

> Marley VFD-Motor Package INSIGHT

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Overview

Marley offers a complete VFD and motor upgrade aftermarket package for cooling towers that can significantly reduce energy costs compared to single or two-speed starters. This package provides a single-source solution, it's easy to purchase and has a longer warranty than individually purchased components.

Primary Benefits

- Significant Cost Savings – The VFD package can lower operating costs as much as 30% compared to a two-speed motor system, or 70% compared to a single-speed motor system, while also qualifying for state and utility rebates in some regions
- Ease of Purchase – Marley will assist by identifying both mechanical and electrical tower components required to make your single purchase order a smooth experience
- Support / Warranty – Approved and supported Marley and backed with a 3-year warranty that is twice the length of many VFD manufacturers

Benefit Detail

Cost Savings:

- Energy Costs – up to 30% savings vs two-speed or 70% vs single-speed*
- Process Costs – VFDs maintain tighter cold water set-point temperature control than thermostats to minimize your process cost
- Rebates – Multiple utilities provide rebates of up to 50% of the drive cost as an energy saving incentive
- Payback – The payback considering the total cost savings associated with the VFD package can be as low as two years or less—use Marley's UPDATE program to calculate your savings today!



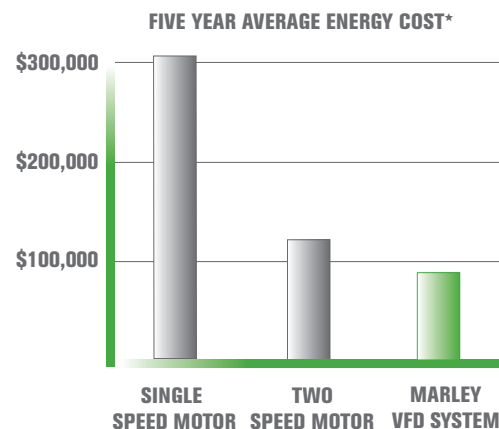
VFD



RTD Temperature Probe



NEMA Premium Efficiency Motor



**Reducing Fan Speed 20%
Reduces Fan Horsepower 50%**

* Based on UPDATE selection for a three-cell NC8405TAN with 40hp motor per cell running 24/7 for 5 years. Total water flow over the tower is 4500 GPM. Cost is \$0.10 per kWh with an assumed annual interest rate of 3%. Cold water set point is 75°F, with an average wet-bulb temperature of 50.7°F, (average seasonal value for Cincinnati, OH).

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Benefit Detail

Ease of Purchase:

- Single-source supplier vs multiple purchase orders
- Cooling tower specific components identified by Marley
- Marley OEM quality and support
- Certified VFD startup assistance from ABB

Marley Support and Enhanced Warranty:

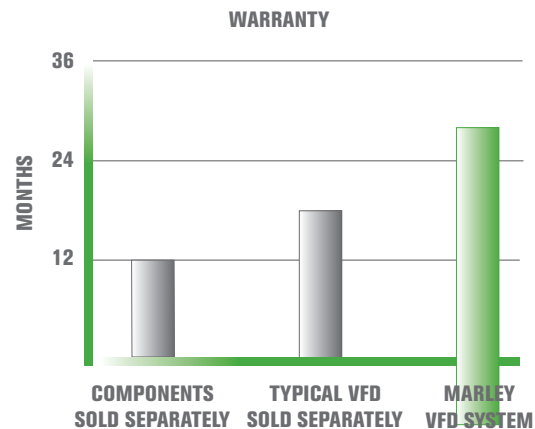
- Extensive Service Record database to identify needs
- Three-year material-only warranty that covers the entire package
- Additional VFD warranty coverage with certified startup assistance—material, labor and travel for VFD repair or replacement included
- Application and troubleshooting assistance from experienced Marley Controls team

Application Range

- Up to 150hp package includes the Marley Cooling Tower Duty Motor
- 200hp and higher includes a NEMA Premium Efficiency single-speed motor

Special Design Considerations

- Hand or Auto operation allows operator direct control of motor speed
- Soft start of motor—enables less wear to mechanical equipment and less noise than using across-the-line starters
- DV/DT output filter option is available for long lead lengths between VFD and fan motor
- Tripless-design drive eliminates most nuisance faults (under-voltage, over-voltage, flying start, downdraft back drive) keeping the tower running
- Reduced fan speeds extend motor bearing life and pulls less airborne contaminants into the tower, minimizing maintenance shutdowns—overall sound levels of the tower are also reduced



Methods of Operation

- Stand alone system matched external controller required—status indicators and keypad display provide easy tower control with RTD, No
- Customer BMS controls speed the Building Management System process temperature and control of the VFD Let - 4-20 mA, 0-10 VDC analog signals the - Modbus RTU, Johnson Controls FLN (p1) and BACnet (MS/Speed N2, Siemens field bus

Features and Options

- UL Listed
- PWM drive with IGBT switching bypass design
- NEMA 12 indoor or NEMA and integrated
- 208 through 575 VAC power choices
- 5% line impedance standard 3R outdoor enclosure
- Main circuit breaker disconnect lock-out tag-out padlocks
- Switch to isolate VFD from with provisions for voltage supply when servicing

SPX

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