AIRTECHNOLOGY / AMETEK®

AUXILIARY POWER UNIT (APU)



WHEN
EXCEPTIONAL PERFORMANCE
MATTERS

General Overview

Auxiliary Power Units (APU) and Combined Auxiliary Power Units with Air Conditioning Systems provide the vehicle with a provide the vehicle with a source of power when the main engine is switched off – the power being used to drive a suitable 28V DC generator and, when an AC System is incorporated, refrigeration compressor, although they have also been proposed for other applications including hydraulic power generation.

The systems are specifically configured for each potential application, taking into account the specific vehicle requirements for:

- Electrical Power Generation
- Cooling/HeatingPerformance
- Space Availability
- Operating Temperature and Altitude Range



AC165 Main Battle Tank APU / AC

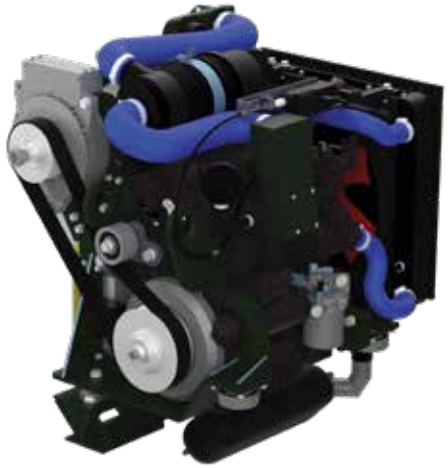
The AC165 APU was designed for a Main Battle Tank application, forming part of a prototype APU and Air Conditioning System. The APU was designed to be installed in a hull compartment directly in front of the main engine compartment and offersa rapid removal and replacement capability.
The APU was designed to operate at all times and provide power to drive the AC compressor and AC condenser fan, in addition, providing the necessary 250 Amp 28v dc electrical power supply. The AC evaporator was installed in the crew compartment and provided heated or cooled air to the vehicle occupants.



AC165 - Main Battle Tank	
Engine	4 cylinder, 4-stroke diesel
Power	20.3kW nominal at 2850 rpm
Generator	250 Amp 28V DC
Mounting	Installed in hull compartment
Cooling Capacity	6.5 kW
Heating Capacity	6.0 kW
Design Ambient	-30°C + 50°C

AC143 Command Post Vehicle APU / AC

The AC143 APU was designed for a Command Post Vehicle.
Designed to fit in a semi-armoured pannier installed at the rear of the vehicle, one requirement was that the APU pannier should not look particularly different to a standard pannier. A very compact layout was required mimicking the profile of a standard storage pannier on the opposite side of the vehicle.
The APU was also designed to operate when the main engine was switched off and provided power to drive an AC compressor and AC condenser fan, in addition to providing the necessary 150 amp 28v dc electrical power supply. An additional AC compressor and condenser were installed in the vehicle for use when the main engine was running, with a valve arrangement being employed to connect whichever compressor/condenser was in operation (driven by the main engine or APU) to the evaporator installed in the crew compartment – providing cooled air to the vehicle occupants via a customer-supplied duct system.



AC143 - Command Post Vehicle	
Engine	3 cylinder, 4-stroke diesel
Power	13kW nominal at 3000 rpm
Generator	150 Amp 28V DC
Mounting	Semi-Armoured rear stowage bins
Cooling Capacity	6.8 kW
Design Ambient	-31°C + 44°C

AC143 Forward Observer Vehicle APU

This is a variant of the AC143 Command Post APU as described above, configured to suit the specific requirements of the Forward Observer Vehicle platform.
Also designed to fit in a semi-armoured pannier installed in the rear of the vehicle, this is an APU only application, i.e. no AC requirement. The engine power is dedicated to providing 28 V DC over the specified temperature and altitude range.
This APU includes a CANBUS controller, allowing operation via the vehicle databus, as well as from a local control box that provides a reversionary control capability in the event of a databus failure.



AC143 - Forward Observer Vehicle	
Engine	3 cylinder, 4-stroke diesel
Power	15kW nominal at 3000 rpm
Generator	310 Amp 28V DC
Mounting	Semi-Armoured rear stowage bins
Design Ambient	-31°C + 49°C

AC196 Battery Command Post Vehicle APU

The AC196 APU has been developed for an Artillery Battery Command Post Vehicle application. Designed to be installed at the rear of the sponson, above the vehicle tracks, this installation makes best use of the available space and does not alter the vehicle profile.
The APU was also designed to operate at all times and to provide power to drive the AC compressor and AC condenser fan, in addition, providing the necessary 100 amp 28V dc electrical power supply. The AC evaporator is installed in the crew compartment and provides heated or cooled air via two, customer supplied, duct system for the crew and on board electrical equipment.



AC196 - Battery Command Post Vehicle	
Engine	4 cylinder, 4-stroke diesel
Power	20kW nominal at 2900 rpm
Generator	100 Amp 28V DC
Mounting	Installed in vehicle sponson
Cooling Capacity	10.6 kW
Heating Capacity	3 kW
Design Ambient	0°C + 55°C

AC1522 Self-Propelled Howitzer Vehicle APU

Providing 28V DC to a Self-Propelled Howitzer, during action or silent watch, This APU is installed under armour in a compartment to the rear of the vehicle hull. The APU is mounted on a slide arrangement so, for maintenance and servicing activities, can by pulled out of its compartment for easy access.

This is an APU only application, i.e. no AC requirement, so the engine power is dedicated to providing 28V DC over the specified temperature and altitude range. The APU includes a range of sensors and control modules, to monitor performance, plus a Control Box for User operation.



AC1522	
Engine	3 cylinder, 4-stroke diesel
Power	15kW nominal at 3000 rpm
Generator	200 Amp 28V DC
Mounting	Installed in vehicle sponson
Design Ambient	-30°C + 50°C

AC159 Forward Observation Vehicle APU

The AC159 APU was designed for an Infantry Fighting Vehicle – Forward Observation Vehicle Variant. Designed to be installed in an acoustic enclosure of AMETEK Airtechnology design, mounted on the roof of the vehicle, a particular requirement for this APU was that the noise level had to be minimised for when the vehicle was operating in its Forward Observation role. The APU was also designed to operate at all times and provided power to drive the AC compressor and AC condenser fan, in addition to providing the necessary 120 amp 28v dc electrical power supply. Two AC evaporators were installed in the crew compartment, providing cooled air to the vehicle occupants via a customer-supplied duct system.



AC159	
Engine	3 cylinder, 4-stroke diesel
Power	13kW nominal at 3000 rpm
Generator	120 Amp 28V DC
Mounting	Roof mounted in acoustic enclosure
Cooling Capacity	6.5 kW
Design Ambient	-31°C + 52°C

Contact Us

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