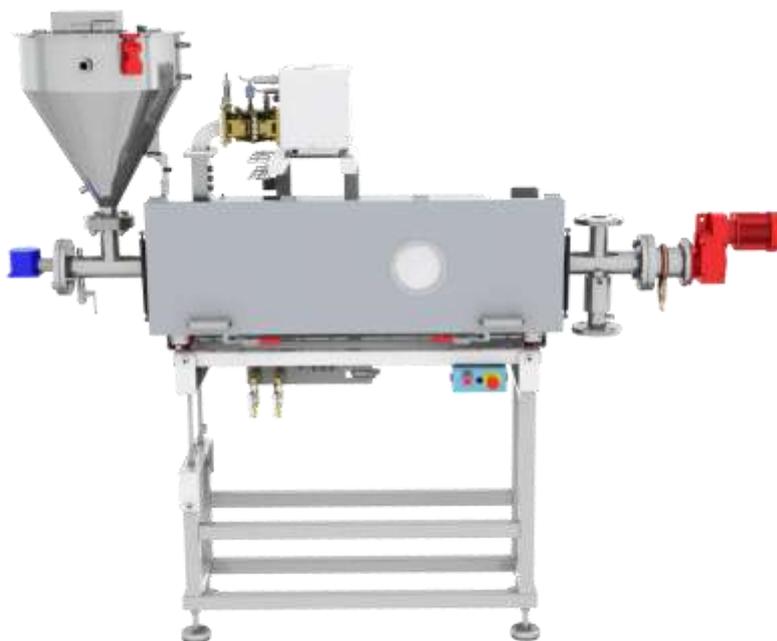




6 kW, 2.45 GHz MICROWAVE-ASSISTED CONTINUOUS FLOW REACTOR

Ref. MAPS6K



Sairem's MAPS6K is a microwave-assisted continuous flow reactor the system can be easily configured to perform different applications including reactions in liquid and solid phase in homogeneous and heterogeneous mixtures.

The double jacket of the oven allows the operation of the reactor at high temperature whilst the outside of the oven remains at room temperature.

The microwave cavity is designed and dimensioned to provide a very uniform microwave field via a slotted waveguide.

The continuous flow reactor is made out of Pyrex; a metal resort moves slowly inside the reactor to assure the uniform treatment of the product and its motion inside the Pyrex tube. As well, depending on the product to be treated, the whole reactor can be inclined to the left or to the right (max 8 degree) to make sure that the reactor is always full during the microwave treatment.

The main parameters and dimensions of the reactor are given below (electrical cabinet not represented).

Ref.	MAPS6K
Microwave cavity	Multimode resonant cavity made out of stainless steel, front access door with sight glass, during treatment sample rotation The whole reactor is mounted on chassis with adjustable feet and angle– for dimensions see enclosed drawings; Designed for easy cleaning and no retention of cleaning liquids after draining. Reactor: Pyrex, internal volume ~ 3.5 L
Product delivery (optional)	Product loaded into hopper with motor screw to draw product into pyrex reactor tube. A level switch indicates when hopper should be refilled. A DN50 flange at the outlet for solid by-products outflow. If required, a DN50 connection for a distillation column (not provided).
Motor operated screw	Reactor: 400V 900 rpm Hopper: 24VDC 34 rpm A clearance of 1850 mm from the end of the reactor tube is required for manipulation of the motor operated screw if required for maintenance or replacement.
Fire suppression & Smoke Detection	Optional: A smoke detector detects smoke inside the reactor and launches CO ₂ or water fire extinguisher system (CO ₂ not provided).
Temperature measurement & control	Two methods of temperature measurement. IR pyrometer (-50 to 975°C), to measure temperature in the tube inside the reactor; Thermocouple at the exits (solid product and distillation) to measure exit temperature. Control of temperature and programming by levels of temperature vs. time, power vs. time. Thermal insulation (not shown) around the pyrex tube improves heat retention inside the tube.
Microwave generator	GMP60KSM, 2.45 GHz, microwave power adjustable from 1500 W to 6000 W; Operation: continuous wave (CW) or OPTIONAL continuous mode (CW) & pulse Switching mode power supply with low ripple to decrease the risk of arcs when running high electric field in an application at low pressure and high temperature.
Gas fittings (inlets/outlets)	2 off, 3/8 G; manometer and safety release pressure valve
HMI	The controls and HMI are enclosed inside a separate cabinet, including the cooling water connections. Colour touch screen 7.5" (IP65) Data recording and export in CSV files via USB port , Ethernet port Main parameters available on and screen set-up: forward and reflected power (W), temperature (°C), time (s), MW operation mode (CW or pulsed)
Impedance tuning	Manual with standard model; automatic tuner in option
Personal security	Safety relays connected to the microwave generator; Safety switch and limit switch on the reactor door to shut off microwaves if opened. Nitrogen purge to limit flammable vapours. Warning flashing on the HMI if the temperature of the sample is higher than the minimum value measured by the IR thermometer when the cavity door is opened.
Cooling	By water for the microwave generator, min 6 L/min (for cca. 6 kW of heat to be dissipated), $\Delta p = \text{min. } 3 \text{ bar}$, $T_{\text{water}} = 18 - 25 \text{ }^\circ\text{C}$, quick release connectors for water in/out
Mains	3 x 415 V + earth, 11 kVA at maximum power

