MEDHA

Auxiliary Converters

Wide range of Auxiliary Converters to adopt existing designs or design new products to provide an optimized solution for varying applications

2.5 TO 540 KVA

There are no standard auxiliary converters that can fit different applications. Requirement of every auxiliary converter is unique and accordingly designed.

Medha has designed different types of auxiliary converters in the range of 2.5 kVA to 540 kVA and for various types of applications such as air-conditioned passenger coaches, electrical multiple units and metro cars.

- Proven-in-use modules, packaged to meet space and weight restrictions
- Mild Steel (MS), Stainless Steel (SS) or Aluminum (Al) enclosures with IP54 or better protections
- Under-frame or on-board mounted, light weight solutions
- Energy efficient solutions
- In-built redundancy and reliability for improved availability
- Natural, forced air or liquid cooled
- Customized for input from Alternator, Transformer winding or Third Rail supply (600 to 750 Vdc)

Flexibility to suit customer needs

- Input : AC or DC or both
- Input source : Vehicle transformer, Alternator, Traction Converter dc link, Battery Bank, Third Rail or others
- Output : AC or DC or both
- Cooling : Natural/Forced air convection or Liquid cooling
- Auxiliary loads : Blower, Pump, Compressor, Lighting, Fan, HVAC, Heating, Battery charging, Radiator fan, other vehicle specific sub-systems
- Converter mounting : Underframe, On-board, Roof or as Distributed modules
- Weight : as per customer requirement
- Body : Mild Steel, Aluminum, Stainless Steel

Sample architecture

- Input power is processed through a converter to provide a stable and controlled DC bus voltage. Output may be another DC stage (with or without galvanic isolation) or an AC inverter with regulated output.
- IGBT switching devices used along with Thyristors, power diodes and MOSFETs.
- Polypropylene (dry) capacitors used for improved life and ripple handling capabilities.
- Magnetics (transformers and inductors) used for isolation and harmonic filtering.
- Sensors (voltage, current, temperature) used for control, monitoring and protection purposes.
- Optic fiber communication for electrical noise immunity.
- DSPs or Microcontrollers used for overall controls.
- Type tested to latest IEC standards such as IEC61287, IEC60571, and IEC61373.

Customer Options

Medha offers a wide range of auxiliary converters that are currently used for powering auxiliary loads in Diesel / Electric Locomotives, EMUs, DMUs and Metros. Typical loads involved are a combination of blowers, pumps, compressors, lighting, fans, air-conditioning (HVAC), battery charging and auxiliary power required by other sub- systems.

Current product offering has a wide selection of input power type such as AC power from auxiliary winding of traction transformer, DC power from Alternators (rectified) / Traction Converter or battery banks. Offered converters are available for range of power rating from 2.5 kVA up to 300 kVA with combination of AC and DC outputs for different loads.

Typically the input power is processed through a converter stage to provide a stable and controlled DC bus voltage. The output can be another DC stage (with or without galvanic isolation) or an AC inverter with regulated output to handle different AC loads with varying voltage, frequency and power.

Auxiliary Converters also vary by type of cooling and mounting rating, location, cooling method, input / output voltage, type of loads, harmonic distortion requirements, isolation and protection requirements. sinks and from underframe mounting to on-board cooling and mounting selection is based on customer preference, availability of space, auxiliary power and availability of filtered cooling air / water.

Some of the Implemented Solutions

	Rating	Input	Output	Cooling	Other Details
Electric Locomotive	**300 kVA** 132 kVA X 3	**600-1200 Vac (1F)** from transformer auxiliary winding	**415 Vac (3F), 132 kVA &** **110 Vdc, 12 kW** for battery charger	**Forced air cooling**	**IP54 cabinet** Inbuilt redundancy and load change overs among three inverters
Electric Locomotive	**180 kVA**	**500-1140 Vac (1F)** from transformer auxiliary winding	**415 Vac (3F), 162 kVA** for TM cooling, & Compressor **110 Vdc, 18 kW** for battery charger	**Forced air cooling**	**IP54 cabinet**
Electric Multiple Unit (EMU)	**125 kVA**	**1800 Vdc** from dc Link of Traction Converter	**415 Vac (3F), 87 kVA** for propulsion cooling, compressor, coach ventilation **110 Vac (1F), 21 kVA** for lighting & fans **110 Vdc, 14.4 kW** for all DC loads **110 Vdc, 2.6 kW** for battery charger	**Forced air cooling**	**IP54 cabinet**
Electric Multiple Unit (EMU) Underslung	**540 kVA**	**285 - 450 Vac (1F)** from traction transformer secondary	**415 Vac (3F), 275 kVA + 235 kVA** for air conditioning, propulsion cooling, compressor, pantry loads **110 Vdc, 30 kW** for battery charger, coach lights, doors, and other DC loads	**Forced air cooling**	**IP65 cabinet** underframe mounted
Metro Cars	**160 kVA**	**500 - 1000 Vdc** from third rail collector	**415 Vac (3F), 132 kVA** for air conditioning **110 Vdc, 25 kW** for all DC loads and battery charger	**Natural Air Convection cooled**	**IP65 cabinet** underframe mounted
Metro Cars	**50 kW**	**500 - 1000 Vdc** from third rail collector	**415 Vac (3F), 25 kVA** for air conditioning **110 Vdc, 25 kW** for battery charger	**Natural Air Convection cooled**	**IP65 cabinet** underframe mounted
Metro Cars	**5 kW**	**500 - 1000 Vdc** from third rail collector	**6-12 Vdc, 5 kW** for field injection to TM for braking	**Natural Air Convection cooled**	**IP65 cabinet** underframe mounted
Passenger Coaches	**25 kVA**	**110 Vdc** from battery in parallel to axle driven Alternator	**415 Vac (3φ), 25 kVA** for Air conditioning	**Natural Air Convection cooled**	**IP65 cabinet** underframe mounted
Passenger Coaches	**2.5 kVA** and **5 kVA**	**110 Vdc** from battery	**230 Vac (1φ), 2.5 kVA** and **5 kVA** for Coach lighting and charging plugs	**Natural Air Convection cooled**	**IP65 cabinet** underframe mounted

180 kVA

50 kVA

25 kVA

2.5 kVA

2-3-2/A, Cherlapally, Hyderabad - 500 051, India
Tel: +91-40-67237000 / 01
exports@medha.com, marketing@medha.com