



## BIMESPRO MIF furnace system for MCVD process

### Introduction & Application

MIF furnace is used in fabrication of optical fiber preforms by MCVD process using substrate tubes with outer diameter (OD) from 10 to 45 mm. MIF furnace eliminates typical disadvantages of H<sub>2</sub>/O<sub>2</sub> burners and allows easier, more accurate and repeatable preform collapsing process. It improves final preform geometry, reduces hydroxyl penetration to preform surface, reduces hydroxyl diffusion into core, and shortens collapsing time by at least a factor of 2. MIF furnace is a valuable tool in core laser fiber preform fabrication and in core preform jacketing.



### Description

MIF furnace is a graphite inductive furnace. Furnace width is optimized to provide maximum carriage traverse length. Furnace disassembly and maintenance is extremely straightforward, and all graphite and insulation parts are of simple geometric shape to reduce their fabrication cost. Special attention has been paid to design of internal protective gas paths and gas windows, preventing air penetration. Inert gas is injected at multiple ports and flows can be adjusted by rotameters (by MFC as option).

Usually, MIF furnace is installed on preform lathe carriage in parallel with a burner (longer lathes are available as option). Furnace is positioned on a slide that permits removal from the preform line, so that lathe can be used with a burner only. Inductive power supply and capacitor bank are supplied by Jutronic. Graphite heating element temperature is measured by IR pyrometer and temperature is PID controlled. MIF furnace and power supply are fully integrated with MCVD control system OptiFACT which is used over the whole platform of Bimes equipment.

### Specifications

Parameter	Value
Heating element diameter	55mm (according to customer's request)
Tube diameter (before collapse)	10 – 45 mm
Furnace size	360 x 300 (W x D in mm), approx. 40 kg
Max recommended temperature	2400 °C
Temperature setting accuracy	± 2 °C or better
Measurement range	1000 – 2500°C, Raytek FM series
Protective gas	UHP argon (N <sub>2</sub> may be used), max 150 slm
Mains voltage	400 V ± 10 % , 50/60 Hz, 3 phase 5 wire
Mains power consumption	40 or 60 kVA
Fuse protection	100 or 175 A
Power control range	6 – 100 % ± 0.5%

Power factor	0.95 - 0.97
Output frequency	20 ...29 kHz
Dimensions, power supply unit	approx. 350x900x600 (WxHxD)
Dimensions, capacitor bank	245x180x375 (WxHxD), mounted on furnace
Weight, power supply unit	approx. 65 kg (power supply with stand)
Weight, external capacitor bank	21 kg
Cooling water temperature	Max. 35°C above dew point of room air
Cooling water consumption (slm)	2 lines, power supply max 20, furnace max. 40
Max cooling water pressure	max. 5 bar, 3 bar between inlet and outlet
Min differential pressure	3 bar to Supplier device
Required cooling capacity	15 to 20 kW, max. 25 kW

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