EPROTECH
environmental protection technology

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PROCESS TECHNOLOGIES

Microwave reactors

From research to industrial processing

Configurable systems combining microwaves, conventional heating and pressure control for chemical processing and heat treatment applications.

THREE TECHNOLOGIES

1. **Microwaves**
   Energy transferred directly to the absorbing medium.

2. **Conventional heating**
   Preheating and maintaining the process temperature.

3. **Pressure and atmosphere**
   Operating conditions managed according to the configuration.



Esterification configuration

Speed

Volumetric energy transfer and reduced thermal inertia.

Control

Coordinated power, temperature and treatment conditions.

Flexibility

Systems sized to suit the process and production requirements.

Applications Chemical reactions and heat treatment of pumpable substances, including pasteurisation and sterilisation.

Benefits depend on the reaction, materials and operating conditions.

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Configuration examples

Three examples of machines built for specific requirements: proven experience to help define the right solution for your process.



01 Esterification

Pressurised thermal processes with product recirculation. A secondary vessel allows final cooling and reagent addition at subsequent stages.

2 kW	25-100%	0-6 bar
microwave power	adjustable microwave power	operating pressure

Temperature-controlled reactor and insulated piping; also operates under vacuum or with an inert gas atmosphere.



02 Fullerene synthesis

Compact reactor for experimental processing of materials and liquids. Integrates the main treatment stages in a single unit.

3 kW	25-100%	0-6 bar
microwave power	adjustable microwave power	operating pressure

Direct product temperature control, vacuum and nitrogen flushing. Metered liquid addition, LED lighting for photosynthesis and controlled cooling.



03 Levulinic acid synthesis

Continuous conversion of glucose syrup into levulinic acid. Also suitable for viscous or chemically aggressive liquid reagents, provided they are pumpable.

14 kW	300 L/h	3-4 min
microwave power	maximum flow rate	reaction time

Up to 250 °C and 26 bar absolute • Wetted surfaces: AISI 316L and PTFE • Viscosity at pumps: up to 1,400 mPa·s.

Let's talk about your process Let's define your Eprotech configuration together.