

MultiCell



Technology

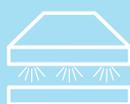


Plate and frame configuration



External illumination

The equipment

Apria Systems has designed a series of laboratory cell reactors combining flexibility and modularity for multiple technologies.

Depending on the selected technology, our 20 cm² MultiCell offer:

Cutting-edge **LED technology as light source** to promote a minimum energy consumption, with optimized heat dissipation.

Wide range of available **electrode materials**.

Operation under **elevated temperature** and / or **pressure** conditions –up to 450 °C and 15 bar–.



The technology

Our MultiCell allows up to five different technologies to be interchanged in a single device, offering maximum versatility at every stage of use.



Photochemistry
(PC)



Photoelectrochemistry
(PEC)



Photofiltration
(PF)



Electrochemistry
(EC)



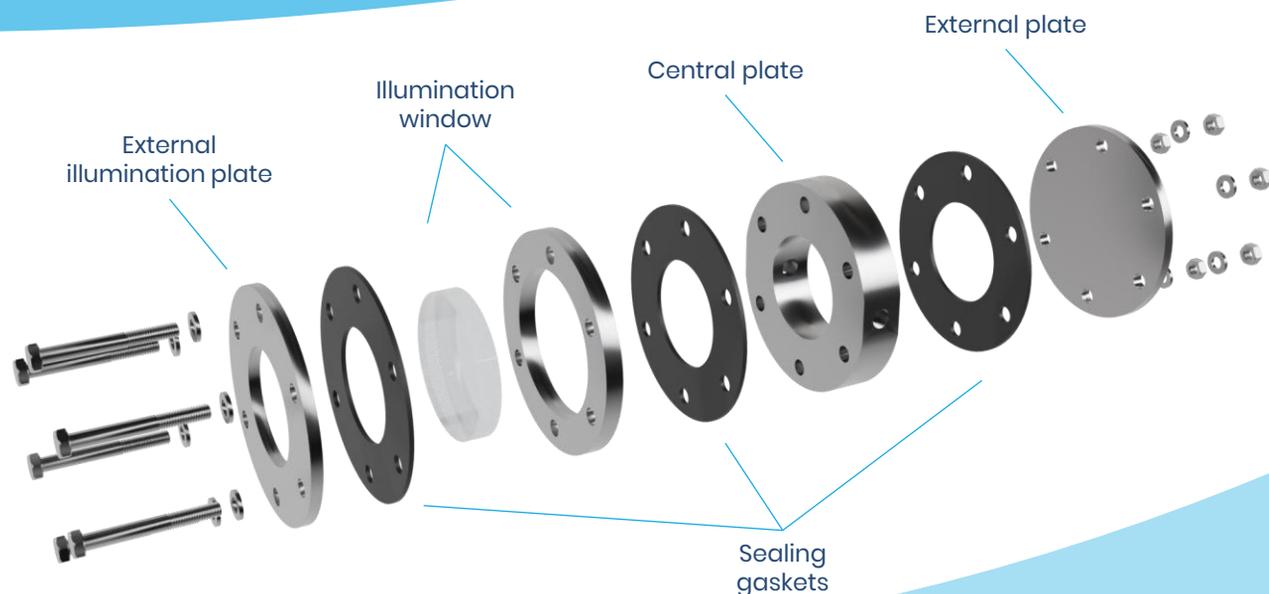
Photothermochemistry
(PTC)

One cell, multiple possibilities

Reactor characteristics

Technology	Photochemistry / electrochemistry / photoelectrochemistry / photothermochemistry / photofiltration
Operation mode	Continuous / recirculation
Configuration	Plate and frame
Cell volume (mL)	40 - 100
Irradiated/ active area (cm ²)	≈ 20 cm ² (∅ = 5 cm)
Number of LEDs	1
Adjustable radiation intensity	Yes, through the distance
Refrigeration system for the LEDs	Heat sink
Optional items	Cell complements / lamps / power supply / full equipment: feed tank, hydraulic line, pumping

Photochemistry

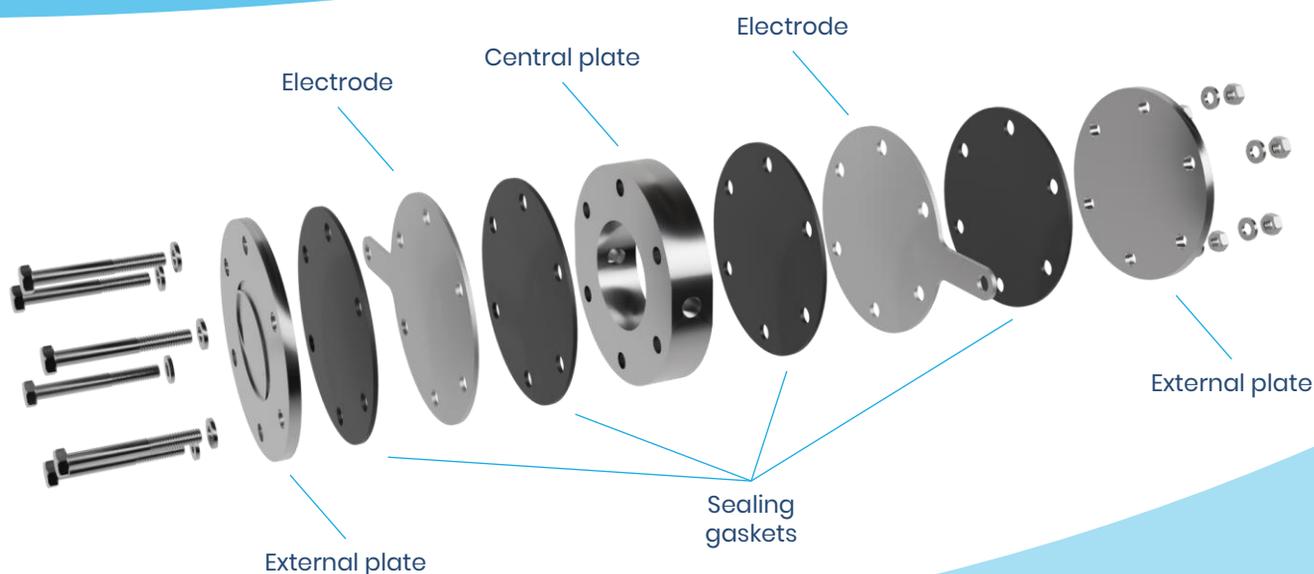


Start small, scale anytime
Upgrade your cell as your process evolves

Reactor characteristics

Operation conditions	P_{\max} : 1 bar, T_{\max} : 50 °C
Connection type	Barb fitting / quick plug
Case material	Stainless steel
Sealing gaskets material	Viton®
Optional items	Cell complements / lamps / full equipment: feed tank, hydraulic line, pumping

Electrochemistry



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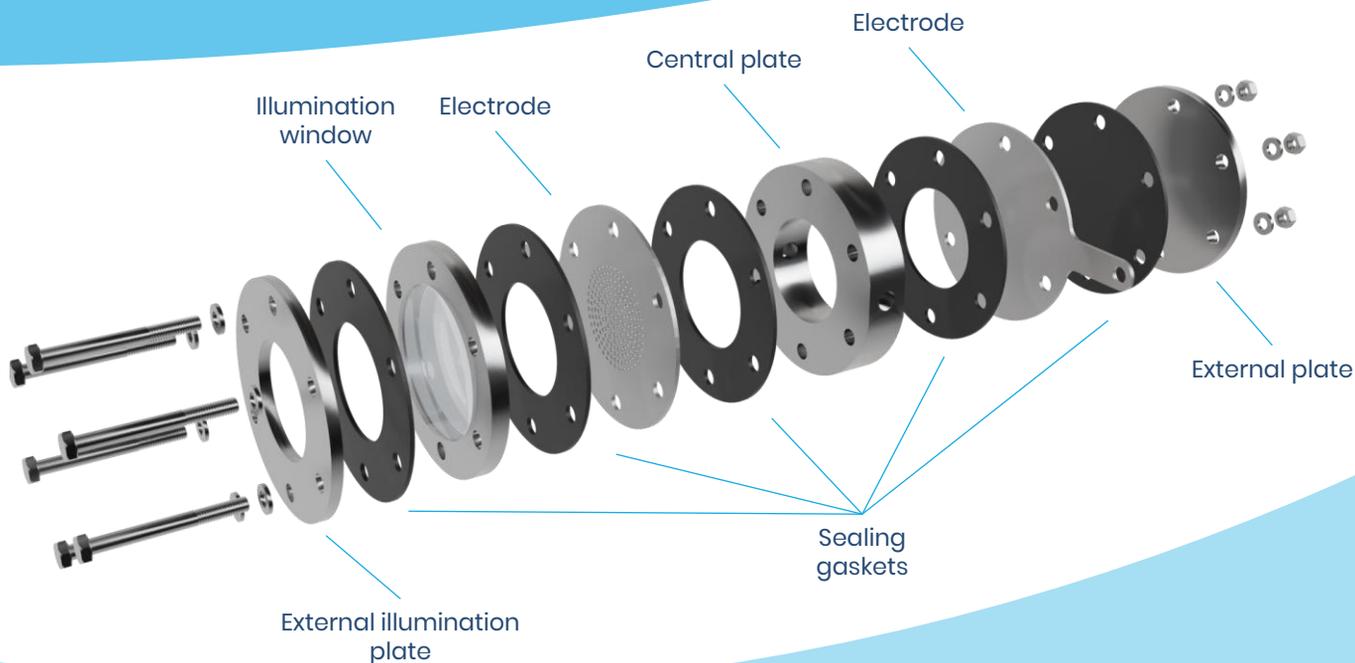
Reactor characteristics

Operation conditions	P_{max} : 1 bar, T_{max} : 50 °C, J_{max} : 1.000 A/m ²
Connection type	Barb fitting / quick plug
Case material	Stainless steel
Sealing gaskets material	Viton®
Optional items	Cell complements / power supply / full equipment: feed tank, hydraulic line, pumping

Electrodes

Type	Frame / mesh / perforated / solid
Geometry	Circular
Material	Al / BDD / carbon felt / IrO ₂ / Ni / PbO ₂ / Pt / PtO _x / RuO ₂ / SnO ₂ / stainless steel / Ti
Active area (cm²)	20
Gap between the electrodes (cm)	2

Photoelectrochemistry



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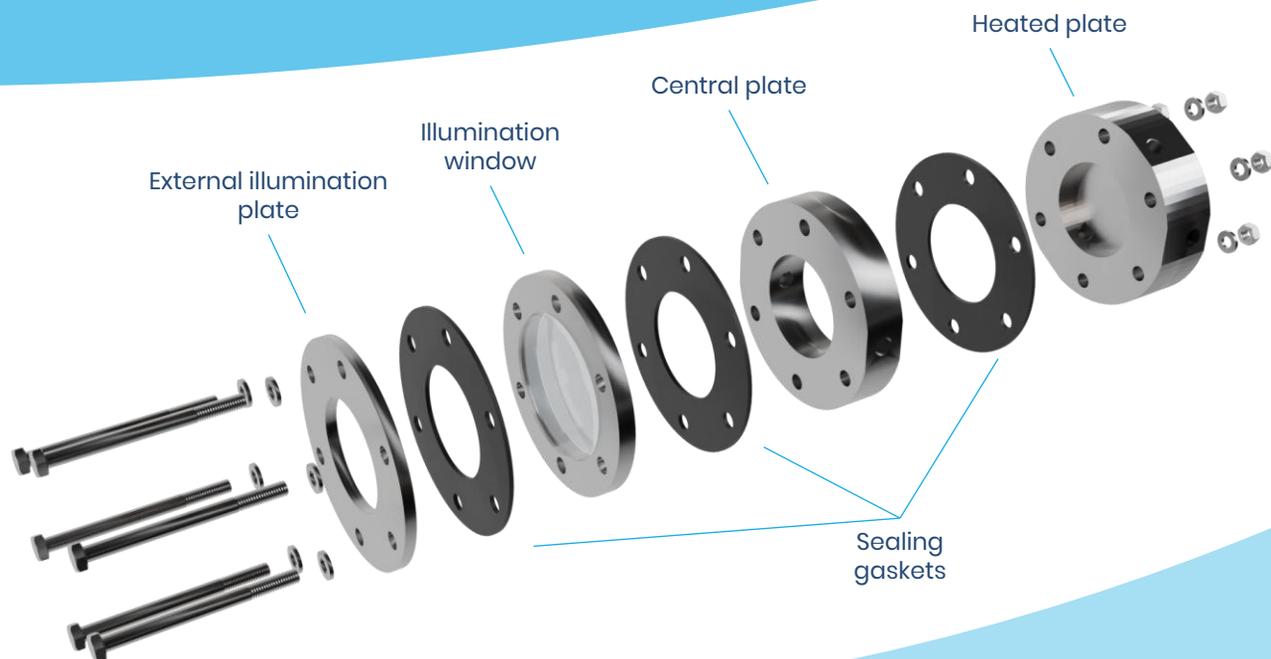
Reactor characteristics

Operation conditions	P_{\max} : 1 bar, T_{\max} : 50 °C, J_{\max} : 1.000 A/m ²
Connection type	Barb fitting / quick plug
Case material	Stainless steel
Sealing gaskets material	Viton®
Optional items	Cell complements / lamps / power supply / full equipment: feed tank, hydraulic line, pumping

Electrodes

Type	Frame / mesh / perforated / solid
Geometry	Circular
Material	Al / BDD / carbon felt / IrO ₂ / Ni / PbO ₂ / Pt / PtO _x / RuO ₂ / SnO ₂ / stainless steel / Ti
Active area (cm²)	20
Gap between the electrodes (cm)	2

Photothermochemistry

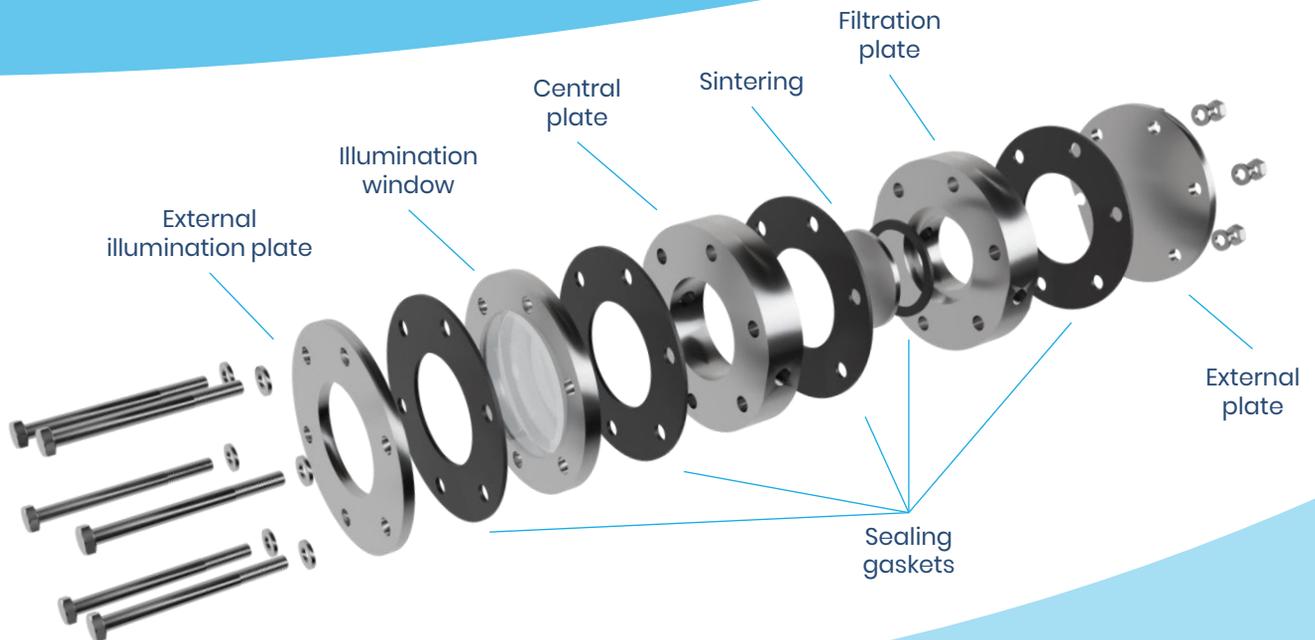


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Reactor characteristics

Operation conditions	1) T_{\max} : 350 °C, p_{\max} : 15 bar 2) T_{\max} : 450 °C, non presurizable
Connection type	Barb fitting / quick plug
Case material	Stainless steel
Sealing gaskets material	Special for high-temperature conditions
Number of heater cartridge	1
Refrigeration system	Forced air convection
Optional items	Cell complements / lamps / full equipment: feed tank, hydraulic line, pumping

Photofiltration



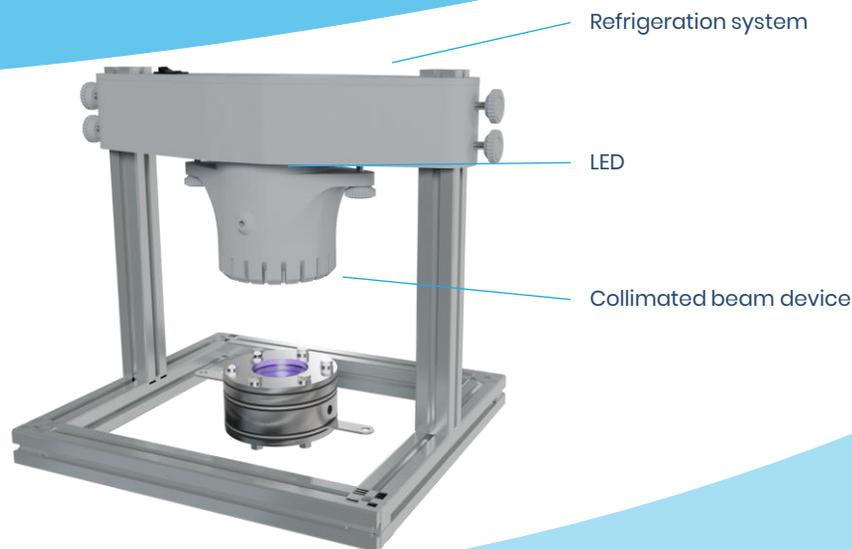
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Reactor characteristics

Operation conditions	P_{max} : 15 bar, T_{max} : 50 °C
Connection type	Barb fitting / quick plug
Case material	Stainless steel
Sealing gaskets material	Viton®
Membrane* support	Sintering
Optional items	Cell complements / lamps / full equipment: feed tank, hydraulic line, pumping

*Membrane not included

MULTICELL Lamp



External illumination



LED technology



On / off

Characteristics

Number of LEDs per device	1
Number of devices	Multiple devices possible
Configuration	Single wavelength
Irradiated area	≈ 20 cm ² (∅ = 5 cm)
Adjustable radiation intensity	Yes, through the distance
Refrigeration system for the LED	Heat sink
Optional item	Collimated beam device

Source of light

Type of light	λ (nm)	λ_{peak} (nm)	Φ / LED
UV-C	263 – 268	265	100 mW
	268 – 280	275	
UV-B	295 – 305	300	32 mW
UV-A	365 – 370	365	1,200 mW
Violet	400 – 410	405	1,260 mW
White	400 – 700	450	315 lm
Blue	453 – 460	457	1,350 mW

Type of light	λ (nm)	λ_{peak} (nm)	Φ / LED
Green	520 – 530	523	450 mW
Yellow	587 – 598	590	470 lm
Red	618 – 630	623	935 mW
NIR*	835 – 875	850	930 mW
FIR*	920 – 960	940	1,350 mW

*Infrared lamps could not be collimated.