



THE COOLING TOWER DILEMMA: FRIED MOTORS OR ROOFTOP HEADACHES?

Why traditional VFDs force you to choose between expensive cable runs or risky outdoor installations—and how to choose neither.



The Problem



The Hidden Cost of Long Cables

Option A: The Long Run Risk

You keep the VFD in the clean, dry electrical room.

The Result: Long cables act as antennas. Reflected voltage spikes destroy motor insulation, and stray currents eat your bearings.

You pay extra for bulky filters just to keep the motor running.



The Maintenance Nightmare

Option B: The Rooftop Risk

You move the VFD to the tower to save the motor.

The Result: Your expensive electronics bake in the sun, freeze in the winter, and corrode in the humidity.

Maintenance becomes a dangerous, high-altitude chore.



THERE IS A THIRD OPTION.

What if you could keep the VFD in the electrical room, run 5,000 ft of cable, and deliver cleaner power to the motor than the grid itself?

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Scan the QR code to learn more
how **SmartD Technologies**
revolutionize motor control




The Clean Power Fix for Cooling Towers

Pure Sine Wave Technology. No
Filters. No Limits.




Features


- 1



Run Unlimited Cables (no Filters)
Keep your VFD in the climate-controlled electrical room. Our **SiC**-based technology outputs a **pure sine wave**, eliminating the dV/dt spikes that cause reflected waves. Run cables 1,000m+ with zero risk to the motor insulation. No output chokes or dV/dt filters required.
- 2



Double Your Motor Life
Standard VFDs kill motors through bearing currents and heat. SmartD eliminates harmful harmonics and common-mode voltage at the source. Your cooling tower motor **runs cooler, quieter, and vibration-free**—extending bearing and insulation life significantly.
- 3



Retrofit-Ready by Design
Don't rewire the building. Use existing unshielded cabling and standard motors. The compact footprint (50% smaller than traditional drives with filters) fits easily into your existing MCC or electrical room space.

Comparison Chart

Feature	Traditional VFD	Rooftop VFD	SmartD Clean Power VFD
Installation Location	Electrical room	Rooftop	Electrical Room (Safe)
Cable Limits	<100 ft (w/o filters)	Short	Unlimited
Output Filters?	Required (Bulky/\$\$\$)	None	Not Needed
Motor Electrical Stress	High (Heat/Bearings)	High	Zero (Pure Sine Wave)

Case in Point: Motor Preservation at Énergir

We deployed SmartD at Énergir's energy plant to solve recurring bearing failures on critical pumps. The physics of motor preservation apply directly to your cooling tower fans.



reduction in
vibration
acceleration



reduction in
voltage spike
energy



Zero bearing
failures since
installation

"By eliminating the PWM switching noise, we didn't just spin the motor; we stopped the electrical wear that kills bearings."

See the Waveform Difference

Scan to download the **Cooling Tower Application Note** and see pure sine wave performance in action.

