

avion  
power

Voyager is a light-weight, 28V/20Ah, portable power source designed to start aircraft engines and provide hours of ground power.

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## Highlights

- Light-weight, portable, dependable, safe
- At least 10 starts per charge
- Hours of continuous power for maintenance work, avionics, on-board medical equipment, or other accessories
- Real-time, wireless display of current, voltage, and temperature
- Charge in-flight or in hangar
- Rapid recharge rate
- Minimal self-discharge (3% per month)
- Long life expectancy (2,000 or more cycles)



Users will benefit from enhanced operational capabilities and improved mechanical performance



## Benefits

- Redundant start capabilities in any location
- More battery power to run electronics and accessories on battery power in any location
- Cooler, faster engine starts
- Less stress on starters, digital engine controls, avionics, and other engine components
- Measure the aircraft's electrical load any time
- Longer life of on-board, lead-acid batteries
- Simplified, more efficient maintenance operations



# The Voyager tells you more than you've ever known about your aircraft's power management.

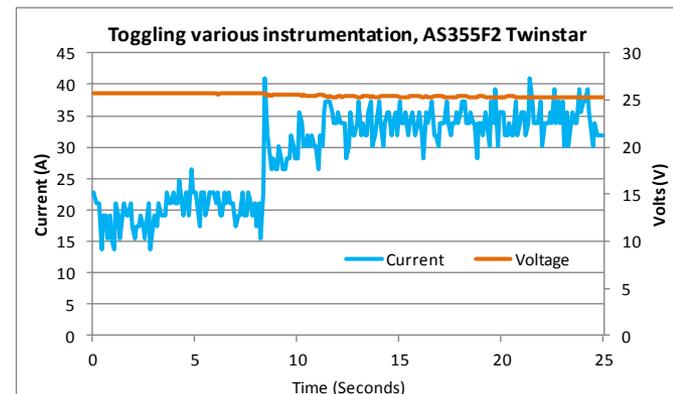
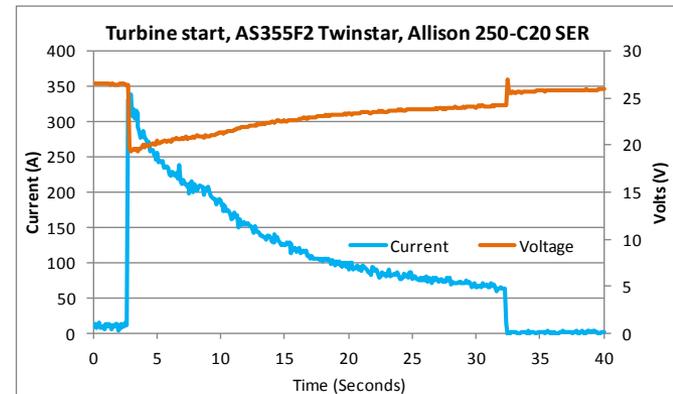


## Voyager / Bluetooth

- Ten or more turbine starts
- An hour or more of auxiliary power
- Real-time display of current, voltage, and temperature
- Record and store hundreds of start profiles and maintenance loads
- Can be used with Android or Microsoft devices

## Benefits

- Power wherever and whenever you need it
- Monitor changes in start profiles
- Document performance of turbine and starter
- Measure the aircraft's electrical load
- Track-down short circuits
- Troubleshoot electrical problems
- Avoid electrical surprises



Voyager's specifications are equivalent to those of lead-acid batteries that are three times heavier.



Specifications	
Nominal voltage	26V
Capacity	20Ah
Continuous current	400A
Ipp / Ipr (14V and 25C)	1600A / 1200A
Operating temperature	-20C to 60C
Storage temperature	-40C to 60C
Starts per charge	> 10 starts
Water resistant	Yes
Length x width x height	17.7" x 6.2" x 4.6"
Weight	15 lbs



# Avion Power's Modular Battery System has an Air Worthiness Release and the 160<sup>th</sup> has flown it since 2010.



## Modular Battery System

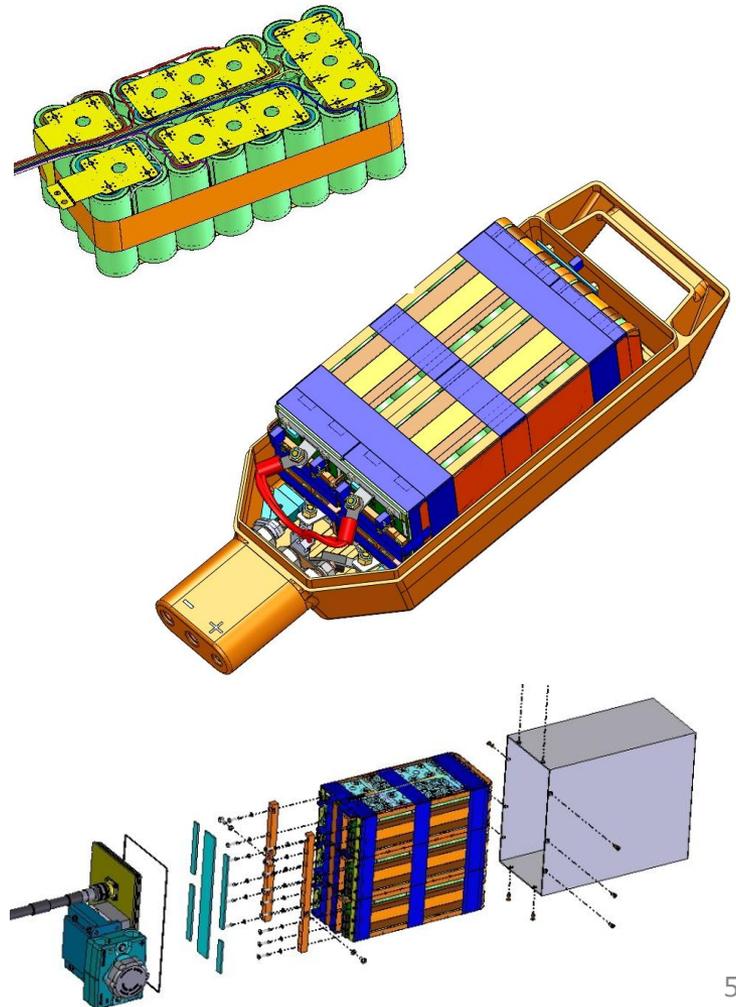
- The Modular Battery System (MBS) is the core technology in our main aircraft batteries, the Voyager battery, and our weapons power systems.
    - Cells are grouped into modules
    - Electronic safeguards and sensors are added
    - Modules are grouped into batteries
    - Testing occurs at every step
- 
- Result: Optimized power, capacity, and performance

## Air Worthiness Release (AWR)

- Performance testing proved operational readiness
- Safety testing proved tolerance of abusive conditions, faulty usage, and violent destruction
- Environmental testing proved tolerance of destructive environmental conditions

## Track record

- Our main aircraft battery has powered the 160<sup>th</sup>'s MH-47 Chinooks since 2010
- Hundreds of batteries delivered
- Fewer than 3% needed repair



# The Modular Battery System's Air Worthiness Release was predicated on a comprehensive set of laboratory and field testing.



## Performance testing

Ambient temperature	Hot temperature	Repetitive deep discharge
Cold temperature	Repetitive shallow discharge	MELB turbine start

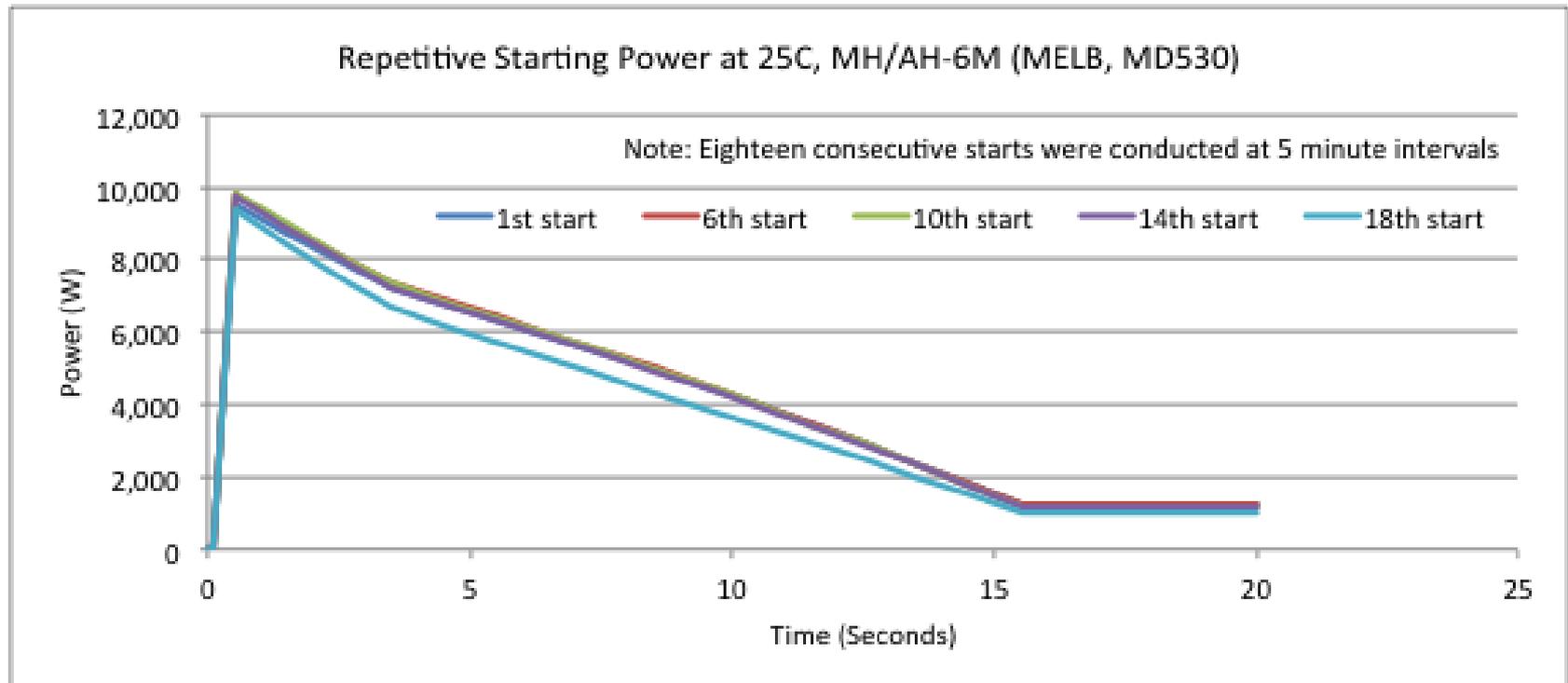
## Safety testing

Short Circuit. BMU and protective circuit disabled	High temperature	Rod puncture
Short Circuit. BMU and protective circuit active	Electrical safety device	Aging cycling
Over-charge and discharge. BMU disabled	Abnormal voltage spike	Gunfire penetration
Over-discharge and charge. BMU disabled	Crush	

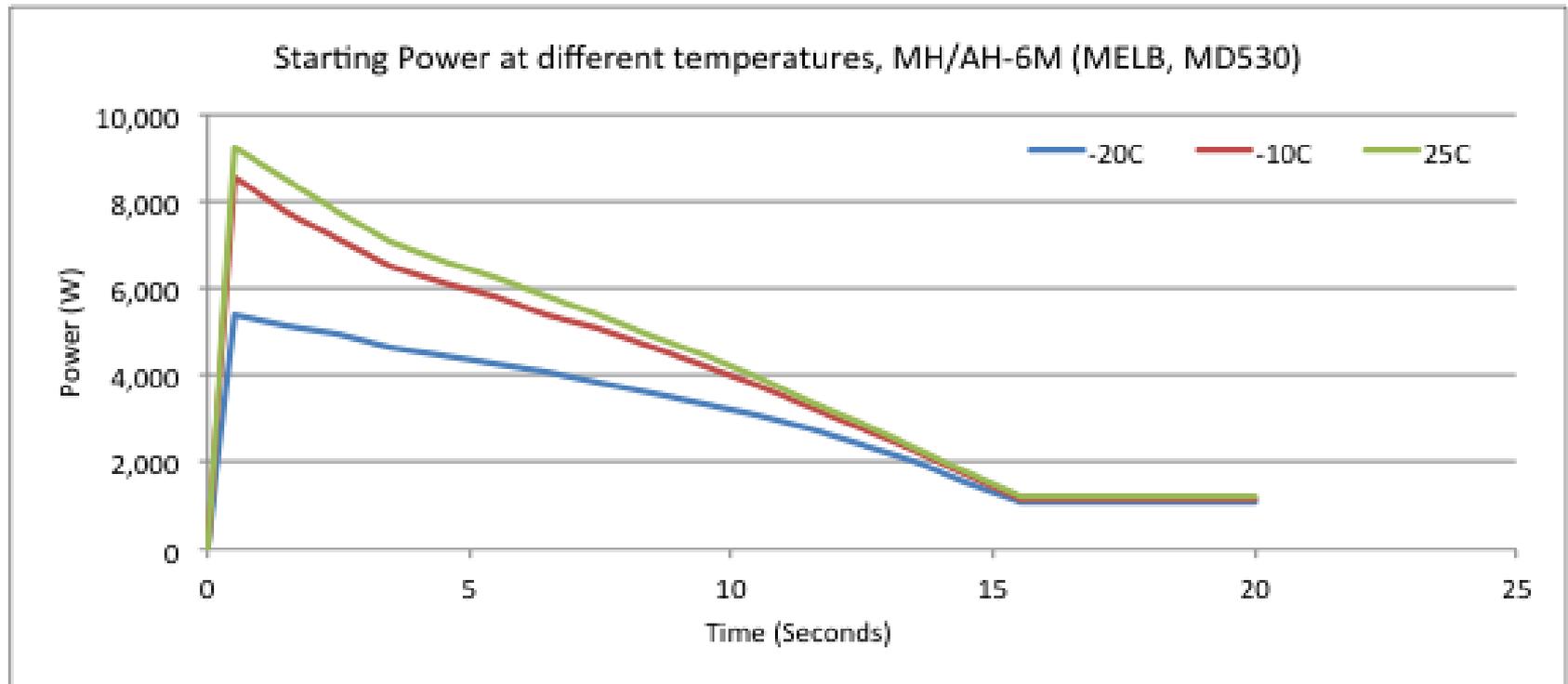
## Environmental testing

Temperature, altitude, humidity	Shock functional	Fungus
High / low temperature storage	Shock bench handling	Salt fog
Altitude / transportation storage	Temperature shock	Blowing sand and dust
Explosive atmosphere	Rain	Acceleration
Shock crash hazard	Humidity	Vibration

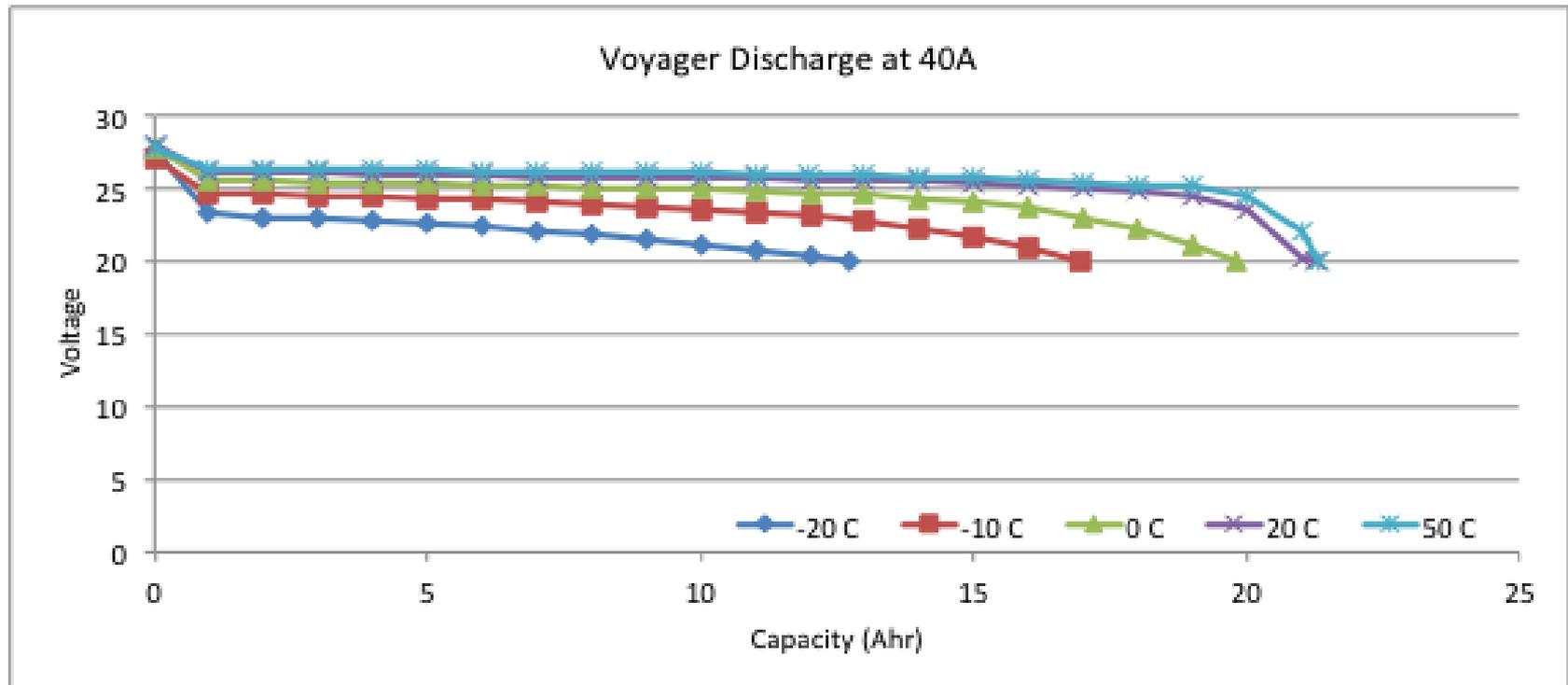
Voyager is capable of conducting repetitive turbine starts.



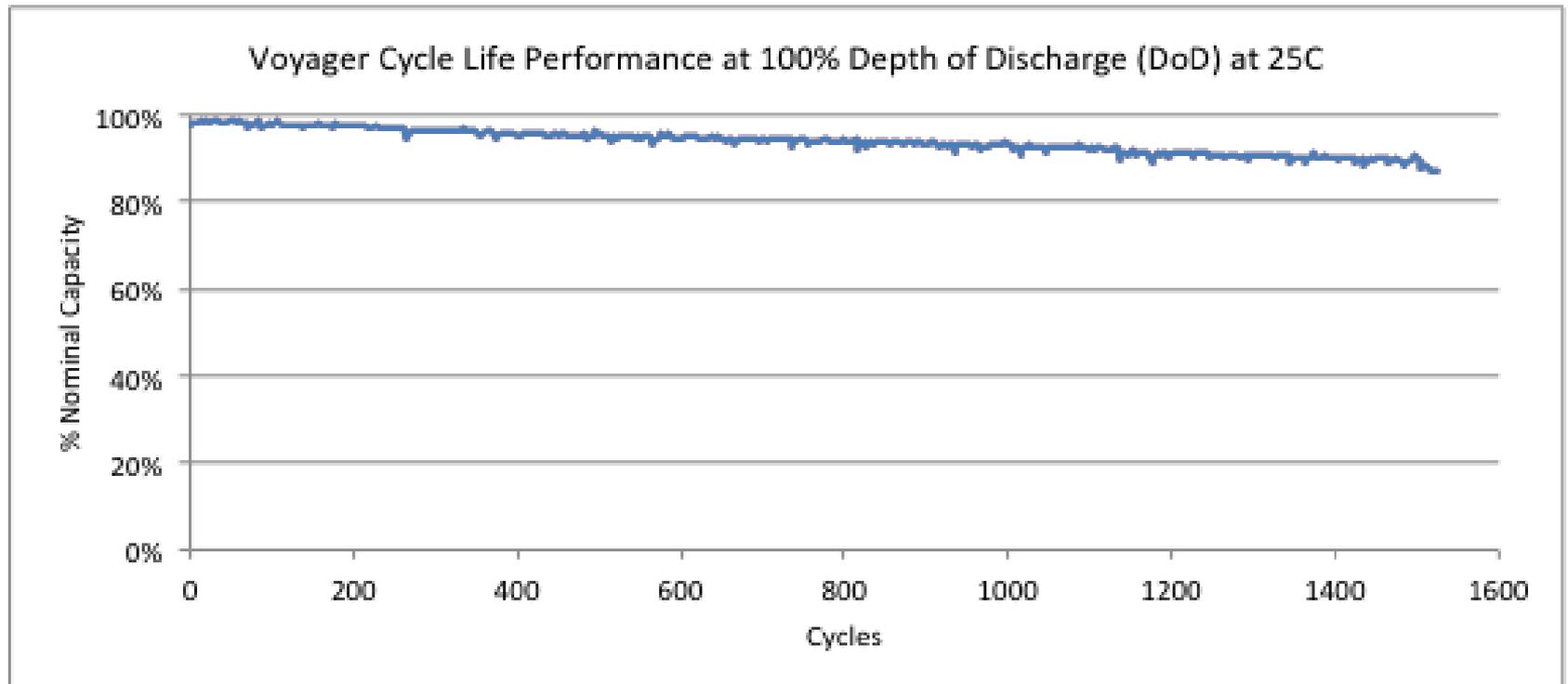
Voyager performs in cold weather. It's portability also makes it very easy to keep warm.



Depending on load and temperature, Voyager can supply auxiliary power for an hour or more.



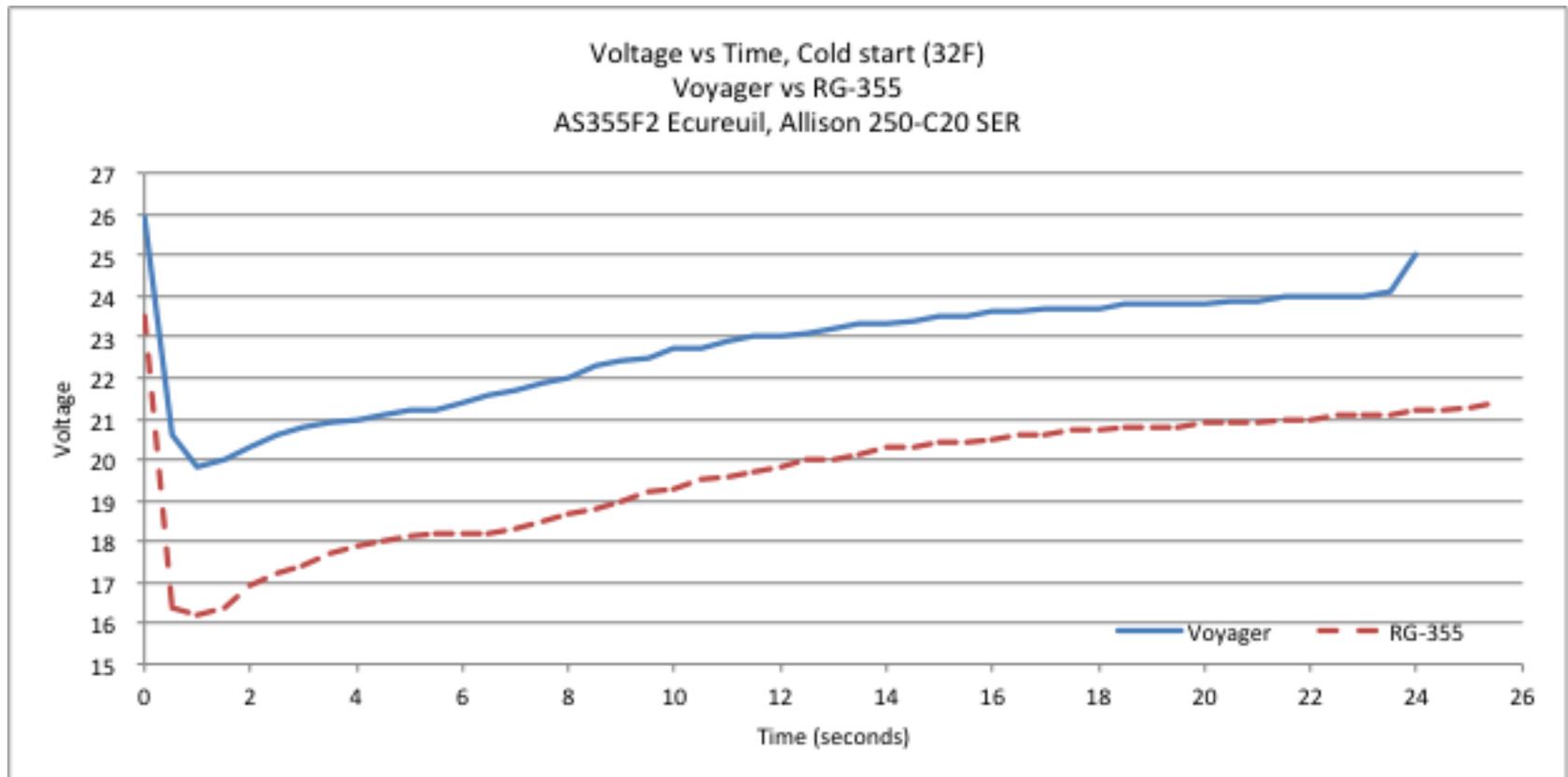
Voyager can be recharged 1,000s of times.



Voyager delivered a cooler, faster, more powerful start than the Concorde RG-355.



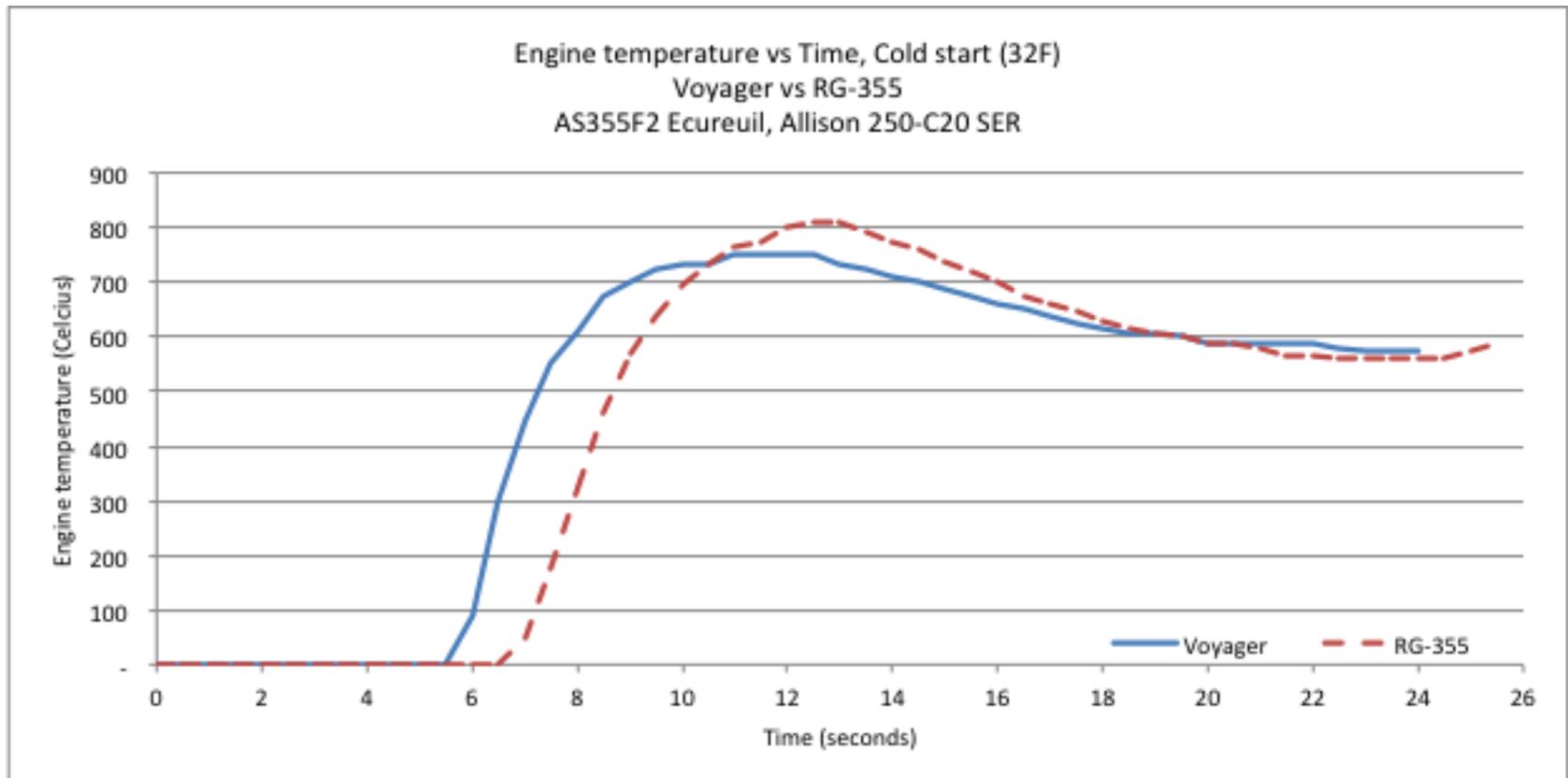
Voyager's voltage profile outperformed the RG-355 by 3-4 volts throughout the start



Voyager delivered a cooler, faster, more powerful start than the Concorde RG-355.



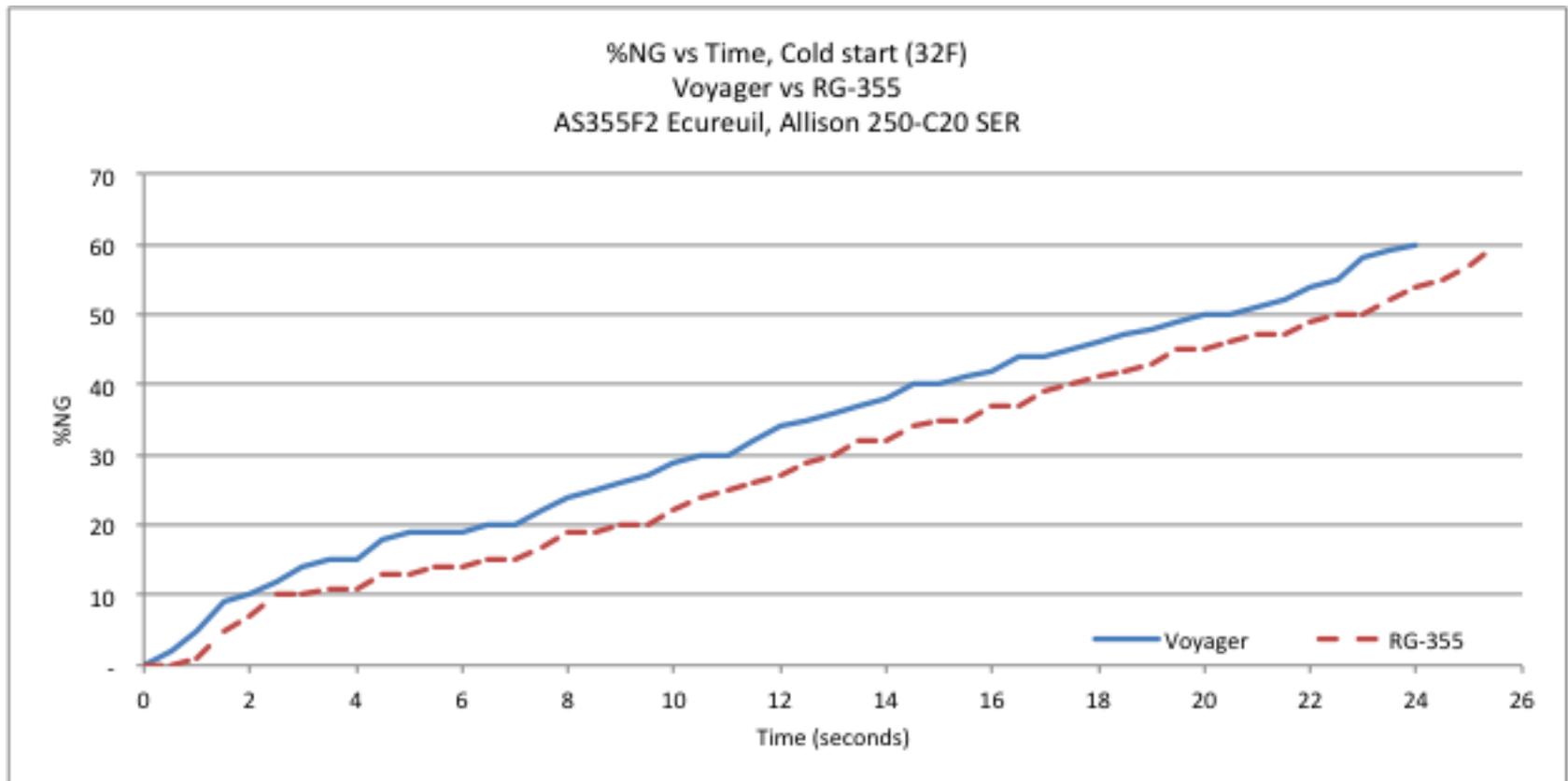
Turbine temperature was 60C cooler using Voyager



Voyager delivered a cooler, faster, more powerful start than the Concorde RG-355.

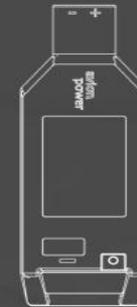


Voyager's %NG profile outperformed the RG-355 by 4-6 percentage points throughout the start



introducing **voyager**  
a revolutionary aviation  
power source  
**welcome to a new start.**

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Avion Power develops and manufactures advanced battery systems for government, military, industrial, and commercial clients worldwide.

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