

# Power where you need it.®

**GENTHERM**   
GLOBAL POWER TECHNOLOGIES



## Increasing Pure PV systems reliability from 95% by up to 99+% by simply integrating a Thermoelectric Generator (TEG).

A TEG is a stationary generator that is intended for remote, industrial applications that require a reliable source of power. Since the TEG is solid state the maintenance and operational costs associated with the technology is very low. The TEG provides a steady source of DC power which allows it to connect easily to your existing PV/battery system, the TEG will charge the batteries and maintain the load when solar is unable to.

### Connecting to your Solar system, what are my options?

- 1) **Manual Start TEG:** If your PV system is installed in an area that has poor solar radiance available during the winter months, then our standard TEG can be purchased and easily integrated. This TEG will need to be manually turned on in the fall and manually turned off again in spring.
- 2) **Remote Start Feature:** The remote start panel (TEG controller board) is an optional feature that can be installed on the TEG which allows the TEGs to start and stop two different ways;
  - a. Remote Start via SCADA Input – this feature allows you to remotely start the unit as required.
  - b. Auto-start via Battery Bank Depth of Discharge (DOD) – this feature monitors the temperature and voltage of the battery bank and automatically starts and stops the TEGs based on a preset level (example: 50% DOD)

### What considerations should I take when integrating the two technologies?

GPT has extensive experience sizing remote power systems, we recommend consulting with GPT before you install the remote start feature in an effort to ensure that you have a properly balanced hybrid system. We can model the system based on location to recommend the optimal solar panel angle as well as estimate TEG fuel consumption.

GPT's engineering team offers sizing recommendations for a low cost – please contact your local representative for more information.

### What are the benefits?

- **Reduced operational costs** – Site visits are significantly reduced as the TEG provides complete redundancy in the event of solar failure (ie. inclement weather, theft, damage/vandalism etc.).
- **Extended life of batteries** – Pure PV sites often require regular site visits to replace over-discharged or damaged batteries. Pairing with a TEG prevents deep discharging and protects from freezing, thus extending the life of the batteries and reducing maintenance/replacement costs.
- **Reduced Site Downtime and Increased Reliability** – Pairing a TEG with PV creates a 99+% reliable power system compared to a pure PV system which is typically sized for 90-95% reliability.

