



## ROTARY FREQUENCY CONVERTER



### General Machine Description

The **LK2 MFC-80** is a specialized electric converter for induction heating. More specifically, it is a rotating frequency converter supplied by standard 3-phase 50/60 Hz AC mains. It is powered by an integrated electric motor/alternator set which converts 3-phase 50/60 Hz AC power into single-phase, medium-frequency (440 to 530 Hz) output specifically intended to supply induction heating coils. Induction heating applications of the **MFC-80** are field-joint heating for coating applications, welding preheating and heat treatment of metallic pipes and vessels. It features a sophisticated electronic control system for the implementation of complex thermal cycles related to heat treatments, but also a simplified user interface for easy in-field use when deployed for field-joint coating and welding preheating. Also the **MFC-80** converter has full automatic real-time power factor correction, making it even easier to use for operators who are not comfortable with complex electrical equipment. Basically, it consists of an electric induction (asynchronous) motor coupled to a single-phase alternator on the same shaft (and in the same casing) and

electrical/electronic control gear housed in a metallic sound-proofed canopy. Also, inside the canopy there are banks of capacitors with switching gear for automatic power factor correction. The main control panel hosts the converter switches and warning lights together with the display and pushbuttons of the electronic control gear. A wired remote control is also provided with the replication of the alarm light, emergency stop, stop and start pushbuttons. This converter provides full electrical insulation between 3-phase AC input and single-phase medium-frequency output so it is safe for operators. Also, it is energy saving, having an idle current draw of just 8 Amps on the AC mains supply. Electrically it is a very clean and efficient load as seen from the AC mains supply with very low total harmonic distortion (THD < 3%) and high power factor (> 0.92 at full load) in full compliance with the most stringent electrical regulations.

The **LK2 MFC-80** has been designed to be fully compatible with the same coils used with equivalent diesel generators.

Mechanical Specifications		
<b>Cooling Air Flow</b>	32 m <sup>3</sup> /s at 50 Hz, 38.4 m <sup>3</sup> /s at 60 Hz	
<b>Weight</b>	1000 Kg	
<b>Dimensions</b>	1260 (L) x 800 (W) x 1390 (H) mm	
<b>Noise Level</b>	68 dBa / 7mt	
<b>Electrical Specifications</b>	<b>50 Hz 3-phase 400 VAC main supply</b>	<b>60 Hz 3-phase 480 V AC main supply</b>
<b>3-Phase Input Current</b>	160 A continuous, 190 A discontinuous (3 minutes on, 2 off)	
<b>Output Voltage</b>	160 V single-phase	185 V single-phase
<b>Output Frequency</b>	440 Hz	530 Hz
<b>Output Current</b>	570 A single-phase	590 A single - phase
<b>Output Power</b>	70 KW continuous 90 KW discontinuous (3 minutes on, 2 off)	84 KW continuous 109 KW discontinuous (3 minutes on, 2 off)
<b>Full-power nominal output load impedance</b>	281 mOhm	313 mOhm
<b>Input Idle Power</b>	2.1 KW	2.7 KW
<b>Input Idle Current</b>	8 A	12 A
<b>Input Starting Current</b>	240 A decreasing to 8 A in 7 seconds	

### **Electronic Control Specifications**

Highly integrated power supply and control boards with CPU for digital control.

- Large VFD (Vacuum Fluorescent Display) digital display.
- Programmable machine cycles for field-joint, welding preheating and heat treatment.
- Full automatic power factor correction. Dynamic electric motor braking when switching converter off
- Protection against mains phase sequence, phase loss, overvoltage and undervoltage
- Protection against converter bearing fault
- Protection against alternator overheating
- Protection against motor overheating
- Protection against output overcurrent
- Protection against output overvoltage
- Protection against alternator earth leakage
- RS-232C PC serial interface.

### **Available Options**

Conditioning kit for extreme temperatures.