

# Aircraft Ground Air-Conditioning Cart

CAPABILITY SHEET · SERVICE AIR TROLLEY SAT-650 · ENGINEERED TO ORDER - DGAQA GE-279 DESIGN

## THE PRODUCT

|                       |                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WHAT</b>           | Self-contained, towable aircraft ground air-conditioning cart: 650 CFM of dry, oil-free air at 5-15 degC into the instrument, radar and avionics bays of Su-30 family aircraft on the ground, plus 50-65 degC hot air to drive off condensed moisture. |
| <b>STATUS</b>         | Engineered to order - designed clause-by-clause to DGAQA specification GE-279 Issue-I. Manufacture, testing and delivery undertaken against contract; configurable to your aircraft, flow and climate.                                                 |
| <b>NO REFRIGERANT</b> | Cooling is produced by an air cycle, not a vapour cycle. No charge to leak, no recovery or re-gassing, no ozone or GWP number, nothing to be legislated out of service. The working fluid is the atmosphere the cart is standing in.                   |

## HOW IT WORKS

|                                |                                                                                                                                                                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>THE CYCLE</b>               | Air is filtered, compressed by a screw compressor, stripped of its heat of compression in a heat-exchanger cascade, dried to below 3 g/kg, then expanded through a screw expander that extracts shaft work - air that has done work comes out cold.  |
| <b>ENERGY RECOVERY</b>         | Compressor and expander are driven from one common bull gear, so the work recovered from the expanding air is fed back into compression. The diesel supplies only the difference - which keeps a 650 CFM machine inside a 4-tonne AN-32 cart.        |
| <b>BLEND CONTROL</b>           | Outlet temperature is set by blending dry pre-expander air - tapped after the dryer - back into the cold air, in the right proportion. Fast and stable, with no penalty at intermediate settings, and it carries no moisture back into the delivery. |
| <b>SELF-REGENERATING DRYER</b> | The sectored desiccant drum is regenerated by the compressor's own hot discharge air passing over its sectors in sequence - the heat of compression does the work, and no air is bled off as purge.                                                  |
| <b>NOT JOULE-THOMSON</b>       | Worth being precise: this is not throttling. JT expansion through an orifice barely cools air at these conditions. The cooling here is a near-isentropic expansion doing external work, and that work is recovered rather than wasted.               |

## REFERENCE SPECIFICATION

|                       |                                                                                                                                                                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COLD / HOT AIR</b> | 650 CFM at 5-15 degC, delivery 0.1-0.5 kg/cm <sup>2</sup> , oil free, water <3 g/kg of cold air; hot-air mode 50-65 degC for moisture removal from avionics.                                                                                           |
| <b>ENVIRONMENT</b>    | Ambient -20 to +50 degC with cold start to -20 degC; climate design -20 to +55 degC, humidity to 95%, wind to 100 km/h, sea level to 2000 m, drizzle to heavy rain; noise 75-80 dB at 3 m.                                                             |
| <b>MACHINE</b>        | Turbo-charged, water-cooled inline 6-cylinder DI diesel, min 127 BHP per BS 5514 / IS 10002 at 1500 rpm, operating 1800 rpm; 4-inch aluminium piping on flexible joints; battery-powered PLC carrying all safety interlocks and filter-clogging watch. |
| <b>CART</b>           | 4675 x 2150 x 2000 mm, ~4000 kg, 150 mm clearance, AN-32 transportable; all-terrain tyres, multi-door canopy with detachable top, obstacle lamps, search light, D-shackle lifting points; manual and on-trolley instructions in Hindi and English.     |

## LINE & ENGAGEMENT

|                            |                                                                                                                                                                                                                                                        |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DELIVERED ALONGSIDE</b> | Delivered and commissioned by the same line: oxygen and nitrogen charging vehicles for the Indian Air Force; a mobile aircraft-engine test facility for a gas-turbine research establishment; hydraulic servicing trolleys for an aircraft overhauler. |
| <b>VARIANTS</b>            | Other flows, outlet temperatures and delivery pressures; adaptors for other fighter, transport and helicopter ground-cooling connectors; hangar-fixed and shelter-mounted forms on mains power.                                                        |

## DEFENCE PROGRAMMES DESK ENGAGEMENT

Sales@neometrixgroup.com · 91 7777 876 876 · neometrixgroup.com  
 Neometrix Defence Limited · E-148, Sector 63, Noida, Uttar Pradesh, India

Reference specification follows DGAQA GE-279 Issue-I. Flow, temperatures, engine rating and envelope are re-scoped against the customer's specification and aircraft type at proposal stage.