



# **MFG MFC**

## **INDUCTION HEATING SYSTEMS**



**GENERATORS**

**CONVERTERS**

**RINGS**

**COILS**

## **INDUCTION HEATING DIVISION**

Pre heating of field joint coating as a part of the pipeline welding is often a critical phase of the pipeline construction: a fast, accurate and uniform heating, especially on large diameters, is often not easy to achieve with traditional gas flame and resistance heating systems.

When higher temperatures are required, or even in peculiar installations sites, such as extremely cold regions, the use of induction heating systems is not only strongly recommended but, in most cases, it represents the easiest and most reliable method to meet the cycle times demanded by the industry, in order to get a an accurate and uniform heating around the full circumference and bandwidth of the weld joint.

**LK2 offers a wide range of Induction Heating Generators and Converters, covering any customer's need and matching all applications.**





# THE ADVANTAGES OF INDUCTION HEATING

- Much faster temperature rise than gas or resistance heating
- Variable control over temperature/time parameters
- Localized, constant and precise heating
- Fast, accurate, reliable and cost-effective
- Minimal or zero damage to factory coating
- Robust and reliable machine
- Intuitive, easy-to-use equipment operation
- Induction heat is 'direct into metal'
- No deleterious surface residues are produced
- No naked flames or exposed elements
- Improves process efficiency
- Temperature control
- No need for storage of gas bottles on the laybarge
- The best solution for applications with very low temperatures



# ENGINE DRIVER GENERATORS FOR INDUCTION HEATING

**MFG**  
SERIES

## GENERAL MACHINE DESCRIPTION

Single phase engine-driven generators, medium-frequency (490 to 510 Hz) output specifically intended to supply induction heating coils.

- Sophisticated electronic control system for the implementation of complex thermal cycles related to heat treatments;
- Simplified user interface for easy in-field use when deployed for field-joint coating and welding preheating;
- Full automatic real-time power factor correction
- Wired remote control is also provided with the replication of the alarm light, emergency stop, stop and start keys.



## MECHANICAL SPECIFICATION

	MFG - 90	MFG - 150	MFG - 240	MFG - 350
Engine	FPT N45 ENT (*) water-cooled, 4 cylinders in line with turbo aftercooler	FPT N67 TE2A (*) water-cooled, 6 cylinders in line with turbo aftercooler	FPT C87 ENT (*) water-cooled, 6 cylinders in line with turbo aftercooler	FPT C13 ENT (*) water-cooled, 6 cylinders in line with turbo aftercooler
Power	110 KW at 2200 rpm	215 KW at 1800 rpm	260 KW at 2100 rpm	375 KW at 2100 rpm
Displacement	4500cc	6700 cc	8700 cc	12900 cc
Emissions Category	Tier 3 / STAGE 3A	Tier 2 / STAGE 2	Tier 3 / STAGE 3A	Tier 3 / STAGE 3A
Fuel Tank Capacity	225 liters	325 liters	350 liters	400 liters
Dry Weight	1800 Kg	2400 Kg	2900 Kg	3600 Kg
Dimension	1900 (L) x 1000 (W) x 1800 (H) mm	2600 (L) x 1180 (W) x 2050 (H) mm	2850 (L) x 1200 (W) x 2050 (H) mm	3000 (L) x 1250 (W) x 2100 (H) mm
Noise Level	75 dBa / 7mt	75 dBa / 7mt	76 dBa / 7mt	78 dBa / 7mt

## ELECTRICAL SPECIFICATION

	MFG - 90	MFG - 150	MFG - 240	MFG - 350
Output Voltage	155 V single-phase	185 V single-phase	240 V single-phase	350 V single-phase
Output Frequency	490-510 Hz	480-510 Hz	535-560 Hz	535-560 Hz
Output Current	580 A single-phase	810 A single-phase	1000 A single-phase	1000 A single-phase
Output Power	70 KW continuous	120 KW continuous	190 KW continuous	280 KW continuous
	90 KW at 60% duty cycle over a 5-minute period	150 KW at 60% duty cycle over a 5-minute period	240 KW at 60% duty cycle over a 5-minute period	350 KW at 60% duty cycle over a 5-minute period
Full-power nominal output load impedance	267 mOhm	228 mOhm	240 mOhm	350 mOhm

\* FPT IVECO MOTORS SUPPLIED AS STANDARD.  
OTHER ENGINE OPTIONS AVAILABLE ON REQUEST



# ELECTRIC CONVERTERS FOR INDUCTION HEATING

**MFC**  
SERIES

## GENERAL MACHINE DESCRIPTION

- Powered by an integrated electric motor/alternator set to convert 3-phase 50/60 Hz AC power into single-phase, medium-frequency (440 to 530 Hz) output specifically intended to supply induction heating coils.
- Sophisticated electronic control system for the implementation of complex thermal cycles related to heat treatments
- Simplified user interface for easy in-field use when deployed for field-joint coating and welding preheating.
- Full automatic real-time power factor correction
- Full electrical insulation between 3-phase AC input and single-phase medium-frequency output (operators safety)
- Full compliance with the most stringent electrical regulations.



## MECHANICAL SPECIFICATION

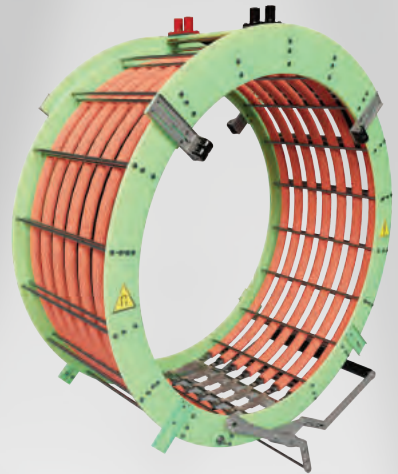
	MFC 80		MFC 200	
	50 Hz 3-phase	60 Hz 3-phase	50 Hz 3-phase	60 Hz 3-phase
Cooling Air Flow	32m³/s	38.4 m³/s	60 m³/s	60 m³/s
Weight	1000 Kg		1680 Kg	
Dimensions	1260 (L) x 800 (W) x 1390 (H) mm		1260 (L) x 800 (W) x 1390 (H) mm	
Noise Level	68 dBa / 7 mt		68 dBa / 7 mt	

## ELECTRICAL SPECIFICATION

	MFC 80		MFC 200	
	50 Hz 3-phase 400 V	60 Hz 3-phase 480 V	50 Hz 3-phase 400 V	60 Hz 3-phase 480 V
3-Phase Input Current	160 A continuous		350 A continuous	
	190 A discontinuous (3 minutes on, 2 off)		425 A discontinuous (3 minutes on, 2 off)	
Output Voltage	160 V single-phase	185 V single-phase	220 V single-phase	260 V single-phase
Output Frequency	440 Hz	530 Hz	440 Hz	528 Hz
Output Current	570 A single-phase	590 A single-phase	980 A single-phase	980 A single - phase
Output Power	70 KW continuous	84 KW continuous	170KW continuous	205 KW continuous
	90 KW discontinuous (3 minutes on, 2 off)	109KW discontinuous (3 minutes on, 2 off)	215 KW discontinuous (3 minutes on, 2 off)	250 KW discontinuous (3 minutes on, 2 off)
Full-power nominal output load impedance	281 mOhm	313 mOhm	225 mOhm	265 mOhm
Input Idle Power	2.1 KW	2.7 KW	7.3 KW	10.3 KW
Input Idle Current	8A	12A	25A	35A
Input Starting Current	240 A decreasing to 8 A in 7 seconds		520 A decreasing to 15 A in 15 seconds	540 A decreasing to 15 A in 15 seconds

## CLAMP, COILS AND RINGS

The products range is completed by a range of external clamp coils and rings, available for any pipeline diameter, for different applications: welding pre-heating, Field Joint Coating, Thermal treatments.



## DEMAGNETIZATION

Steel demagnetization is provided thanks to an integrated system which detects and removes almost any residual magnetism, using the same coil performing welding pre-heat.



## SERVICE, ASSISTANCE MAINTENANCE

Thanks to a skilled and experienced team of engineers, LK2 can provide maintenance and assistance, repair and refurbishing of your equipments.

LK2 can provide service and support not only for its range of generators and converters but also for the most of the machines currently existing on the market.



## QUALITY, EXCELLENCE AND RELIABILITY



**LK2 is committed to continuously improving products, services and processes to meet and exceed our customers' requirements and quality objectives.**

LK2 operational excellence, together with our ability to deliver high-quality products and services to our clients, make LK2 a solid name among the existing Induction Heating solutions providers:

Each single component is selected among the most trusted companies on the European market, to supply an excellent, performing and reliable final product



## THE PIPELINE PARTNER

### **LK2 Srl**

Via Ada Negri, 2/4  
20081 Abbiategrasso (MI)

**Legal site:** Piazza Zamara 27  
25036 Palazzolo sull'Oglio (BS)

**Tel:** +39 02 94.96.07.47

**Email:** [info@lk2group.com](mailto:info@lk2group.com)

**Website:** [www.lk2group.com](http://www.lk2group.com)

### ***Sales:***

[info@lk2group.com](mailto:info@lk2group.com)  
+39 – 366 – 578 84 84

### ***Technical department:***

[tech2@lk2group.com](mailto:tech2@lk2group.com)