



ENERCRAFT

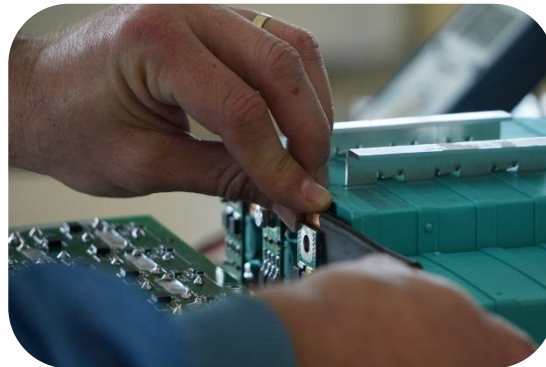
Energy to Fly

New Generation Ground Support Equipment

February 2020



ENERCRAFT



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	11 kg	23 kg



NEW ADDITION !!

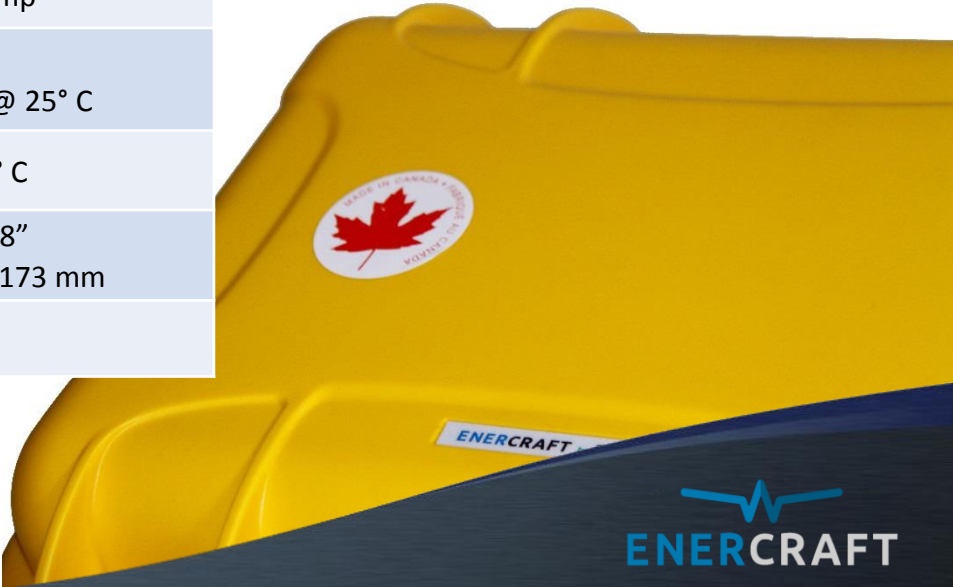


NEW Ultra-Starter 12V

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

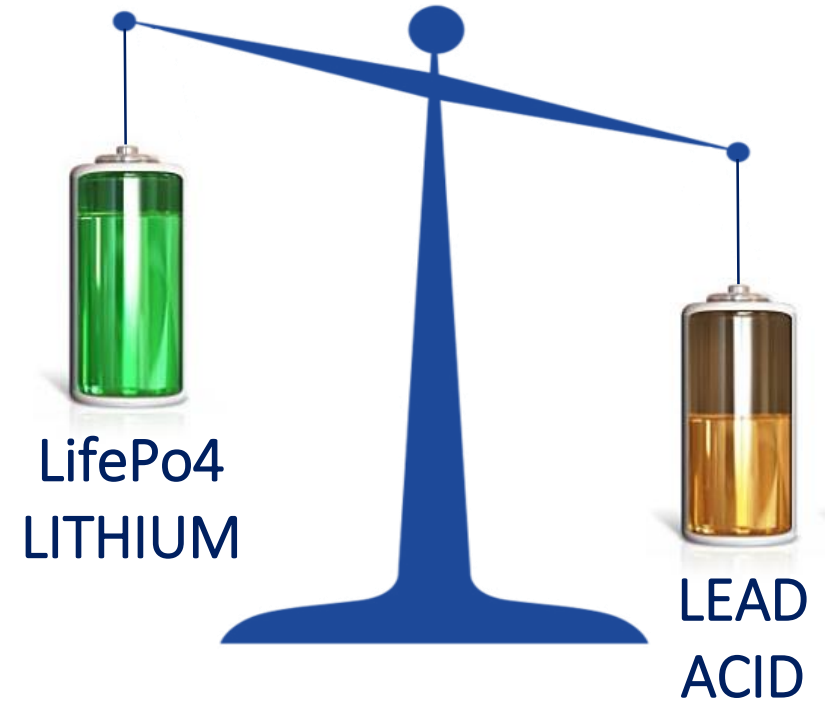
30%

more **USEFUL
ENERGY**

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

NO **MEMORY
EFFECT**

WEIGHT



LifePo4
LITHIUM

LEAD
ACID

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

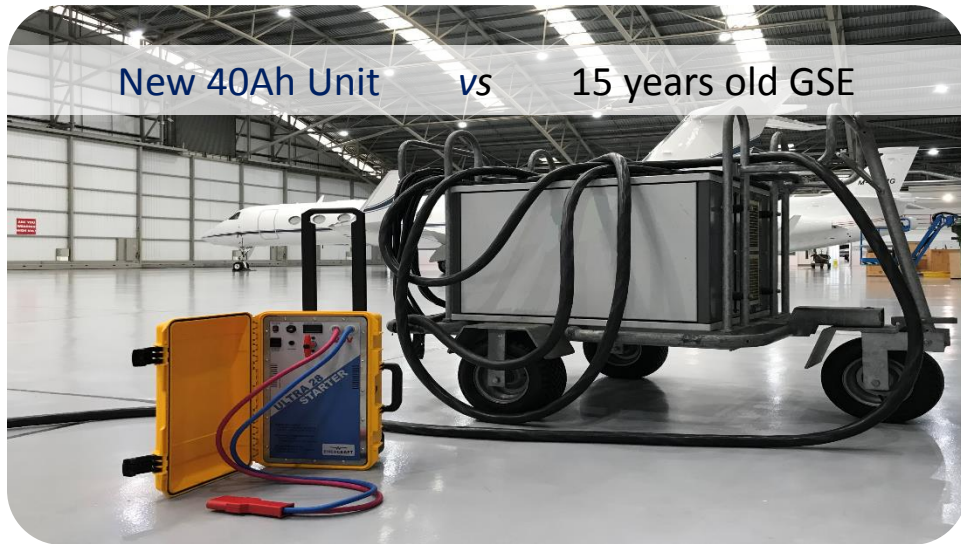


No harmful materials

COMPLEMENTARY TECHNOLOGIES

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

Welcome to the future of electrification

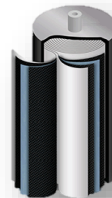


A new step in innovation

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)



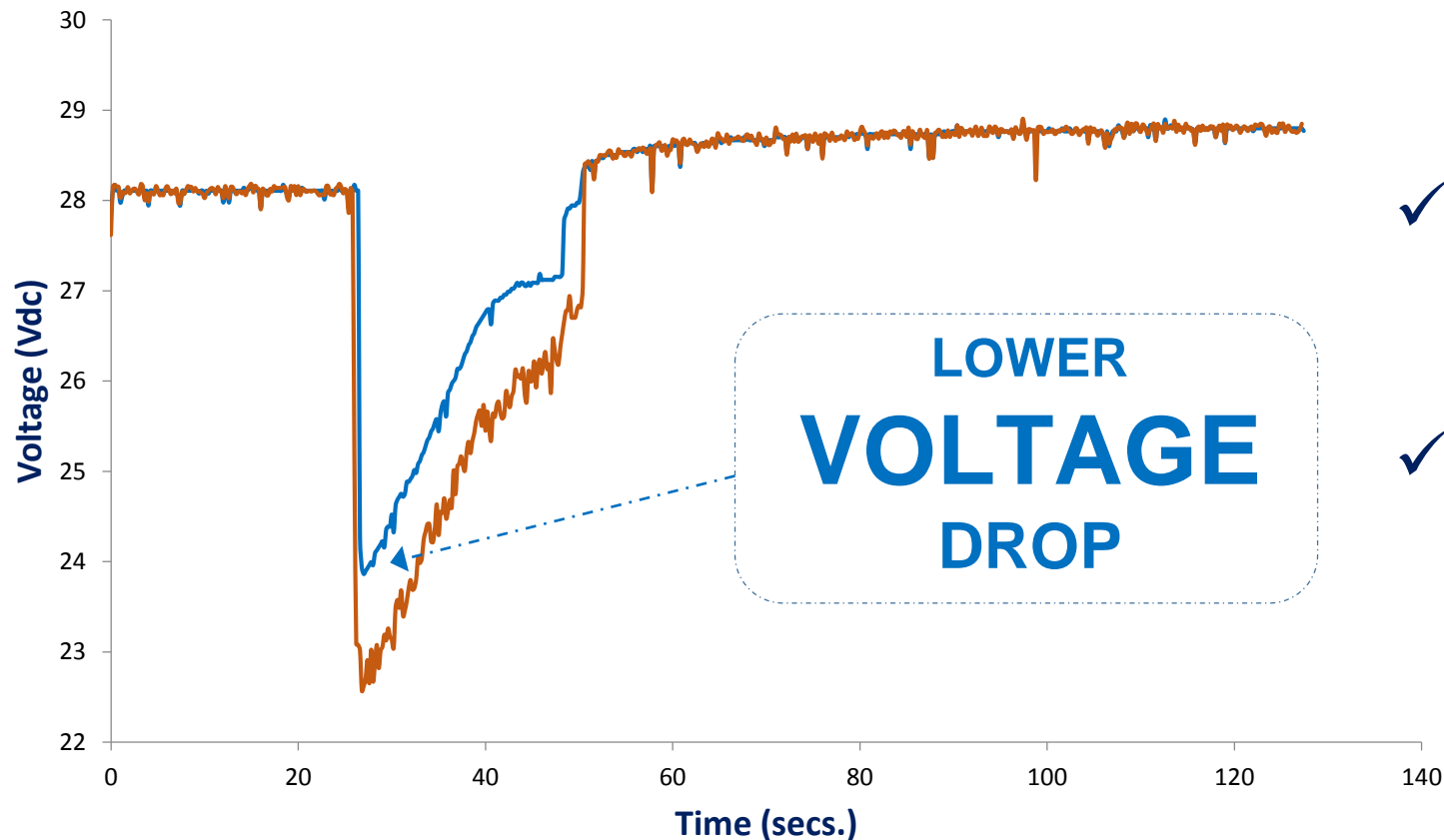
UST-2012
(20Ah)

* 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

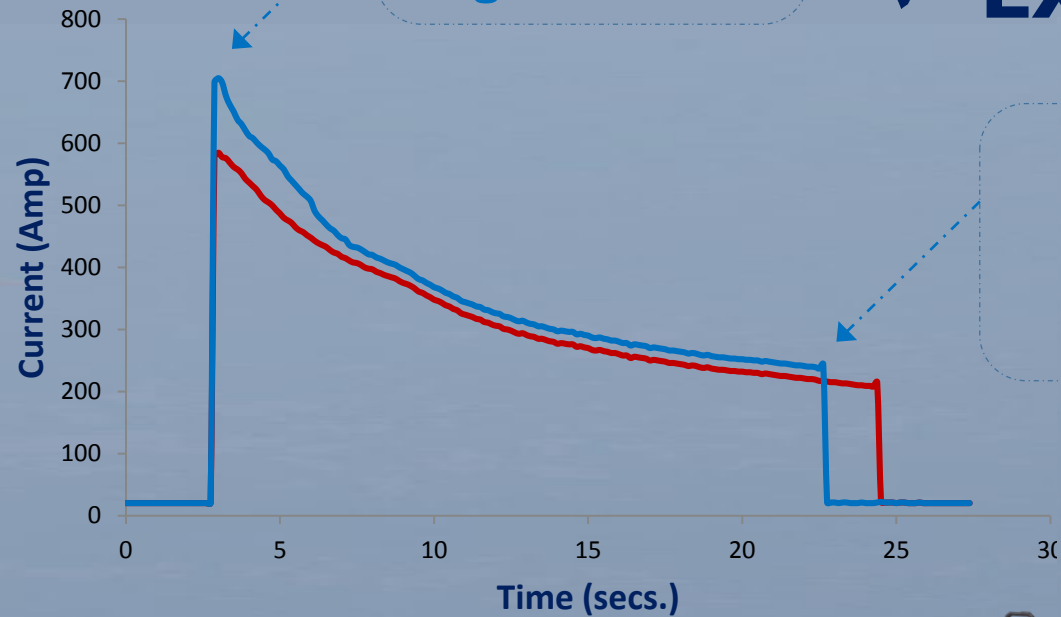
ENSURE AN UNBEATABLE PEAK CURRENT

ENERCRAFT POSITIONING

20%
higher PEAK

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

✓ **EXTENDING the LIFE of your TURBINE**



8%
FASTER



• **Competitor**
(40Ah)



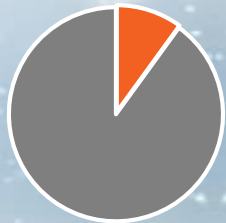
• **ENERCRAFT**
(40Ah)




ENERCRAFT

EXTREMELY HIGH EFFICIENCY

LOW TEMPERATURE PERFORMANCE



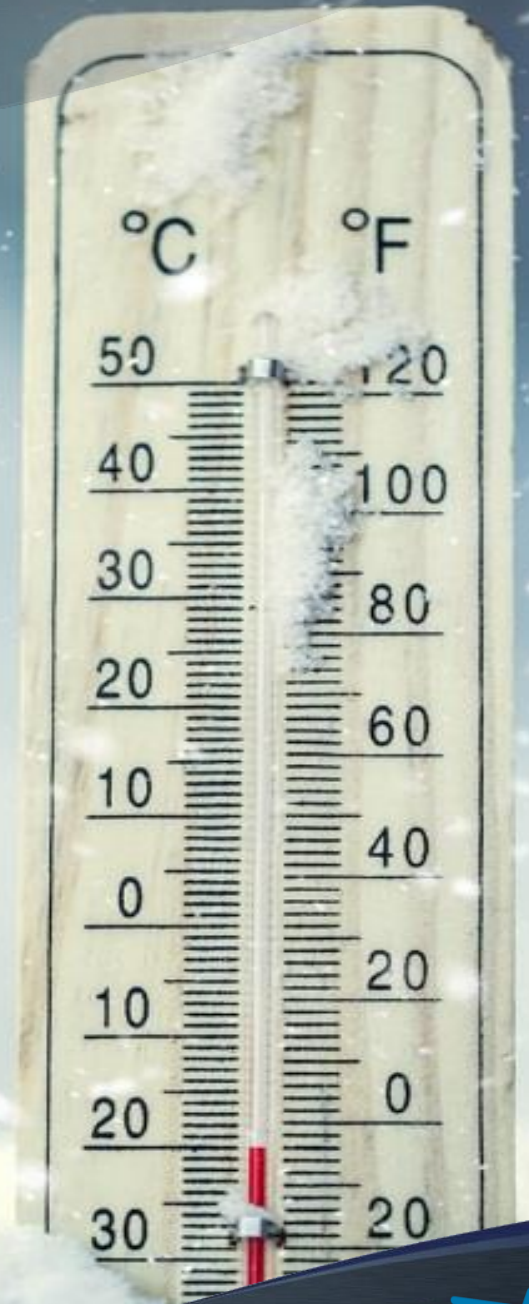
DISCHARGE
TIME



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 28.5Volts	35 Amp Nom. 40 Amp Max.	70 Amp Nom. 90 Amp Max.	130 Amp Nom. 145 Amp Max.	250 Amp Nom. 260 Amp Max.	500 Amp Nom. 520 Amp Max.
Temperature Range	- 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	5 kg	7 kg	8 kg	10 kg	15 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	11 kg	23 kg

GPU LITE	35 A	70 A	130 A	250 A	500 A
Weight	5 kg	7 kg	8 kg	10 kg	15 kg

Engine Start + Continuous Power

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

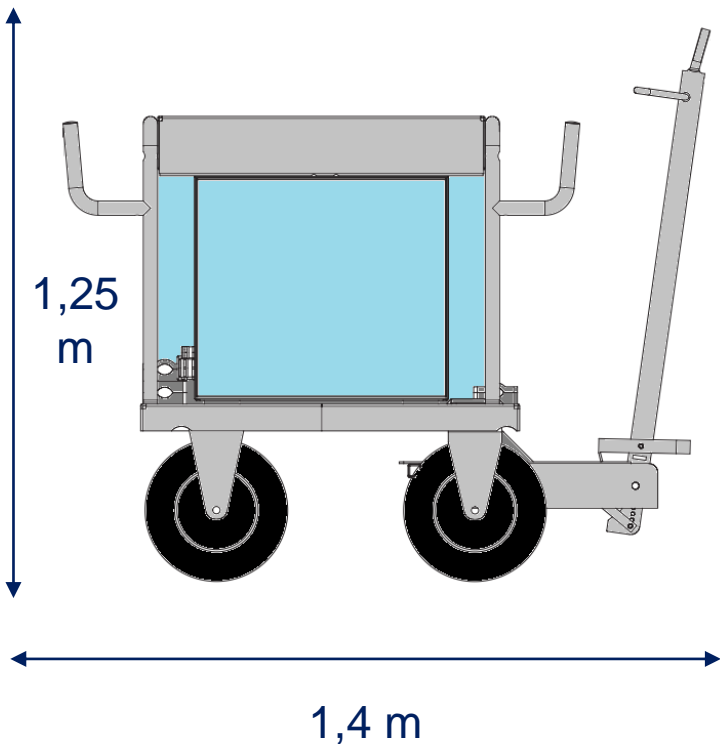
Lightest weight of any comparable solution on the market.

Minimum acquisition and maintenance costs.



ENERCRAFT DUAL SOLUTION POSITIONING

Competitor



Competitor	Specification	ENERCRAFT
400 - 600 Amps	DC OUTPUT	500 Amps
28V @2000 A	Engine Start	28V @2600 A
1	Units	2
NO	Can serve 2 aircraft	YES
NO	Portable on board	YES
240 Kg	Weight	23 + 15 = 38 Kg

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.



plastⁱcase
NANUK[™]
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**

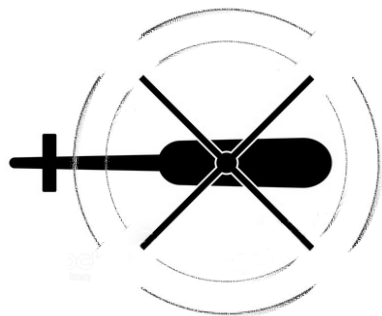
&

**INTERNATIONAL
MANUFACTURING
STANDARDS**



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

ENERCRAFT - GALLERY



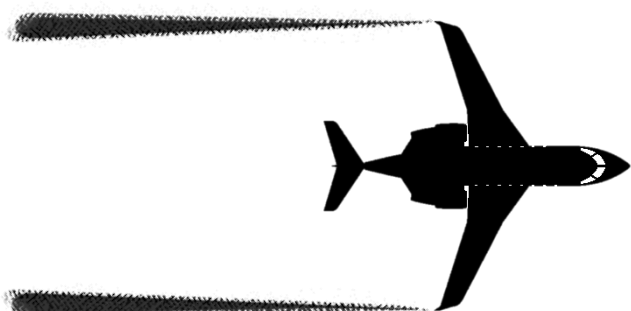
✓ Helicopters

✓ Business jets

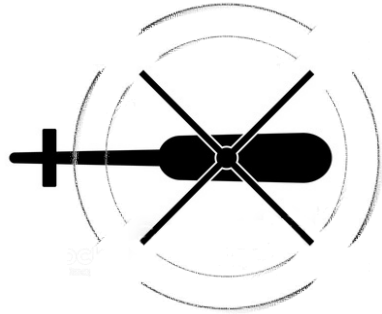
✓ General aviation

✓ 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

PERLAN
MISSION II





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