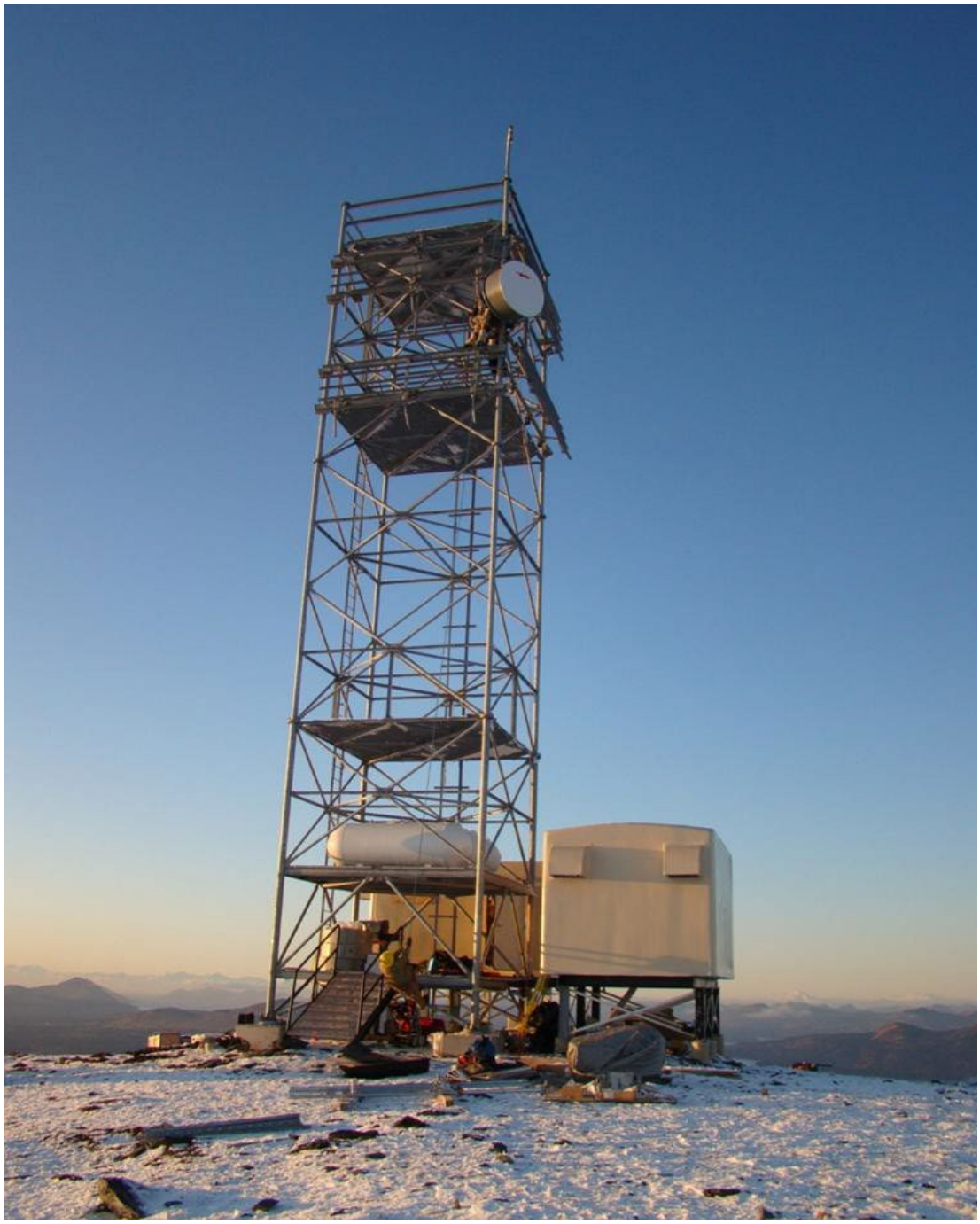
Meeting Telecommunications need for Power since 1995



Helicopter access only site in Alaska

Polar Power Inc.
249 E. Gardena Blvd
Gardena, CA 90248 USA
Tel: +1 (310) 830 - 9153

You can count on Polar's experience in weather extremes.

At extreme weather sites we strongly suggest the generators are installed inside the shelter.

It's difficult to service any generator during high winds, snow and rain, sand blowing, strong sun, etc.

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Fuel efficiency, reliability, and low maintenance are paramount when access is limited.

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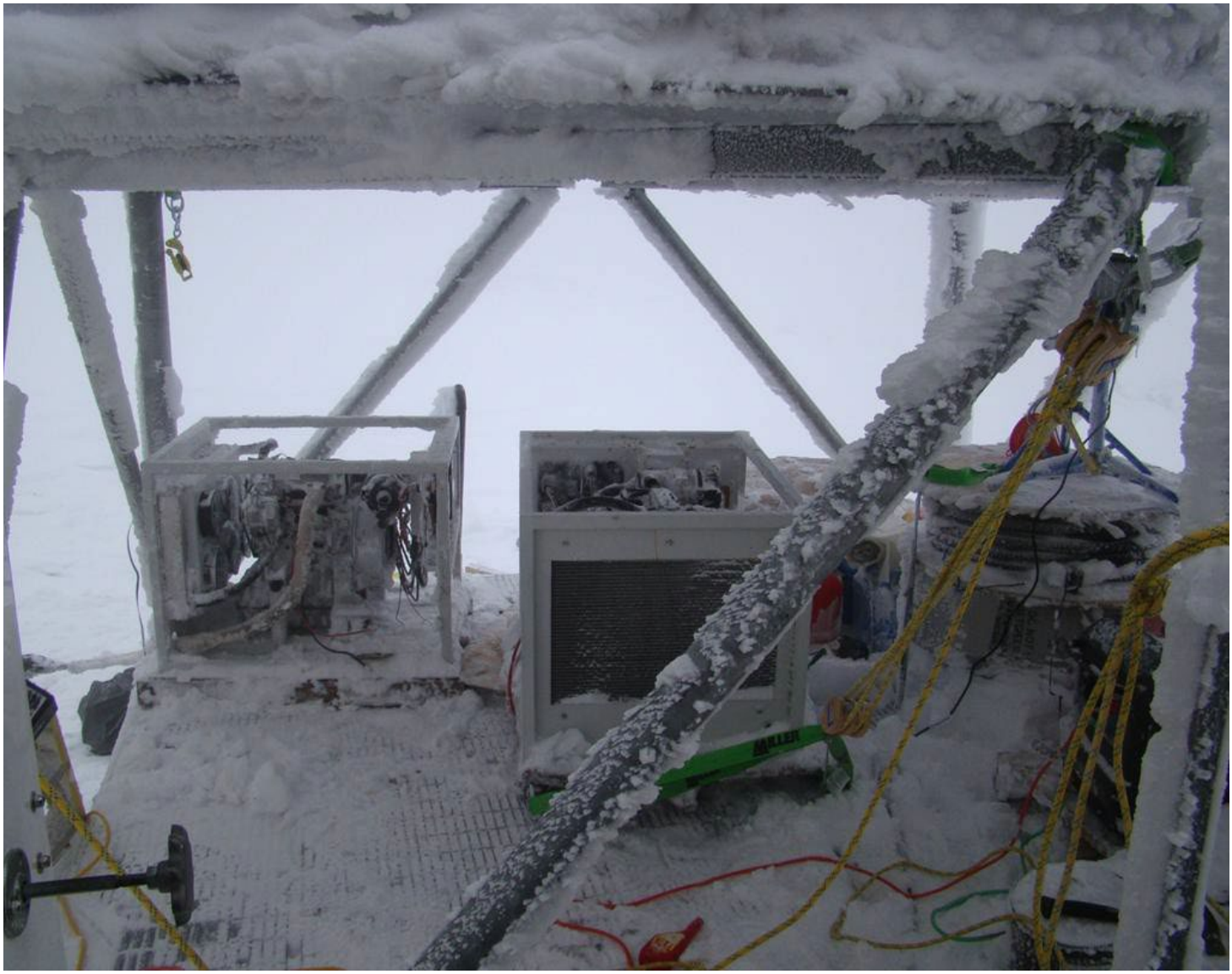
Sometimes you can't complete the job before the storm comes.



Polar Power products are rugged enough to survive; just make sure you keep the water / ice from entering the engine.

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POLAR POWER INC.

Telecommunications

Solar and Wind Generators are useless during winter.
A Polar Power DC Generator keeps the site online

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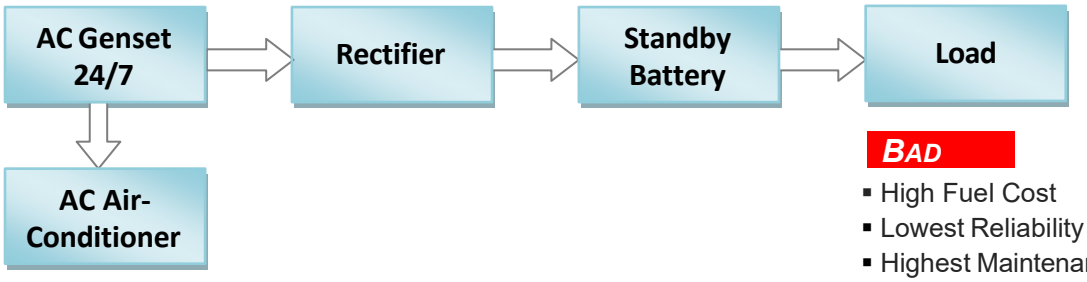
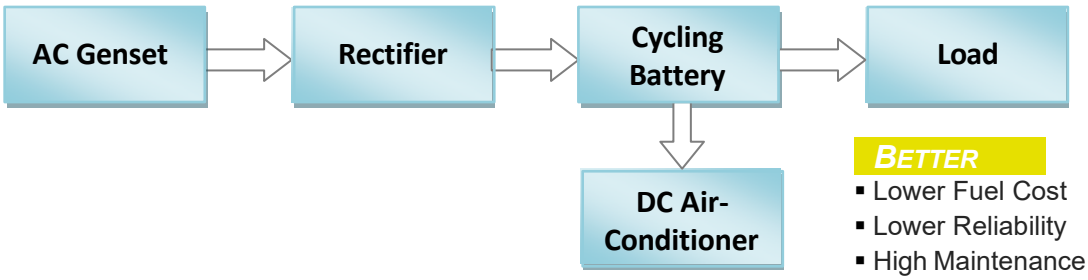
www.polarpower.com

Made in USA



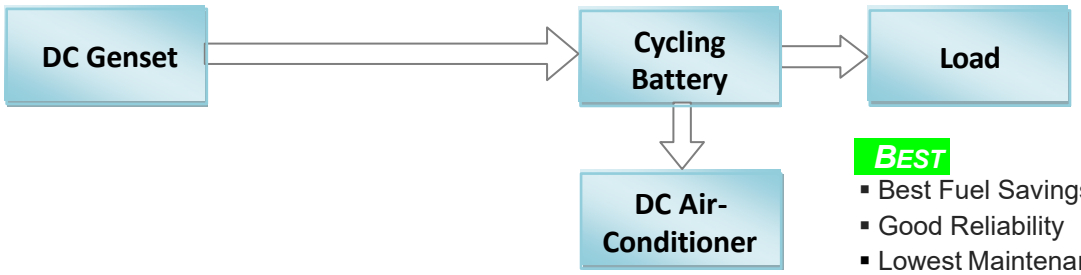
BAD

- High Fuel Cost
- Lowest Reliability
- Highest Maintenance



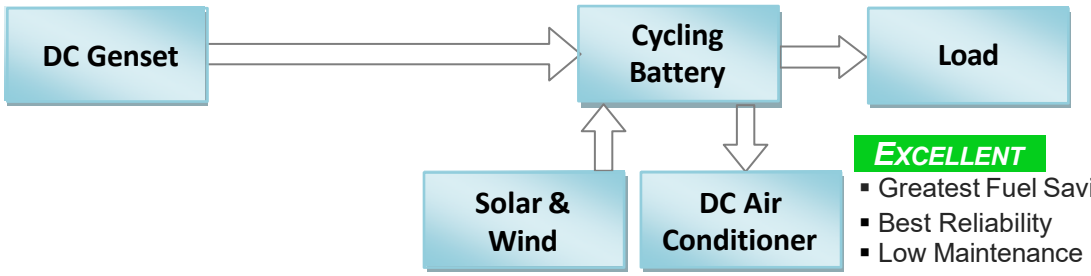
BETTER

- Lower Fuel Cost
- Lower Reliability
- High Maintenance



BEST

- Best Fuel Savings
- Good Reliability
- Lowest Maintenance



EXCELLENT

- Greatest Fuel Savings
- Best Reliability
- Low Maintenance

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DC VS AC GENERATORS

Field trials have shown a 30% - 70%+ fuel reduction in DC over the conventional AC generators.

Polar Power's DC generator makes use of smaller displacement engines operating near their most fuel-efficient points. You can efficiently operate the Polar Power DC generator at 100% of its power rating. In comparison, the AC generator in the typical installation is operating a larger engine at less than 60% of its power rating.

The most significant waste fuel is the AC generator is running while the load is at a minimum power level. Using the DC generator (cycle charging a battery) when the load is small the DC generator is off and the load is powered by the battery.

Polar DC Generators offer a lower OPEX cost than AC Generators:

- The Permanent Magnet DC alternator (synchronous) is more efficient than the asynchronous AC alternator in the conversion of mechanical energy to electrical.
- The AC generator has conversion losses converting from AC to DC through the rectifier / battery charger.
- The DC generator is variable speed and operates near the engine's most fuel efficient point. The DC generator is engineered to provide a significantly longer operational life.
- The Supra controller allows system recalibrations and software updates without the cost of traveling to the site.
- Oversized fuel and oil filters reduce the periodic maintenance cost.
- Polar uses novel filter assemblies to substantially reduce oil, fuel, and air filter replacement costs.

Polar Power DC Generator Systems are more reliable than the AC Systems

- The DC generator eliminates any compatibility problems that may arise between the AC generator and the rectifier / battery charger (ripple currents confusing the AC generator voltage regulator)
- Polar's alternator has no bearings, slip rings, brushes, exciters, or attached diodes
- Polar offers options where: the engine's charging alternator, coolant and mechanical fuel pumps, and all V- Belts, have been removed for enhanced reliability
- No transfer switches required for the DC generator
- Polar's Supra controls have a high level electrical isolation, up to 1500 Volts. Supra controls are designed for positive and negative grounding
- An over current condition in an AC generator causes the circuit breaker to trip. Power is lost and a field visit is required.
- Polar's DC generator is current regulated so in an over current condition power output is kept constant and not interrupted

IF YOU WANT TO IMPROVE RELIABILITY, ADD A DC GENERATOR RATHER THAN INCREASING THE BATTERY BANK.

When optimizing a power system for efficiency and reliability too many engineers fail to create a balance between Power Generation and Energy Storage. Too frequently the battery, which is a storage device, gets placed in the role of a power generation device; compromising the efficiency and reliability of the system.

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