Efficiencies
  - More Efficient Turndown
  - Patent-Pending Design
  - **SAVE UP TO 35% on Energy Costs**



# How Does It Work?

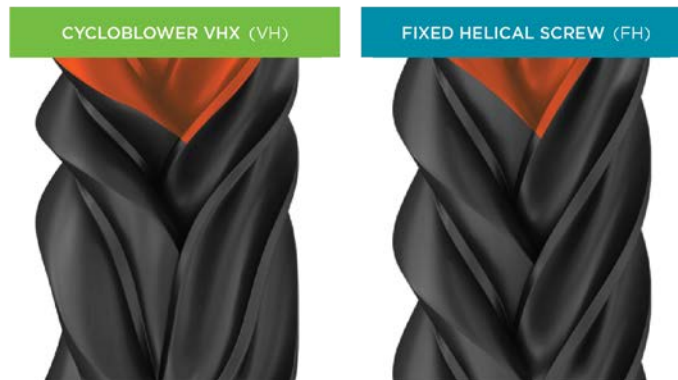
ROTOR CELL VOLUME DEVELOPMENT CYCLE



## Variable vs. Fixed Helix

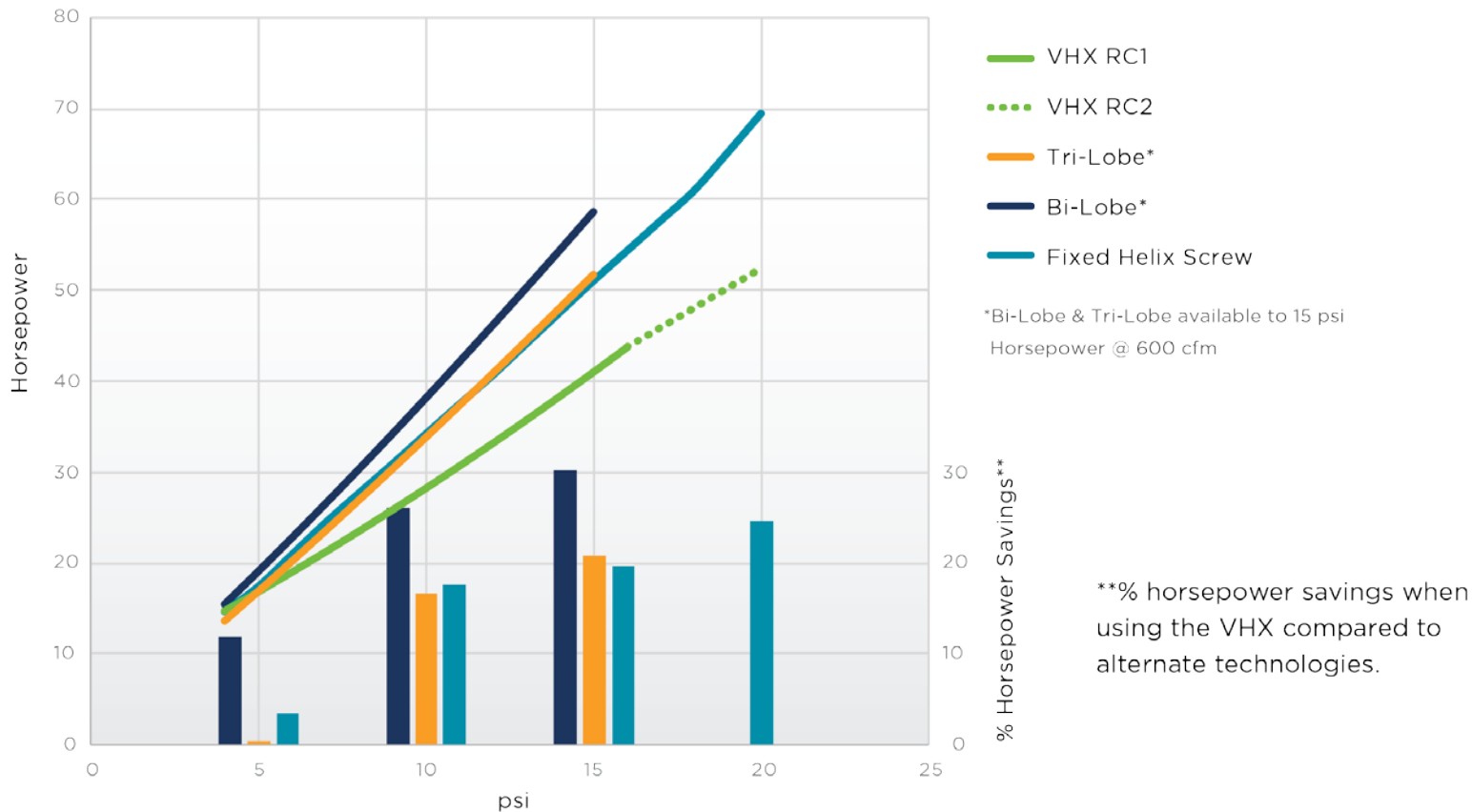
- Variable Helix Rotor Geometry Allows Discharge Port to Open 41° Earlier than Fixed Helix Design
- Lowering Flow Loss
- Increasing Efficiency

Highlighted Area = Port Exposure



# It's All About...The Energy Savings

## HORSEPOWER SAVINGS



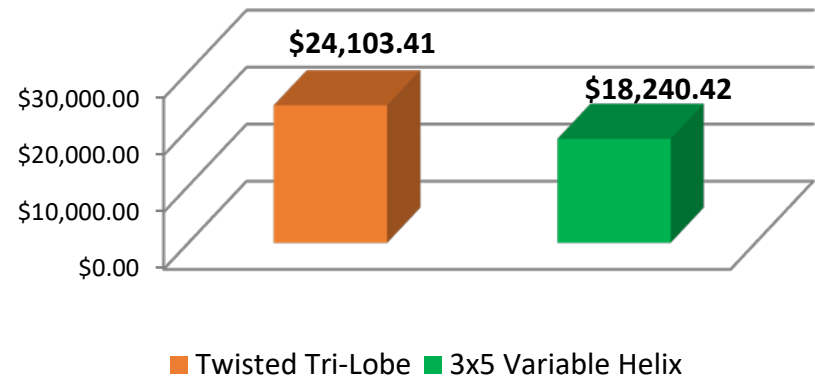
Save up to 35% on Your Energy Costs

# Twisted Tri-Lobe vs 3x5 Variable Helix Screw

Payback Calculator		Enter Data in Yellow Cells	
Client / Project:		Date: July, 1 2019	
Blower / Vacuum Pump Data		Existing / Option A	Proposed / Option B
Quantity		1	1
Model		Twisted Tri-Lobe	3x5 Variable Screw
Unit Cost		\$3,847	\$15,109
System Operating Data & Costs		Average kWh Cost--> \$0.10	
Hours per Day		24	24
Days per Week		7	7
Weeks per Year		52	52
Operating Hours per Year (Existing vs Proposed)		8,736	8,736
Unit BHP		37	28
Power (Kilowatts)		28	21
Total Kilowatt Hours / Total System		241,034	182,404
Annual Energy Costs		\$24,103	\$18,240
Annual Operation and Maintenance Costs		0	0
Annual Operating Costs		\$24,103.41	\$18,240.42
Project Implementation Costs			
Total Equipment (premium for Option B)			\$11,262
Installation Estimate (extra required for Option B)			\$0
Rebate (from utility companies)	Left Blank ---->		\$0
Total Project Cost Adder for Option B			\$11,262.00
Project Payback Analysis			
Annual Operating Costs Savings			\$5,863
Annual Depreciation	0% of equipment		\$0
Annual Cost Savings after Depreciation			\$5,863
Simple Payback in Years			1.92
Life Cycle Savings based on	10 Years		\$58,630

- 405 ICFM
- 14 PSI
- 24hrs/day
- 7 days/week

## Annual Operating Costs



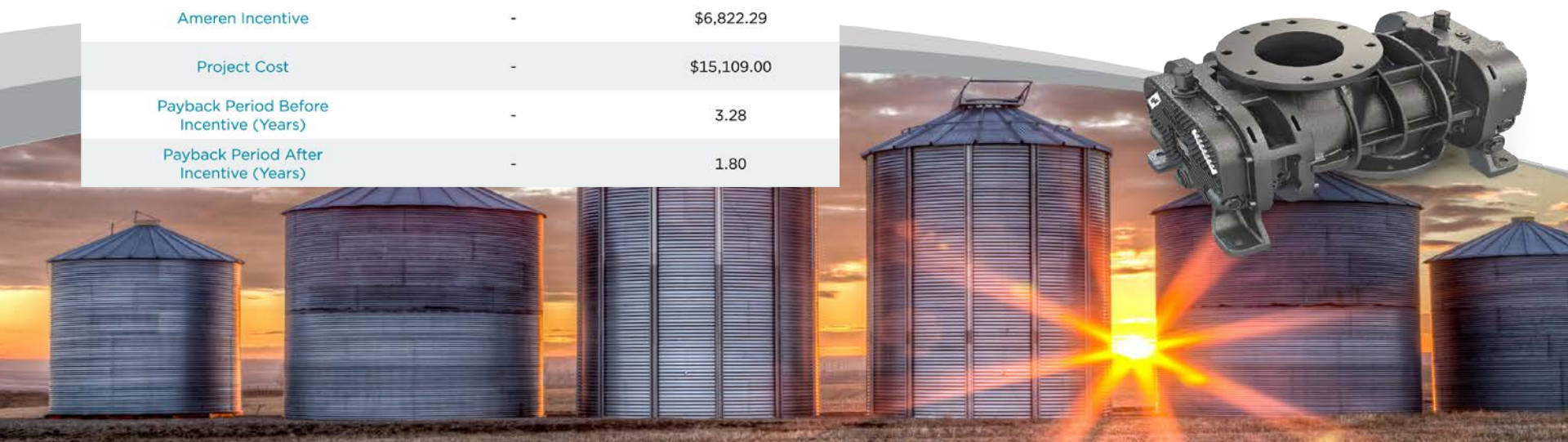


# The Variable Helix Difference

	STRAIGHT TRI-LOBE BLOWER	GARDNER DENVER CYCLOBLOWER VHX
Building Size (ft²)	333,015	333,015
Normal Operating Performance	405 ICFM @ 14 PSIG	405 ICFM @ 14 PSIG
BHP	36	28
Electrical Load (kWh)	29.19	22.70
Estimated Annual Hours of Operation	8,760	8,760
Estimated kWh/Year Used	255,704.40	198,852
Reduced kW	0	6.49
Reduced kWh/Year	-	56,852.40
Electric Rate (\$/kWh)	-	\$0.0810
Annual Energy Cost Savings	-	\$4,605.04
Ameren Incentive	-	\$6,822.29
Project Cost	-	\$15,109.00
Payback Period Before Incentive (Years)	-	3.28
Payback Period After Incentive (Years)	-	1.80

## Efficiency = Payback

- Customer – U.S. Based Milling Company
- Location – Illinois
- Application – Pneumatic Conveying
- Technology – CycloBlower VHX
- Customer Benefits
  - Energy Consumption Reduction
  - Cost Savings





Thank You