

# Generator Technical Data Sheet

APX-TDB.M

|                               |                                        |
|-------------------------------|----------------------------------------|
| <b>Customer</b>               | Energico Oy for Suolahti Power Station |
| <b>Contract Number</b>        | 01/61914A                              |
| <b>Machine Serial Numbers</b> | 61914A - 1G                            |
| <b>Number Off</b>             | One                                    |
| <b>Enclosure</b>              | IP44                                   |

The electrical details provided below are calculated values. Unless otherwise stated, all values are subject to tolerances as given in the relevant national standards.

| RATING DETAILS                      |                         |
|-------------------------------------|-------------------------|
| <b>Frame Size</b>                   | BJHW 45L.101/4          |
| <b>Terminal Voltage</b>             | 6.3kV                   |
| <b>Current</b>                      | 422.9A                  |
| <b>Frequency</b>                    | 50Hz                    |
| <b>Speed</b>                        | 1500rpm                 |
| <b>Power Factor</b>                 | 0.8                     |
| <b>Applicable National Standard</b> | BS 5000 Part 99         |
| <b>Rated Air Inlet Temperature</b>  | 40°C (25°C Water Inlet) |
| <b>Rated Output</b>                 | 3692kW/4615kVA          |

| REACTANCES to a base of 4615kVA (Calculated)   |              |         |
|------------------------------------------------|--------------|---------|
| <b>Unsaturated Synchronous Reactance</b>       | $X_{d(l)}$   | 2.10pu  |
| <b>Saturated Transient Reactance</b>           | $X'_{d(v)}$  | 0.227pu |
| <b>Saturated Subtransient Reactance</b>        | $X''_{d(v)}$ | 0.148pu |
| <b>Unsaturated Negative Sequence Reactance</b> | $X_{2(l)}$   | 0.156pu |
| <b>Unsaturated Zero Sequence Reactance</b>     | $X_0$        | 0.06pu  |
| <b>Short Circuit Ratio</b>                     |              | 0.56    |

**RECOMMENDED ALARM AND TRIP SETTINGS**

|                              | Alarm | Trip |
|------------------------------|-------|------|
| Stator Winding Temp °C       | 130   | 135  |
| Bearing Metal Temp °C        | 95    | 105  |
| Generator Air Inlet Temp °C  | 38    | 41   |
| Generator Air Outlet Temp °C | 63    | 66   |

**WATER COOLED AIR COOLER**

|                                  |                      |
|----------------------------------|----------------------|
| Type                             | Top Mounted          |
| Coolant                          | Fresh Water          |
| Dissipation                      | 130kW                |
| Coolant Flow (total per machine) | 5.4l/s               |
| Coolant Inlet Temperature °C     | 25                   |
| Coolant Outlet Temperature °C    | 30.8                 |
| Coolant Pressure Loss            | 38kPa                |
| Air Flow (total per machine)     | 6.1m <sup>3</sup> /s |
| Air Inlet Temperature °C         | 53.3                 |
| Re-cooled Air Temperature °C     | 35                   |
| Air Pressure Loss                | 190Pa                |

**Materials for Water Cooled Air Cooler**

|                         |                                 |
|-------------------------|---------------------------------|
| Tubes (Double Wall)     | 90/10 CuNi inner, copper outer  |
| Fins                    | Aluminium                       |
| Tubeplates              | Carbon Steel                    |
| Secondary Tubeplates    | Galvanised Carbon Steel         |
| Coverplates/Water Boxes | Carbon Steel                    |
| Casing                  | Carbon Steel                    |
| Wetside Gasket          | PTFE                            |
| Dryside Gasket          | Inseal                          |
| Fasteners               | Zinc Plated Carbon Steel Gr 8.8 |

| BEARINGS (Sleeve)              |              |              |
|--------------------------------|--------------|--------------|
|                                | Drive End    | Exciter End  |
| Type                           | Pressure Fed | Pressure Fed |
| Size                           | EMZLB 14.160 | EMZLB 14.160 |
| Diametral Clearance mm         | 0.273/0.208  | 0.273/0.208  |
| Orifice Plate Hole Diameter mm | 2.25         | 2.25         |
| Axial Clearance (TOTAL) mm     | 15           | 20           |

| ANTI-CONDENSATION HEATERS |                                             |                  |                    |                     |                 |
|---------------------------|---------------------------------------------|------------------|--------------------|---------------------|-----------------|
| Supply Voltage            | 220V                                        | Number of Phases | 1                  | Ambient Temperature | 40°C            |
| Location                  | Heater Type                                 | Number Off       | Rating per Element |                     | Brush Reference |
|                           |                                             |                  | Volts              | Watts               |                 |
| Generator                 | SEF 14                                      | 2                | 220V               | 336W                | 25281-314       |
| Exciter                   | TE-12-6                                     | 1                | 220V               | 42W                 | 25281-331       |
| Total Load                | Generator 672W at 220V; Exciter 42W at 220V |                  |                    |                     |                 |

