



# ENERCRAFT

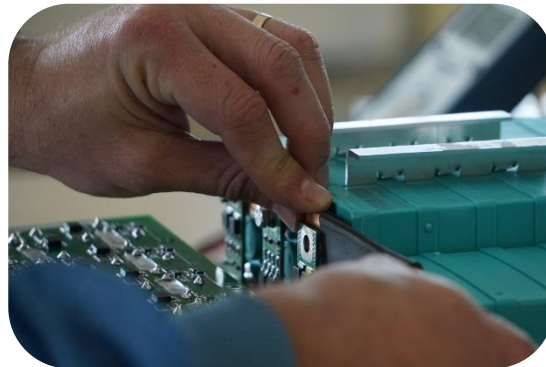
## Energy to Fly

New Generation Ground Support Equipment

February 2020







**ENERCRAFT** is a company created with the strong commitment of setting up new quality standards in the aircraft Ground Support Equipment arena, with a vision to become the worldwide sales leader in the aviation world.



**WE LOVE INNOVATION**



## The most innovative Ground Support Equipment

### ULTRA-STARTERs

Protect your Engine



20 Ah unit

40 Ah unit

### Ground Power Units

The most compact GPU

**GPU LITE 35**  
28VDC - 35 Amp

**GPU LITE 70**  
28VDC - 70 Amp

**GPU LITE 130**  
28VDC - 130 Amp


**GPU LITE 250**  
28VDC - 250 Amp

**GPU LITE 500**  
28VDC - 500 Amp





# ULTRA – STARTER UNITS

A yellow Enercraft Ultra 28 Starter unit is positioned in the foreground on a tarmac. The unit is a rugged, yellow plastic case with a blue panel on the front. The panel features a digital display, a red emergency stop button, and various cables and connectors. The text "ULTRA 28 STARTER" is printed on the blue panel. In the background, a white helicopter with blue and yellow accents is parked. The helicopter has "BC 145" written on its side. The scene is set on a paved airfield with some trees and buildings in the distance under a clear sky.

# THE STRENGTH OF YOUR START



Ultra-Starter: Initiates engines operation, providing clean energy.



# ULTRA – STARTER 28V UNITS



ULTRA - STARTER is a device developed by **ENERCRAFT** to improve the engine start of airplanes or helicopters, providing clean energy and a more efficient start, extending the life of the engine and being capable of operating in any weather and environmental condition.

The equipment must be connected through the external power connector to the aircraft. The ULTRA - STARTER was developed *in house*, to offer the latest technology in energy storage, combining the best of Lithium batteries and the best of Ultracapacitors.



	20 Ah unit	40 Ah unit
AC Input	Charges from Single Phase 100-260 Vac, 50/60 Hz 3 amps @ 220 Vac	
DC Output	28.5 Vdc. Peak start: 1500 amp 570 watt hours without power ac GPU mode: 10 Amp	28.5 Vdc. Peak start: 2600 amp 1140 watt hours without power ac GPU mode: 10 Amp
Recharging Rate	45 minutes from full discharge @ 25° C	90 minutes from full discharge @ 25° C
Temperature Range	- 40° C ↔ 70° C	
Dimensions	16.9" x 12.9" x 9.3" 426 mm x 327 mm x 236 mm	22.0" x 14.0" x 9.0" 558 mm x 355 mm x 228 mm
Weight	13 kg	25 kg





NEW ADDITION !!

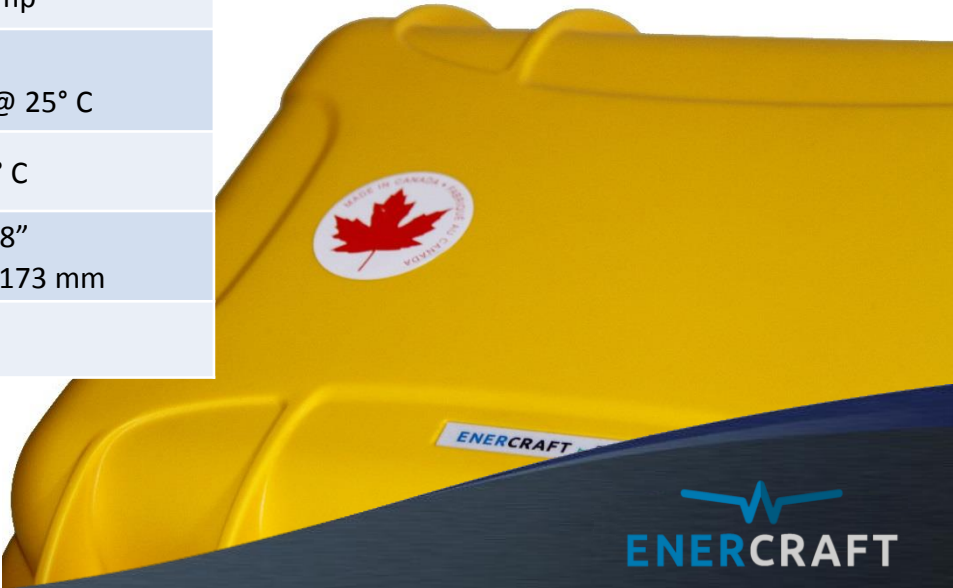


# NEW Ultra-Starter 12V

READY  
for  
ORDER!!



	20 Ah unit
AC Input	Charges from Single Phase 90-240 Vac, 50/60 Hz - 0.75 amps
DC Output	14 Max Vdc. Peak start: 1500 amp GPU mode: 7 Amp
Recharging Rate	45 minutes from full discharge @ 25° C
Temperature Range	- 40° C ↔ 70° C
Dimensions	15.4" x 12" x 6.8" 391 mm x 307 mm x 173 mm
Weight	7 kg





# LITHIUM BATTERIES AS A STANDARD

## ENERGY

80 – 100%  
D.O.D.



LifePo4  
LITHIUM

50 – 70%  
D.O.D.



LEAD  
ACID

**30%**

more **USEFUL  
ENERGY**

**4** x **LIGHTER**  
than **LEAD ACID**  
batteries

**NO** **MEMORY  
EFFECT**

## WEIGHT





# ULTRACAPACITOR TECHNOLOGY

High power & adequate energy, ideal for a short term high power application



**Ultracapacitors** are typically used in applications where batteries have a short fall when it comes to high power and life.



**Longer lifetimes**

1+ million charge cycles or 15+ years



**Maintenance-free and reliable**



**60 times more power density**



**30% more efficient**



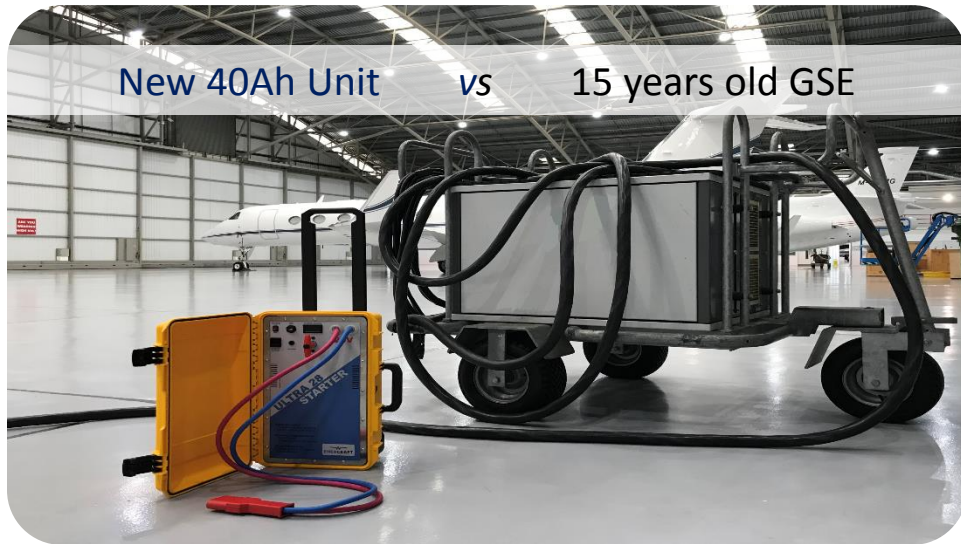
**No harmful materials**



# COMPLEMENTARY TECHNOLOGIES

**Batteries** provide long term energy while **Ultracapacitors** provide the fast reaction and high power

## Welcome to the future of electrification



**A new step in innovation**

Lithium



Ultracapacitors



- ✓ First to incorporate Li & UC technology
- ✓ Developed with the highest standards
- ✓ Minimum Size & Weight
- ✓ Fully customizable



# ENGINE STARTER + GPU CAPABILITIES

## ALL IN ONE Ground Support Equipment



The **Switching Power Supply** delivers up to 10 Amps continuous power when the unit is plugged in.



The **Lithium Batteries & Ultracapacitors** provide the peak current needed for an engine start, but can also provide continuous power in remote locations with the unit not being plugged in.

**UST-4030 (40Ah):** 10Amps for up to 4\* hours

**UST-2030 (20Ah):** 10Amps for up to 2\* hours

**UST-2012 (20Ah):** 10Amps for up to 2\* hours



UST-4030  
(40Ah)



UST-2030  
(20Ah)



UST-2012  
(20Ah)

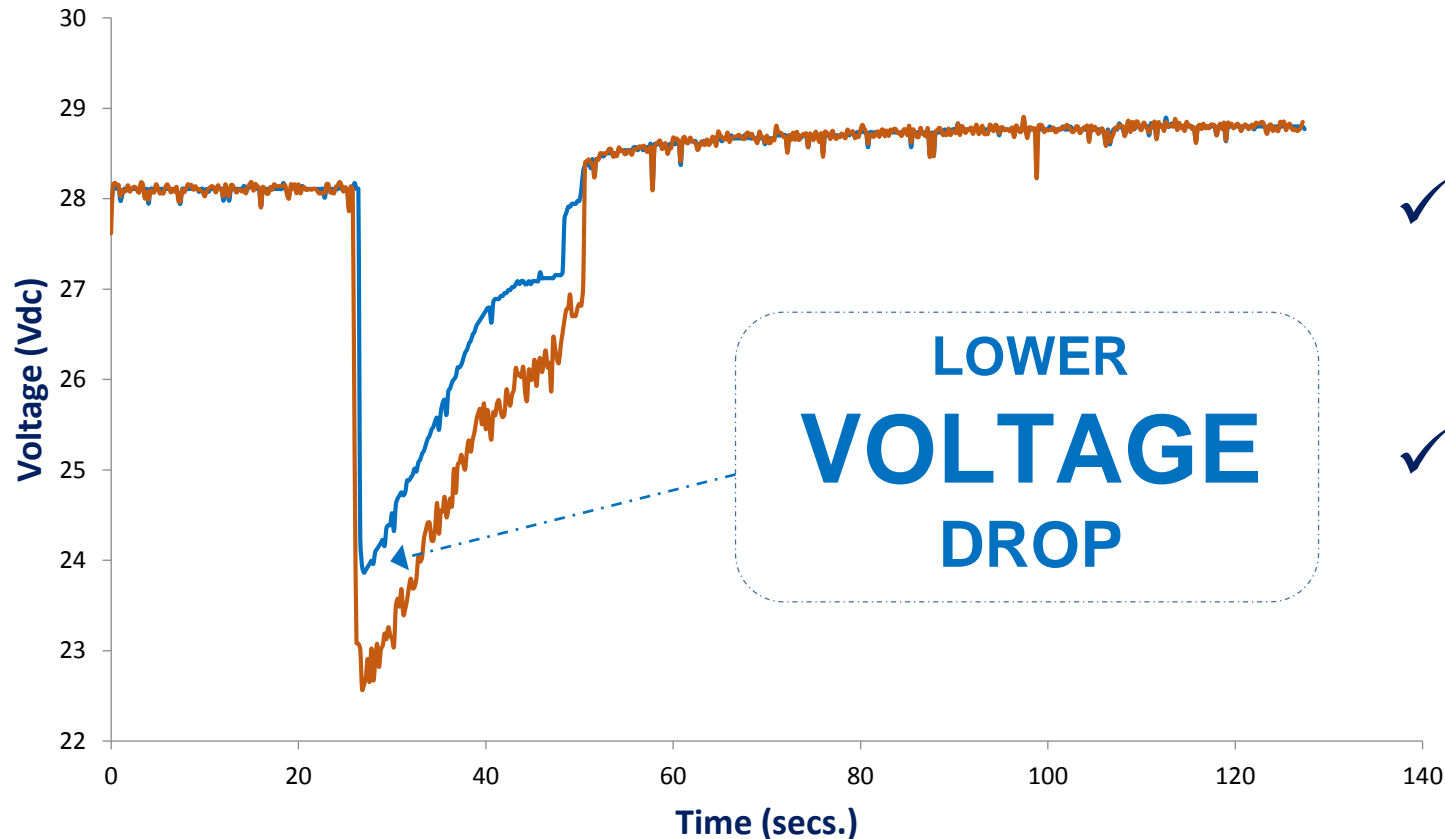
\* Considering FULL discharge of the Batteries, which is not advised. Please refer to the Ultra-Starter user manual.



# ADVANTAGES OF ULTRACAPACITORS

## ULTRA - STARTER 28V (40Amp Hour) by ENERCRAFT

- With ULTRACAPACITORs
- Without ULTRACAPACITORs



- ✓ Improve the engine start of airplanes or helicopters
- ✓ Provide clean energy and a more efficient engine start



# ENSURE AN UNBEATABLE PEAK CURRENT

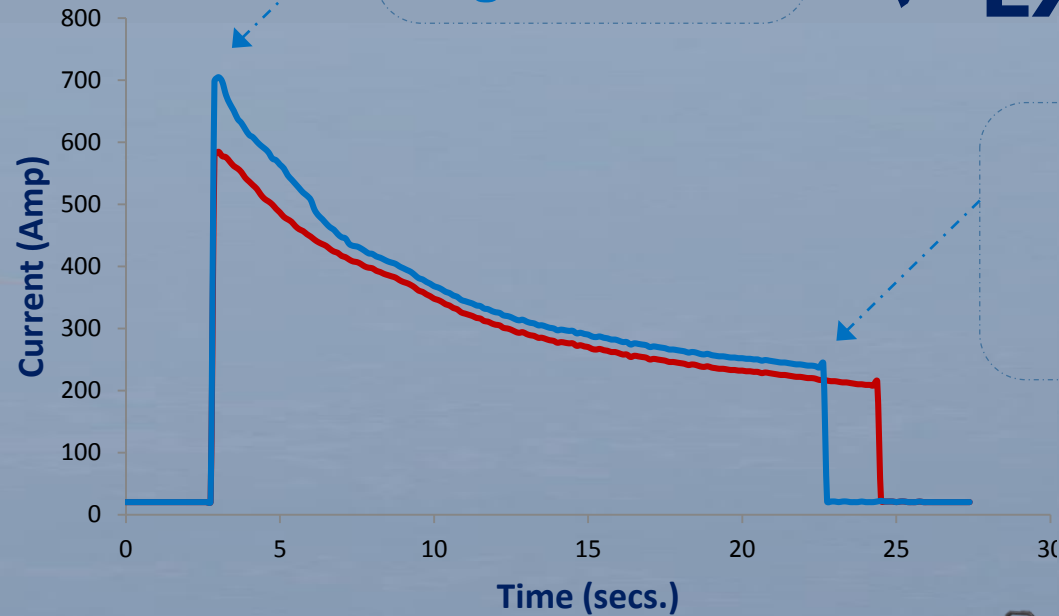
ENERCRAFT POSITIONING

**20%**

higher **PEAK**

✓ **PROTECTING the LIFE of your AIRCRAFT BATTERIES**

✓ **EXTENDING the LIFE of your TURBINE**



**8%**  
FASTER



• **Competitor**  
(40Ah)



• **ENERCRAFT**  
(40Ah)

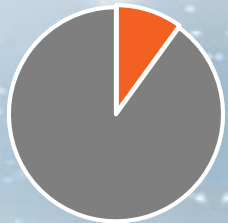


  
**ENERCRAFT**



**EXTREMELY HIGH EFFICIENCY**

## LOW TEMPERATURE PERFORMANCE



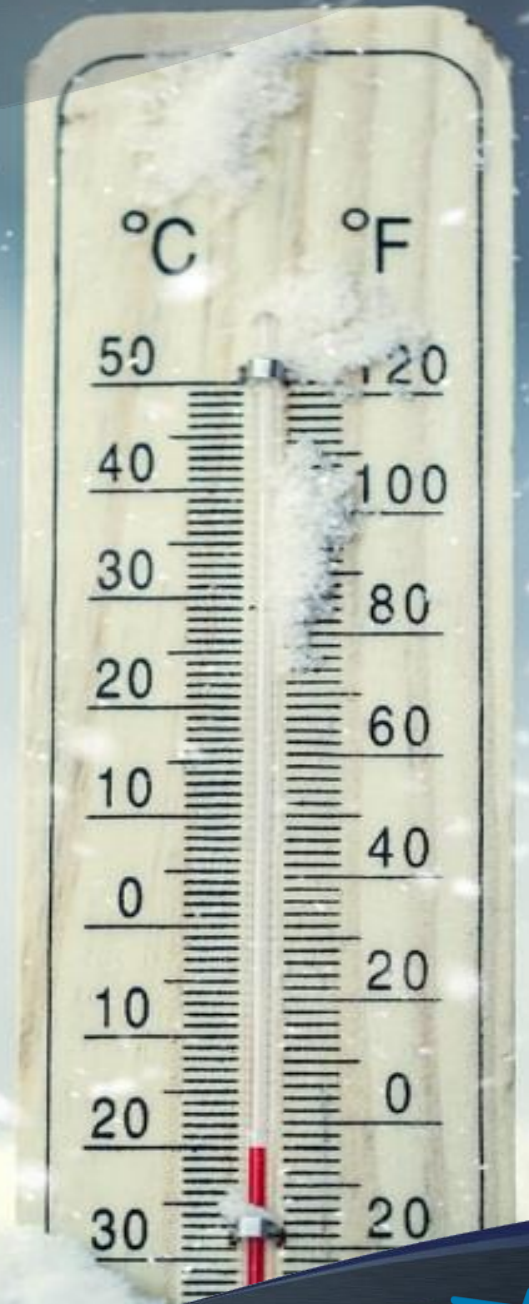
DISCHARGE  
TIME



Delivering  
**PEAK POWER**  
down to

**-40°C**

with **MINIMAL**  
**IMPACT**  
on efficiency



**ENERCRAFT ULTRA-STARTER** is equipped with Ultracapacitors manufactured by **Maxwell & Skeleton**.

Developed to obtain a Higher Peak start and to be used in extreme temperature conditions: - 40° C ↔ 65° C



# ENERCRAFT ULTRA – STARTER 28V

## THE BEAUTY OF BEING UNIQUE

### 1 Incorporates the latest technology

- ✓ **ENERCRAFT** patented design
- ✓ First to incorporate Lithium & Ultracapacitor technology
- ✓ Full operation in any weather and environmental condition
- ✓ Peak current is ensured, even in non-ideal charge conditions
- ✓ Extends & preserves the aircraft main battery useful life
- ✓ Supports more turbine starts\* without recharge
- ✓ Provides clean energy and a more efficient engine start
- ✓ True DUAL UNIT. Works as Starter and GPU (10Amp)

### 3 Protective Case

- ✓ Reliable waterproofing
- ✓ NANUK®'s patented PowerClaw latching system
- ✓ Robust and Impact resistant
- ✓ Lightweight
- ✓ Sleek and modern design

### 2 Full data display

- ✓ Voltage
  - ✓ Battery loading %
- + **USB** connector

### 4 Portable equipment

- ✓ Two stage retractable handle
- ✓ Posture-friendly
- ✓ One-handed operation
- ✓ Polyurethane wheels
- ✓ Stainless steel bearings



\* Number of starts dependent on Ultra-Starter model and aircraft engine



**GROUND POWER UNITS**

# MORE TECHNOLOGY ON THE GROUND



GPU: Supplies clean energy for a long time, for aircraft maintenance purposes.

**ENERCRAFT**



# OUR GPU LITE FAMILY

The GPU LITE family are devices developed by **ENERCRAFT** to allow energy supply for a long time, mainly for maintenance or operational purposes, working as a continuous service source. The equipment must be connected to the aircraft through the external power connector.

The GPU LITE family has been developed and tested *in house*, to offer the latest technology in energy management and supply.

The most **innovative** GPU  
Provides **clean** energy  
**Lighter** and **compact**  
The latest **technology**  
**Reliable** and **robust**



## GPU LITE VARIANTS

### GPU LITE 35

28VDC - 35 Amp

### GPU LITE 70

28VDC - 70 Amp

### GPU LITE 130

28VDC - 130 Amp

### GPU LITE 250

28VDC - 250 Amp

### GPU LITE 500

28VDC - 500 Amp



# OUR GPU LITE FAMILY



GPU LITE	35 A	70 A	130 A	250 A	500 A
AC Input	1 Phase 90-240 Vac Freq. 50/60 Hz		1 Phase (220V) or 2 Phases (110V) 180-240 Vac. Freq. 50/60 Hz		3 Phases 180-240 Vac Freq. 47/63 Hz
DC Output 28.5 ± 0.5 Volts	35 Amp Nom. 40 Amp Max.	70 Amp Nom. 85 Amp Max.	130 Amp Nom. 145 Amp Max.	250 Amp Nom. 260 Amp Max.	500 Amp Nom. 520 Amp Max.
Temperature Range	- 20° C ↔ 60° C		- 30° C ↔ 70° C		
Dimensions	15.8" x 12.1" x 6.8" 401 mm x 307 mm x 173 mm	15.8" x 12.1" x 6.8" 401 mm x 307 mm x 173 mm	18.7" x 14.8" x 7.0" 474 mm x 376 mm x 178 mm	18.7" x 14.8" x 7.0" 474 mm x 376 mm x 178 mm	22.0" x 14.0" x 9.0" 558 mm x 355 mm x 228 mm
Weight	7 kg	9 kg	10 kg	13 kg	17 kg



The Lightest and Most Compact GPU Family in the market





# INNOVATIVE DUAL SOLUTION



**ENERCRAFT** is pleased to report the success of the final testing of a unique Dual Solution, combining the best of our Ultra-Starters and the best of our GPUs LITE.

## READY FOR ORDER!

- ✓ A unique dual connector (2 x 3 PIN NATO AN2551).
- ✓ Two separate and easily portable **ENERCRAFT** units.
- ✓ Use them together, or individually.
- ✓ Optimize you Ground Operations, minimizing costs.

### Ultra-Starter + GPU LITE = Dual Solution

**Ultra-Starter:** Initiates engines operation, providing clean energy.

**GPU LITE:** Supplies clean energy for a long time.



# INNOVATIVE DUAL SOLUTION

**Feel free to combine them all !**



ULTRA-STARTER	20 Ah unit	40 Ah unit
Weight	13 kg	25 kg

GPU LITE	35 A	70 A	130 A	250 A	500 A
Weight	7 kg	9 kg	10 kg	13 kg	21 kg

## Engine Start + Continuous Power

Combine the use of **ENERCRAFT** Ultra-Starters and GPUs, while maintaining the convenience of having two small individual equipment.

Lightest weight of any comparable solution on the market.

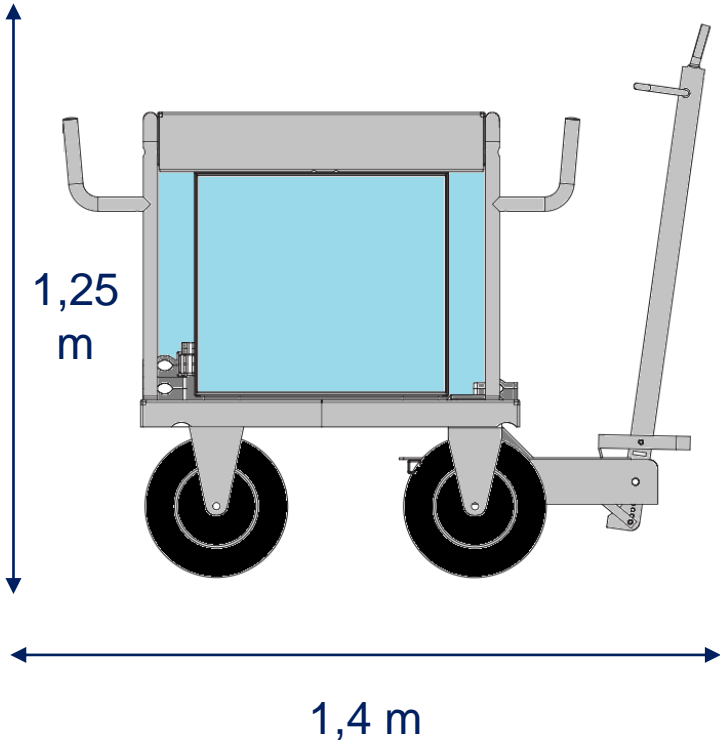
Minimum acquisition and maintenance costs.





# ENERCRAFT DUAL SOLUTION POSITIONING

## Competitor



Competitor	Specification	ENERCRAFT
400 - 600 Amps	<b>DC OUTPUT</b>	500 Amps
28V @2000 A	<b>Engine Start</b>	28V @2600 A
1	<b>Units</b>	2
<b>NO</b>	Can serve 2 aircraft	<b>YES</b>
<b>NO</b>	Portable on board	<b>YES</b>
<b>240 Kg</b>	<b>Weight</b>	25 + 17 = <b>42 Kg</b>

Additionally, **ENERCRAFT** solution is **30%** cheaper





# GREEN AIRFIELD OPERATIONS!

## REAL & COMMON CASE

Aircraft: Embraer Phenom 300  
Engines: Pratt & Whitney PW535E

Picture date: October 2019



Diesel GSE\*      Towing Truck

\*GSE: Starter + GPU



LET'S  
GO  
GREEN



PAST

FUTURE

  
**ENERCRAFT**

- ✓ Starter + GPU capabilities
- ✓ Clean Power
- ✓ Innovative Technology
- ✓ Fully Electrical
- ✓ 100% EMISSION FREE



  
**ENERCRAFT**



**COMPACT & FULLY INTEGRATED**

**THE MOST  
POWERFUL  
UNITS COME NOW IN  
THE SMALLEST  
FORMAT**

PERLAN  
MISSION II

  
ENERCRAFT

**NOTE:** Know everything about the unique Perlan Project - <https://perlanproject.org/>

  
ENERCRAFT



# PROTECT YOUR INVESTMENT

**First** Ground Equipment family conceived to be **fully integrated into a protective case**, designed and certified to guarantee the life of the **ENERCRAFT** equipment, even if it is exposed to the harshest daily conditions.

- ✓ NANUK®'s patented **PowerClaw** latching system to clamp your case tight.
- ✓ Reliable **waterproofing**, which resists deformation and fatigue. Nothing gets in.
- ✓ **Impact resistant**, absorbing shocks without damaging the case and, more importantly, its delicate content.
- ✓ Lightweight, and armed with NK-7 resin bodies.
- ✓ Sleek and **modern design**. Soft corners and chamfered edges.



plast<sup>i</sup>case  
**NANUK**<sup>™</sup>  
PROFESSIONAL PROTECTIVE CASES



# MOBILITY IS OUR MUST



**First Ground Equipment family designed to offer smooth mobility.**

## **Two stage retractable handle**

Hassle-free transport comes courtesy of NANUK®'s two-stage retractable handle. Posture-friendly, the handle can be adjusted to two different heights and offers easy, one-handed operation with its quick release button.

## **Polyurethane wheels**

Smooth mobility is a major advantage, especially when transporting fragile and sensitive equipment. All cases come equipped with polycarbonate wheels moulded with polyurethane. These wheels, along with their stainless steel bearings, ensure a quiet, effortless trip over a multitude of terrains and through a number of weather conditions.





**AND IT FLOATS TOO !**

**100% WATERPROOF**



**THE EQUIPMENT THAT  
NEVER SINKS**



# WE ADDRESS SPECIAL NEEDS

**ENERCRAFT GSE** main applications are found in civil, commercial and military sectors:

**Aeronautics:** aircraft, helicopters, UAVs.

**Land vehicles:** tanks and heavy transportation.



## ONE DESIGN MAY NOT FIT ALL



## TALK TO US and WE'LL DESIGN YOUR CUSTOMIZED EQUIPMENT

Aircraft and heavy vehicles start

Clean energy support in maintenance, repair or operational tasks

Check aircraft and vehicles status through energy patterns

Prevention and risk management



**PROVEN TECHNOLOGY. MADE IN CANADA**



**HIGHEST  
QUALITY**

**&**

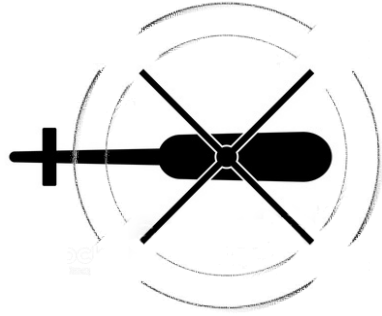
**INTERNATIONAL  
MANUFACTURING  
STANDARDS**



**A brand new Serial Production Line has been  
established in Barrie, Ontario**



# ENERCRAFT - GALLERY



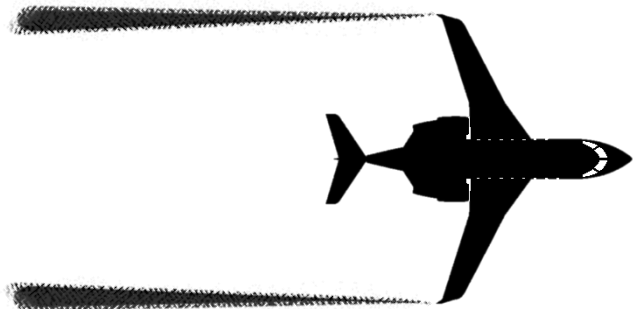
✓ Helicopters

✓ Business jets

✓ General aviation

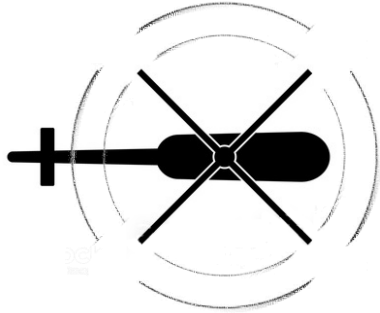
✓ Commercial

✓ Defense





# ENERCRAFT - VIDEOS



**ENERCRAFT Customer:** DAP Helicopters (<https://dapairline.com>)  
**Location:** South of Chile. Antarctica  
**Aircraft:** Aerospatiale 355F2 Ecureuil 2 (AS355)  
**ENERCRAFT Equipment:** Ultra-Starter UST-4030  
**Youtube Link:** <https://www.youtube.com/watch?v=poE0nJVQAWQ>



## DAP



**ENERCRAFT Customer:** PERLAN Project (<https://perlanproject.org>)  
**Location:** South of Argentina. El Calafate  
**Aircraft:** Egrett Grob 520  
**ENERCRAFT Equipment:** Ultra-Starter UST-4030  
**Youtube Link:** [https://www.youtube.com/watch?v=thzChg\\_NI6U&t](https://www.youtube.com/watch?v=thzChg_NI6U&t)

PERLAN  
MISSION II







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