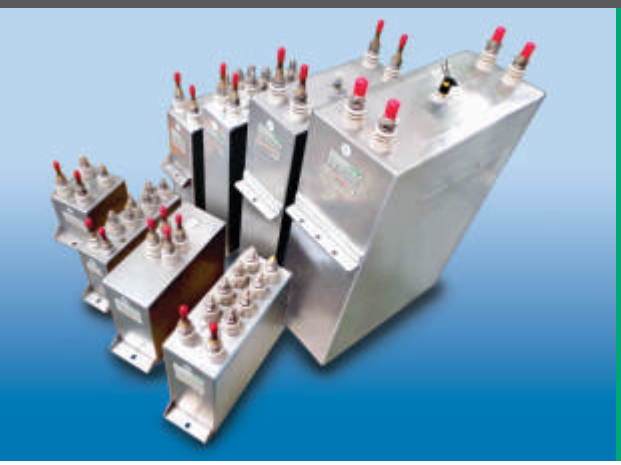
Medium Frequency Water-Cooled Capacitors



Advantages

- World Class Raw Materials
- Mfgd in State of art infrastructure
- Low Loss
- Highly Reliable
- Long Life Performance
- Environmental Friendly

For Induction Heating & Melting Applications

An ISO 9001 : 2008 Certified Company

Magnewin
Enhancing Power

General Information

Scope
Medium Frequency Water Cooled Capacitors from 1 kV up to maximum 5000 volts, to maximum 7000 kVAr and frequency up to 50 kilocycles for indoor use.

- with dead casing, open terminal (2 bushings).
- with live casing, open terminal (1 bushing).

Standards
- IEC 60110-1 Capacitors for Induction Heating & Melting application.
- BIS 9251 (Indian standards).
- DIN EN 60110-1 Power capacitor for Induction Heating Installations.
- VDE 05650-9:1999-09

Capacitors in accordance with other standards, available upon request.

Quality Management System
ISO 9001 accredited by TUV.

Safety Regulations
When installing the equipment, relevant IEC or VDE recommendations shall be observed.

Quality management system
ISO 9001, BS 5750
Qualifications
EDF (HN 54-S-05), CSA

Dielectric
An imported all film dielectric is used and consists of polypropylene in the form of bi-axially oriented film, hazy on both sides, and in 2 or 3 layers with end and edge folded aluminum foil as electrodes.

Impregnant
The capacitors are impregnated with a NON-PCB based fluid which is Jarylec C-101. This dielectric fluid is environmentally acceptable, eliminates health and environment hazards.

Dielectric losses
Dielectric losses@ 50 C/s in fresh condition are approx. 0.2 to 0.3 watts/ kvar up to 5 KHz, and 0.5 watts/ Kvar up to 50 KHz and reduce after 500 operating hours to a stable state.

The dielectric losses, depending on capacitor design, shall be added to losses caused by:

- Internal discharge resistors
- Internal connections

Altitude
Capacitors are designed to operate at altitudes not exceeding 1500 mtrs.

Temperature range
Capacitors are designed for operation between 1°C to +50°C.

Permissible Overloads

Maximum permissible voltages
Capacitors are designed for operation at voltage levels according to the following table.

The amplitudes of the over voltages that can be tolerated without significant deterioration of the capacitor depend up on the duration, the total number and the capacitor temperature.

Switching over voltages
The residual voltage on a capacitor prior to energization shall not exceed 10% of the rated voltage.

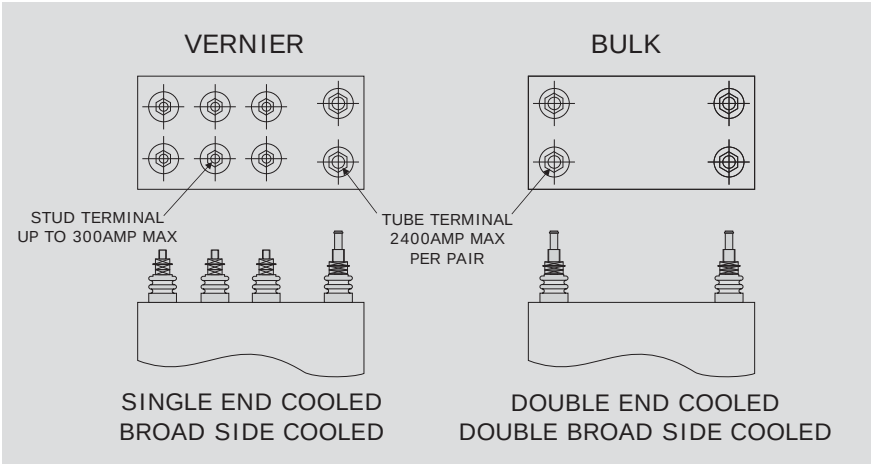
Maximum permissible currents
Capacitor units will be suitable for continuous operation at an r. m. s current of 1.30 times the current that occurs at rated sinusoidal voltage and rated frequency, excluding transients.

Discharging
Each capacitor unit shall be provided with means of discharging to 75V or less.

Manufacturing and Quality Control
Imported bi-axially oriented Double hazy Polypropylene film and 99.9% pure aluminum foil are used as dielectric and electrode. Wrinkle free winding of the elements is carried in an Class 100 environment on a Semi Automatic winding machine with edge and end folding of the aluminum foil. This is to eliminate overvoltage stress at the edges of the buried area of the foil.

Each wound element is tested for dry DC Overvoltage with stand for pin holes and adequacy of margins between Al foils.

Numbers of elements are interconnected in series – parallel to achieve the desired capacitance and designed voltage rating of the Capacitor.
The dry pack is wrapped with several layers of high quality insulating paper before inserting it into a pre treated /



Un (V r.m.s)	Maximum Duration	Observation
1.00	Continuous	Highest average value during any period of capacitor energization.
1.10	8 h in every 24 h	System voltage regulation and ?uctuations.
1.15	min in every 24 h	System voltage regulation and ?uctuations.
1.20	5 min	Voltage rise at light load
1.30	1min	-

degreased aluminum container and the top lid is welded by semiautomatic Pulsed TIG welding machine.

The aluminum Sheet used for fabricating containers is imported, manufactured of a special alloy with its surface embossed.

All metal parts copper and brass are silver brazed to ensure homogeneous joint.

Porcelain bushings of desired BIL are leak proof fitted on the lid as required. The terminals are manufactured from extruded brass and the water cooling pipe is of 99.99% pure electrolytic grade annealed copper and pressure tested for leaks before fitting on the pack.
On specific request of client, imported over pressure switches are also fitted on the Capacitors.

All the joints are tightened with torque wrench and are locked to ensure they remain perfectly tight always.

The capacitors are then loaded in a PLC controlled autoclave for uniform heating @85°C and drying under vacuum of 0.001 torr for a given period.

After confirming the quality of drying by precision online monitoring instruments, the capacitors are then impregnated under vacuum with highly purified and degassed Jarylec C-101.

The capacitors are then subjected to all routine tests in accordance to IEC-60110-1.

Life Expectancy
Based on the state of art plant & machinery, quality of raw materials used, manufacturing under strict quality control and process using precision on line instruments, and elevated over voltage test results under extreme temperatures, capacitors are assured of minimum 20 years life.

Electrical tests
Each and every capacitor is subjected to Routine tests in accordance to IEC 60110-1.

- Measurement of Capacitance.
- Measurement of Dielectric Loss angle @ 50Hz.
- Voltage test between terminals 4 Vn for 10 secs.
- Voltage test between terminals & container 2.15 Vn.
- Sealing Test @ 80°C for 2hrs.

Special Tests
(as per Magnewin Standards)
Each and every MFWC Capacitor is subject to 15% overload at its rated frequency and rated voltage tests for minimum two hours, simulating site operational conditions. It is also possible to continue such testing for as many hours as required.

The test source is a specially developed by "Magnewin" and is only one such kind available in Asia.

Note : Product improvement is a continuous process. For the latest information and special applications, please contact us..

Product Range

- Low Voltage Shunt capacitors
- Medium Voltage Shunt capacitors in Internal / External fuse
- Medium & High Voltage Surge Capacitors
- Medium / High Frequency Water Cooled Capacitors
- Energy storage Capacitors
- Pulse Discharge capacitors
- Low Inductance Capacitors
- Voltage Dividers up to 1200 KV.
- Any Special capacitor in accordance to client specs

Engineering Services

- Harmonics Measurement, Analysis and mitigation & Power Quality
- Turnkey projects / consultancy in Reactive Power Compensation engineering

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