

# DRIVE SYSTEM COMPARISON

## 100 HP BELLE™ Written-Pole® Single-Phase versus VFD's and Stationary Engines

Description	Written-Pole® Single-Phase	Three-Phase Motor w/VFD	Conventional Diesel
Motor/Engine Size	100 HP	100 HP	300 HP
Hours/year	3,000	3,000	3,000
Maintenance Cost/year	\$20	\$300	\$2,250
Initial Cost (Motor + Control)	\$29,980	\$37,328	\$29,000
Life	25	10	8
Capital Cost	\$1,199	\$3,111	\$2,375
Efficiency Converter Drive	N/A	95%	N/A
Efficiency Drive Motor	96%	93%	N/A
Efficiency (Total)	96%	88%	35%
Noise Level (dBA)	70	75	91
Energy Consumption (kW)	78.1	84.4	N/A
Energy Cost / hour	\$9.37	\$10.13	\$17.44
Energy Cost / year	\$28,116	\$30,390	\$52,320
<b>Cost / year (electricity/fuel + maintenance)</b>	<b>\$28,136</b>	<b>\$30,690</b>	<b>\$54,570</b>
Lifetime Cost (25 years)	\$733,380	\$860,570	\$1,423,625
Starting/Running Current Ratio	1.7	7	N/A
Starting Code kVA/HP	1.3	6.0	N/A
Total Harmonic Distortion	2	4	N/A
Flicker (V dip, V/120V)	0.70	6.00	N/A
Power Factor	1.00	0.89	N/A

Specifications for comparison purposes only. Three-phase VFD system estimates based on EATON ControlDrive™ 200 HP (#HVX200A2-4A1N1), Marathon Motor (#405TSHF9026), Harmonic Filter (#KDRYL12H), operating environment (altitude, etc.) and other related factors. kWh based on average US price of 0.12/kWh (eig.gov 10/24/18). Fuel consumption based on 5.3 gallons per hour. National average diesel fuel price \$3.29 (EIA.gov 10/24/18)