At Amar PRESSURE and FLOW is our religion

Pressure Reactor Specialist®
Flow Chemistry Specialist®
<table>
<thead>
<tr>
<th>High Pressure Autoclaves</th>
<th>High Pressure Reactors</th>
<th>Catalyst Screening System</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 50 ml - 100 ltrs. volume</td>
<td>• 100 ltrs - 2000 ltrs. volume</td>
<td>• For high throughput catalyst screening</td>
</tr>
<tr>
<td>• Pressures upto 350 bar at 500 °C</td>
<td>• Pressures upto 100 bar at 350 °C</td>
<td>• 25 ml - 750 ml, 4 or 6 nos. parallel reactors</td>
</tr>
<tr>
<td>• SS316/316L, Hastelloy B/C, Monel, Inconel, Nickel, Titanium, Tantalum, etc.</td>
<td>• SS-316/316L, Hastelloy B/C, Monel, Inconel, Titanium, Zirconium, etc.</td>
<td>• Fully automated with SCADA software</td>
</tr>
<tr>
<td>• Ex-proof / ATEX / CE / PED / ASME U,U2 / CRN / CSA / UL certified systems</td>
<td>• High mass transfer gas induction impeller</td>
<td>• 25 ml - 6 nos, 10 ml - 24 nos. bottom stirred parallel eco catalyst screening system</td>
</tr>
<tr>
<td><strong>Automated Multiple Autoclaves</strong></td>
<td><strong>Glass - Metal / PEEK Autoclaves</strong></td>
<td><strong>Magnetic Drive Couplings / Stirrers</strong></td>
</tr>
<tr>
<td>• 4 nos or 6 nos parallel reactors</td>
<td>• 100ml-2ltrs volume glass autoclaves</td>
<td>• For reactor volumes from 50ml to 10,000L</td>
</tr>
<tr>
<td>• 25 ml - 2 ltrs. for high throughput testing</td>
<td>• MOC: SS316 / Hastelloy / PEEK / glass</td>
<td>• For high vacuum distillation in RBF</td>
</tr>
<tr>
<td>• Fully automated with SCADA software</td>
<td>• Upto 10 bar pressure @ 200 °C</td>
<td>• Full vacuum to 690 bar pressures</td>
</tr>
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<td>• Bottom stirred or overhead stirring</td>
<td>• Interchangeable metal &amp; glass reactors</td>
<td>• MOC: SS-316, Hastelloy C, PEEK, etc.</td>
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<td><strong>High Pressure Vessels</strong></td>
<td><strong>Acid Digestion Bombs</strong></td>
<td><strong>Shaker Hydrogenators</strong></td>
</tr>
<tr>
<td>• 25 ml - 2000 ltrs. volume</td>
<td>• 50 ml to 750 ml volume</td>
<td>• 100 ml to 2 liters volume in glass &amp; metal interchangeable vessels.</td>
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<td>• Pressures upto 689 bar &amp; 600°C</td>
<td>• Teflon lined, SS316 &amp; microwavable hydrothermal acid digestion bomb</td>
<td>• 20 bar for metal vessel &amp; 3 bar for glass vessel</td>
</tr>
<tr>
<td>• Can be used with bottom magnetic stirrer</td>
<td>• Pressures upto 200 bar &amp; upto 250°C.</td>
<td>• Used to study catalyst activity or hydrogenation</td>
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<td>• For gas / liquid storage</td>
<td>• For Hydrogen Induced disbonding tests</td>
<td>• For soaking of diamonds / precious stones</td>
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**HPHT Corrosion Testing System**
- For static, dynamic, loop & electrochemical corrosion studies
- 450 ml to 25 ltr. volume
- Pressures upto 350 bar & 600°C
- MOC: SS316, Hastelloy C, Inconel, Titanium

**Gas Hydrate Formation System**
- For production & study of artificial gas hydrates
- 50 ml to 2000 ltrs.
- Pressures upto 350 bar and 100°C.
- Glass window with camera to observe gas hydrate formation

**Reaction Calorimeter**
- For heat flow, isothermal & non-isothermal calorimetry
- Fully automated to measure heat flow, reaction enthalpy, adiabatic temperature rise, specific heat
- 500ml to 5 ltrs.
- Interchangeable glass & high pressure metal reactors

**Supercritical Fluid Extraction Technology (SCFE)**
- 100 ml to 1000 ltr. extractors
- Pressures upto 689 bar
- For extraction of herbs, spices, essential oil, oleoresins, flavours, fragrance, colours
- Decaffeination of tea & coffee
- Textile dyeing of fabrics, drying of aerogels

**Continuous Stirred Tank Reactors (CSTR)**
- Single or multiple reactors connected in series.
- Multiple inlets and outlets for addition & transfer / removal of gases & liquids.
- Stirred tank reactors of 50 ml to 2000 ltrs.
- Pressures upto 350 bar & 500°C

**Packed Bed Tubular Reactors**
- Tubular micro reactors with packed catalyst
- Fixed, fluidized & trickle bed reactors
- Pressures upto 350 bar & 1000°C
- For catalyst testing / screening, oxidation, reforming, hydrogenation, liquefaction, fischer tropsch process, hydro-cracking etc.

**Continuous Flow Microreactors**
- Modular metal microchannel reactors from 1 ml (AMaR-1) to 2 litres. (AMaR-2) volume
- Glass microreactors from LTF, Germany
- Flow rates upto 240 lph
- For liquid-liquid, gas-liquid, homogeneous & multi phase reactions

**Continuous Flow Reactors Pilot to Plant Scale**
- 3D flow reactor (AMaR-3) with volumes upto 1 ltr. & flow rates upto 360 lph
- Pinch tube reactor (AMaR-4P) with volumes upto 16 ltr. & flow rates upto 500 lph
- MOC SS316, Hastelloy C, Inconel, Titanium
- Reactor system with pump, process control & automation

**Photochemical Reactors**
- UV transparent Chemically inert tubes
- Reactor volume 12, 50, 200, 1000 & 2000 ml
- Flow rate up to 240 lph
- Pressure up to 35 bar & temperature 175°C
- For photochlorination, photobromination, photo alkylation etc.
High pressure automated / ex-proof / customised systems

100 ltr. ex-proof hydrogenation pilot plant with catalyst charging, catalyst filter with recycle, auto cooling system, vacuum pump & catch pot

10 ltr. fully automated ex-proof alkoxylation pilot plant

Continuous emulsion polymerisation pilot plant

High pressure polytest reactor system

100 ltr. polymerization reactor for 2 million cP viscous polymer with hydraulic vessel raising lowering & tilting mechanism

Phase transfer catalyst continuous reactor system with simultaneous 3 different impeller speeds at 3 different levels
High pressure automated / exproof / customised systems

500 Ltr. hydrogenation pilot plant with catalyst filter & recycle

100 ltr reactor with hydraulic lid lifting arrangement

Multiple glass & metal autoclaves

Multipurpose pressure reactor with column & distillation assembly

Ex-proof pilot plant for EO-PO reactions

Ex-proof autoclave with load cell arrangement

Fully automated & semi continuous pilot plant for styrene butadiene emulsion polymerisation with pneumatic vessel raising, lowering & tilting
Continuous flow / CSTR / fixed bed tubular reactor systems

High throughput multi tube reactor system for catalyst screening

Pilot scale tubular reactor with purge panels for continuous biojet fuel production

1 ltr. AMaR-3 with flame proof pumps, control panel & control valves

Table top tubular reactor system (TTRS)

CSTR for hydro-cracking of heavy hydrocarbon oils

High pressure CSTR for hydrogenation
About AMAR

Serving Industry Since 1974

ISO, CE-PED, ASME U/U2, CSA, UL, Ex-Proof, ATEX certification

Largest manufacturer & exporter of reactors in India

Inline with government's MAKE IN INDIA campaign

Exports to over 50 countries worldwide

More than 40 distributors worldwide for local support

Over 5000 successful installations worldwide

More than 2000 delighted customers globally

Unmatched quality & safety standards

Manufacturing on CNC/VMC & automated machines

Prompt & efficient after sales service

Expertise in custom designing high pressure & flow systems

Highly skilled & trained team of more than 100 people

ISO 9001:2008

CE-PED

ASME U/U2