

# ThermaStart

## IDLE MANAGEMENT SYSTEM

No more idling  
& boosting  
Slash your costs

Save on fuel and maintenance, while protecting your fleet. ThermaStart significantly reduces idle time, even in the harshest weather, ensuring your fleet stays efficient and safe.

Eliminate engine hours

ROI in 30-100 hours

Extend asset and engine life

↓ Maintenance costs/hour

↓ Emissions, fuel, and waste



### Availability Guaranteed

Always maintain optimal fleet readiness. Extreme cold or heat? ThermaStart has got you covered.

### Extreme Weather Protection

The moment conditions drop below set limits:

1. A siren warns of imminent start.
2. Engine starts to restore conditions.
3. Vehicle returns to sleep in standby mode.

### Applications



Trucks

Loaders

Excavators

Dozers

Adaptable to a range of vehicles and equipment.



### ESG Meets ROI

By eliminating unnecessary idling, you not only save on fuel but also reduce maintenance costs and extend the longevity of your fleet.

That's progress towards your net-zero targets and a testament to your commitment to sustainable mining.

Slash your operating costs, decrease your carbon footprint, and step into the future of efficient fleet management.

No more frozen engines.  
Eliminate ALL unnecessary idle hours.



## BENEFITS & FEATURES



### Key Benefits & Features

- Easy to install and simple in design
- Proven reliable in mining fleets
- ECM is in full control of engine parameters

We have performed installations with the OEMS on their equipment to their satisfaction.

### Optimal Engine Temperature

- Eliminates cold-starts, maintaining optimal engine temperature
- Reduces wear and strain on components
- Protects turbos in hot weather with adequate cooldown time

### Operator Comfort and Auxiliary Systems

- Runs auxiliary systems like diesel-fired heaters or air conditioners with engine off
- Enhances operator comfort by keeping engine warm
- Improves battery cold-weather performance and maintains charge

ThermaStart eliminates all unnecessary idle hours, increasing asset life and protecting against extreme weather conditions that cause unplanned maintenance or severe component wear and failure.



### Field Service Protection

- Integrates level and pressure sensors to prevent running low on fuel, DEF, or hydraulic fluid
- Maintains air pressure for air start trucks eliminating boosting

### Connectivity and Data Collection

- WiFi and SIM card connectivity for data collection
- Tracks tendencies, alerts anomalies, and suggests parameter changes for increased gains



**COMPLETE Engine Idle Control & Management System**

### Safety Features

- **Machine Lockout:** Activated with the Operator Switch ON, preventing transmission engagement. Park break switch monitoring.
- **Adaptability:** Equipped with various safety options for different machine makes and models.
- **Additional Safety Devices:** Temperature, hood, level, and pressure switches can be added.
- **Environmental & Operational Safety:** Reduced interventions in extreme weather lowers risk.





# THERMASTART SYSTEM OPERATION

## How ThermaStart Works

Once ThermaStart is **ENABLED**, engine shuts off and enters Standby Mode.

- 1 REST - Standby Mode**
  - Minimum off timer programmed to 20 mins
  - Beyond the minimum off-time, ThermaStart will monitor the block temperature, battery voltage and air pressure. Engine stays off until one of these parameters falls below its low limit.
- 2 RESTART - ThermaStart Sequence**
  - Low-limit battery or temperature setting will trigger TS Sequence
  - Alarm will sound (programmed timer 40 seconds)
  - Engine (Therma) starts and enters
- 3 REPLENISH - Run Cycle**
  - a. **Warm-Up Mode** - idle (programmed timer 60 seconds)
  - b. **Min Run Mode** - fast idle when equipped, latches until battery timer, engine temp or air is restored
  - c. **Cooldown Mode** - idle (programmed timer 60 seconds)
- 4 REPEAT**
  - Engine shuts down in Standby Mode again, cycles until system is **DISABLED**.



## Enabling ThermaStart

- 1 Turn ThermaStart operator switch ON**
  - Vehicle must be safely parked with the engine running.
  - Machine or transmission lock must engage if equipped.
- 2 Wait for siren to chirp (5-10s) and turn ignition key OFF**
  - LED will turn solid green.
  - Engine will continue to run for 60 seconds then turn off.
- 3 Engine will shut down.**
  - Turn grid heater or fast idle switch ON if below 0°C.
  - Exit cab. Verify if the strobes are flashing.



## Disabling ThermaStart

With engine running in ThermaStart Mode, follow steps 1 & 2.

With engine off in ThermaStart Mode, follow step 2.



- 1 Turn ignition key ON**  
Engine will continue to run, green LED will turn off.



- 2 Turn ThermaStart operator switch OFF**  
LED will turn solid RED then turn off.

**\*Always keep ThermaStart switch OFF when operating equipment.**





# FLEET RETURN ON INVESTMENT

## Average Cost of Engine Hour at Idle

Calculate your savings.  $Hours\ in\ ThermaStart\ mode \times Idle\ Cost/Engine\ Hour = Savings$



100t - 400t Haul Truck

### Cost of Engine / Engine Life in SMU Hours

\$400K / 20,000hrs | \$1.2M / 20,000hrs

**\$20-60/hour**

### Maintenance Contracts/ Engine Hour

Engine or equipment manufacturer contract.

**\$100-350/hour**

### Preventative Maintenance, 250 Hours

Cost of PM with parts and labour

- \$10K-25K/250Hrs = \$40 - \$100 per hour.
  - Cost of parts and supplies
  - Hours in Shop X In-house Labour \$/HR X # of Techs

**\$88-388/hour**

Cost of PM unavailability

- Hours in Shop X Production Revenue per hour -12-24 hrs X \$1K-3K (12K-72K) / 250 = \$48 - \$288 per hour

Frees up shop space and technician time, allowing focus on reliability and continuous improvement.

### Fuel Consumption

Fuel cost x consumption at high idle (30L -80L/HR) \$1.50/Litre

**\$45-\$120/hour**

### Cold-Weather & Idle Related Issues

- Boosting in the winter and managing battery and air drain year-round.
- Causes DPFs to clog prematurely, a major contributor to turbo failures and costly unplanned maintenance events.
- Premature wear on components from low voltage, and low temperature idle.

**\$1-10/engine hour**

### Environment & Pollution | 0.2t/hr X \$50/tGHG

- Hundreds of litres of oil, grease and dirty filter waste are saved, improving hydrocarbon management practices.
- Low temperature idle creates several detrimental conditions for the engine.
- High pollution from poor combustion causes poor performance of pollution control systems such as DPF's.

**\$10/hour**

### Other Costs

- Parts and components are often replaced based on engine hours, but idle hours may not cause significant wear when the truck is stationary. **\$1-5/hour**

**Total Cost of Idle = \$300-\$1000/hour**

ThermaStart helps improve the productivity rate of your assets considerably.

A great easy win for the whole team, as it allows you to:



- **Reduce idle time:** Minimize engine idling and its associated costs
- **Increase productivity:** Improve asset and production efficiency
- **Enhance asset utilization:** Reduce downtime, increase asset life and residual value





**FEATURES & SPECS**

**A retrofit start-stop system that easily installs on any diesel equipment.**

Downloadable data logging records on/off runtime cycles, ambient temperatures, block temperatures, battery voltage, etc.

Automatic summer/winter changeover regulated by ambient temperature selection.

User selectable start activation by choice of ambient temperature, programmable timer or both.



Illuminated screen with user selectable options including scheduled start/stops if desired.

Optional telematics module transmits data via choice of Satellite, Cell, WiFi or Mine Radio Network.

Pressure-wash duty enclosure facilitates wide range of installation locations.



**Safety Lockout Protection**

Daisy chain safety loop monitoring or activation of safety (i.e. park brake, transmission lockout, implement lockout, hood and level switches)



**Strobe Monitor**

White strobe indicates engine is running under ThermaStart control.



**Pre-Start Warning Siren**

Activates prior to initiating startup (adjustable)



**Engine Block Temperature Control**

Engine is started when block temperature drops below its low limit and shuts off again when block reaches its high limit (adjustable).



**Battery Charge Monitoring**

Engine is started when voltage drops below low limit and shuts off again after time sequence (adjustable).



**Air Start Pressure Monitor**

On air start trucks engine will start when reservoir pressure drops to its low limit and shuts off again when pressure reaches its high limit (adjustable).



**Ambient Temperature Control**

Engine block temperature response is not enabled until ambient temperature drops below freezing, provides automatic summer/winter switchover



**Pre-Lube Pump Timer**

For machines with a pre-lube oil pump the system will facilitate up to 1.5 minutes (adjustable) for oil pressure to reach OEM start activation



**Fast Idle Activation**

Starts at low idle then ramps up to fast idle after adjustable delay



**Data Logging**

System continuously logs key parameters once every minute to an SD card retrievable for PC downloading to identify operational cost savings





**SPECIFICATIONS**

**ThermaStart Specs (Off-Highway 24V)**

TS-24xxx	
Type	Engine Start/Stop Idle Management Controller
Enclosure	Formed 12 GA Mild Steel body and lid with Weather Tight Seal and Latch
Dimensions	8" W x 4" D x 10" H
Power	Input 24VDC, Output 24/12VDC
Wiring Harness	Multi-pin screw-on connector, Deutsch connectors for terminations
Thermal Sensors	Thermocouple ring terminals in stainless steel flex
Strobe Monitor	Weatherproof high-intensity LED
Warning Siren	Weatherproof, not to exceed 100 dB
Operating Temperature	-40°C to 50°C (-40°F to 122°F)
Installation	Per owner's manual
Controls	Scrollable interface for operating and standby parameters, password protected factory settings, field editable by factory certified technician
Data Logging	Logs parameters every minute and every state change, stored on SD card
Warranty	1 year from Date of Purchase

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