MARLEY®

direct drive insight

Overview

Since 2011, SPX Cooling Technologies, Inc. has offered permanent magnet motors to meet our cooling tower customers' direct drives requirements.

Primary Benefits

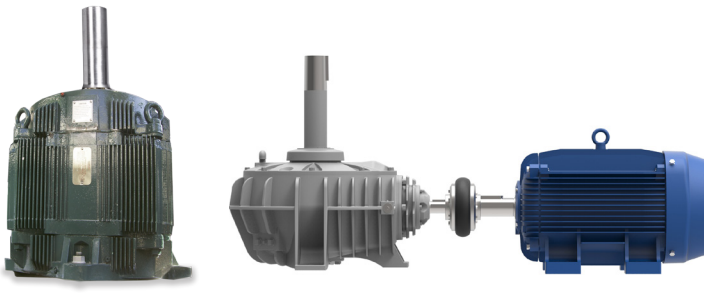
- Higher efficiency
- Reduced maintenance potential
- Available on Marley NC® cooling towers

Benefit Detail

Higher Efficiency:

- Direct drive motors are capable of 1-2% typical system efficiency advantage versus gear drive due to inherent gear losses
- Up to $1400 in potential annual energy savings when compared to a large package cooling tower with gear drive

more



92% 95% 95%

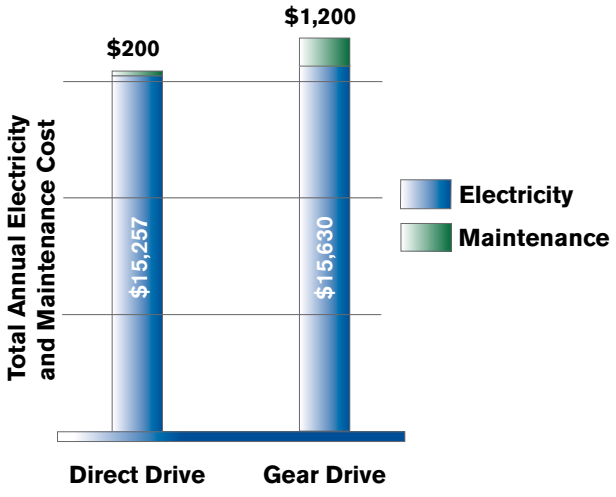
92% versus 90%*

2% Efficiency Advantage for Direct Drive

100 hp at 289 fan RPM

**.95 x .95 = .9025*

Direct drive motor in a Marley NC cooling tower



100 hp motor, $0.10 per kWh, 2000 equivalent full load hours

Availability:

- Available on most Marley NC cooling towers with minimal structural changes
- Direct drive motors are custom built and may have longer lead times
- Footprint designed for easy field retrofit of Amarillo® gearboxes

Reduced Maintenance Potential:

- Elimination of the coupling and gearbox means fewer components in system to align and maintain
- Grease lubrication eliminates gearbox oil maintenance
- Up to $1000 in potential annual maintenance savings versus gear drive for a large package cooling tower

Direct Drive Considerations

- *Safety* – Considerations should be taken to prevent shaft rotation even with the power disconnected – maintenance team must be trained in permanent magnet technology
- *VFD Exclusivity* – The ABB ACS880 VFD is required for the direct drive system
- *VFD Requirement* – In the event of a VFD failure, VFD bypass is not available with direct drive due to the nature of permanent magnet technology
- *Efficiency* – In some applications, the efficiency of direct drive can be equal to or less than gear drive system due to NEMA premium motor efficiency levels now mandated by the US federal government
- *Higher First Cost* – Annual energy and maintenance savings need to be justified

Recent Installation References

Number of Cells	Power	Application	Location
6	50 hp	Paper	Grand Prairie, Alberta
2	50 hp	Aerospace	Spokane, Washington
1	30 hp	University	Columbia, South Carolina
3	50 hp	Manufacturing	Bryan, Texas
2	7.5 hp	University	Columbia, South Carolina

ABB ACS880 VFD

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