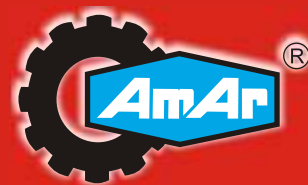


Autoclaves

High Pressure Systems



Pressure Reactor Specialist™

Your Research Partner



Our Profile

Experience

The company was founded in 1974 by Mr. Naresh Shah (Managing Director & Chairman) after completing B.Tech. Mechanical from IIT Mumbai & Masters of Science from University of Michigan, United States. He was later joined in 1998 by his son Mr. Vishal Shah who graduated with a bachelors' degree in Mechanical Engineering from V.J.T.I Mumbai. Ever since 1974, Amar has built its foundation on a strong technical team with a blend of vast experience & technological / commercial understanding.

The Journey

The beginning journey was with general fabrication of large pressure reactors, vessels, heat exchangers etc. Today, we specialize in high pressure autoclaves / reactors / systems, magnetic drive coupling & flow reactors. Our vision is to provide import substitutes in India & new technologies globally, while maintaining quality & costs. Through high pressure systems Amar can offer customized turnkey solution for virtually all applications from high pressure chemical reactors, corrosion testing, supercritical fluid extraction system etc for chemical, pharmaceutical, oil & gas, defence, educational & chemical research purposes.

Certifications

We are a ISO 9001 – 2008, CE – PED, ASME U, U2 certified company offering products with Explosion proof (Ex), ATEX, UL, CSA, CRN certified systems on request.

Facilities

We have complete in-house setup well-equipped to design, manufacture & test all the products & components with latest gauges, measuring instruments & machines including:

- CNC turning centre
- Vertical machining centre (VMC)
- Conventional lathes
- Plasma cutting machine
- Overhead EOT cranes
- Buffing / polishing / cleaning equipment
- Laser marking
- Cutting machines
- Calibration instruments
- Drilling machines
- Welding machines
- Grinding machines
- PMI machine
- Packaging machines etc.

Team

We are a team of around 125 people with qualified staff, skilled workers including a core team of 30 highly skilled & experienced professional engineers, required to produce the desired quality with accuracy & precision as per international quality standards & design codes.

Vision

- To provide import substitutes in India & new technologies globally, while maintaining quality & costs
- To become a leading global player in manufacturing & supply of all our products
- To continuously upgrade the quality of our products and always offer the latest & the best
- To build products that are technically complete, physically reliable, economically competent & ergonomically superior

Mission

- To develop technically complex, challenging, customised turnkey solutions
- At Amar, we strongly follow Hon. Indian Prime Minister Narendra Modi's campaign of MAKE IN INDIA

Global Footprints

Pioneers & largest manufacturer of high pressure reactor, magnetic drive couplings & continuous flow reactor in India year after year for over 40 yrs with around 75% market share in India and substantial share globally. Over 5000 successful installations world over with more than 1000 delighted customers. Exports to more than 50 countries worldwide with presence of local distributors & 5 distributors in different parts of India for local support.

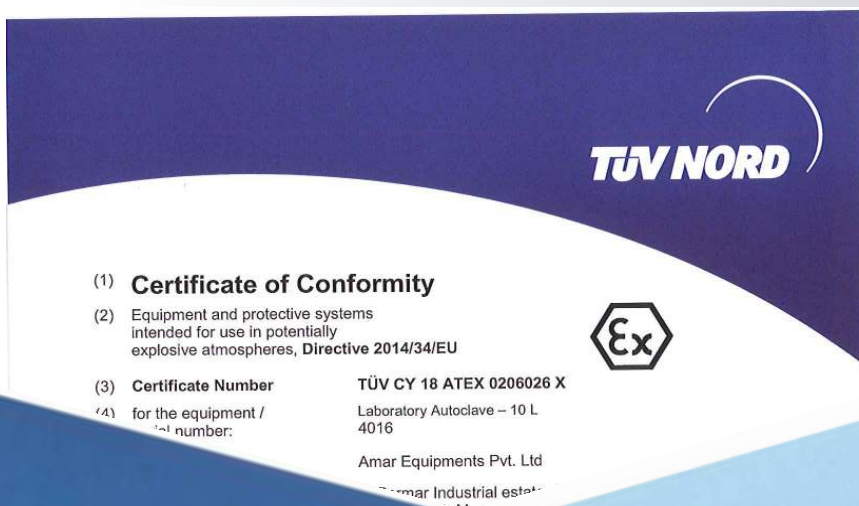
Product Range

- High Pressure Autoclaves
- High Throughput Catalyst Screening
- Automated Parallel Autoclaves
- Gas Induction Reactors
- Glass Autoclaves
- Non Stirred Pressure Vessels
- HPHT Corrosion Testing
- Supercritical Fluid Extraction
- Reaction Calorimeters
- Gas Hydrate System
- Acid Digestion Bombs
- Shaker Hydrogenator
- Pilot Plants
- CSTR
- Fixed Bed Tubular Reactors
- Continuous Flow Micro Reactors
- Photo Chemical Flow Reactors
- Magnetic Couplings / Stirrers
- Heating & Cooling Circulators
- Lab Agitated Nutsche Filters



Certifications & Approvals

- An ISO-9001-2008 certified company.
- All our pressure vessel designs are as per **ASME** codes-section VIII Div 1 / Div 2.
- Our welders are qualified as per **ASME** section IX codes for welded pressure vessels.
- **PED, U/U2 Stamp, CRN for Canada, ASA 1210 for Australia & DOSH for Malaysia** certified systems.
- CE, UL / CSA certified systems offered on request.
- Explosion proof / flame proof systems with Class 1 Div. 2, ATEX Zone I Ex electrical & mechanical certified system for hazardous area.
- DQ, IQ, PQ, OQ documentation can be given on special request.



Non-Stirred Pressure Vessels



Salient features

- 25 ml to 100 ltr net filling volume standard models & 150 ltr to 2000 ltr customized solutions
- Pressures upto 700 bar & temperatures upto 600°C
- Available in different Materials of Construction (MOC) like SS-316, SS-316L, Hastelloy B/C, Monel, Nickel, Inconel, Titanium, Tantalum, Tantalum lined, Zirconium etc.
- Ex-proof / ATEX / CE / PED / ASME U / U2 / CRN certified systems on request
- Fully automated PC controlled high pressure system / pilot plant to continuously monitor, control & record various parameters

Applications

- For gas / liquid storage / charging under pressure
- For gas / liquid separation & collection
- For static, loop, electrochemical, corrosion studies
- For study of gas hydrate formation
- For supercritical fluid extraction
- For hydrogen induced disbonding tests
- For soaking of diamonds / precious stones



Standard models for 1000 series

Volume	25 ml					
Model No.	P 1113	P 1115	P 1123	P 1125	P 1133	P 1135
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	30					
Vessel Internal Height (mm)	40					

Volume	50 ml					
Model No.	P 1213	P 1215	P 1223	P 1225	P 1233	P 1235
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	40					
Vessel Internal Height (mm)	63					

Volume	100 ml					
Model No.	P 1313	P 1315	P 1323	P 1325	P 1333	P 1335
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	40					
Vessel Internal Height (mm)	83					

Volume	250 ml					
Model No.	P 1413	P 1415	P 1423	P 1425	P 1433	P 1435
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	65					
Vessel Internal Height (mm)	80					

Standard models for 2000 series

Volume	500 ml					
Model No.	P 2113	P 2115	P 2123	P 2125	P 2133	P 2135
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	75				65	
Vessel Internal Height (mm)	118				158	

Volume	750 ml					
Model No.	P 2213	P 2215	P 2223	P 2225	P 2233	P 2235
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	75					
Vessel Internal Height (mm)	193					

Volume	1 ltr					
Model No.	P 2313	P 2315	P 2323	P 2325	P 2333	P 2335
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	101.6				75	
Vessel Internal Height (mm)	163				273	

Volume	2 ltr					
Model No.	P 2413	P 2415	P 2423	P 2425	P 2433	P 2435
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	101.6					
Vessel Internal Height (mm)	303					

Volume	5 ltr					
Model No.	P 2513	P 2515	P 2523	P 2525	P 2533	P 2535
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	152					
Vessel Internal Height (mm)	310					

Standard models for 3000 series

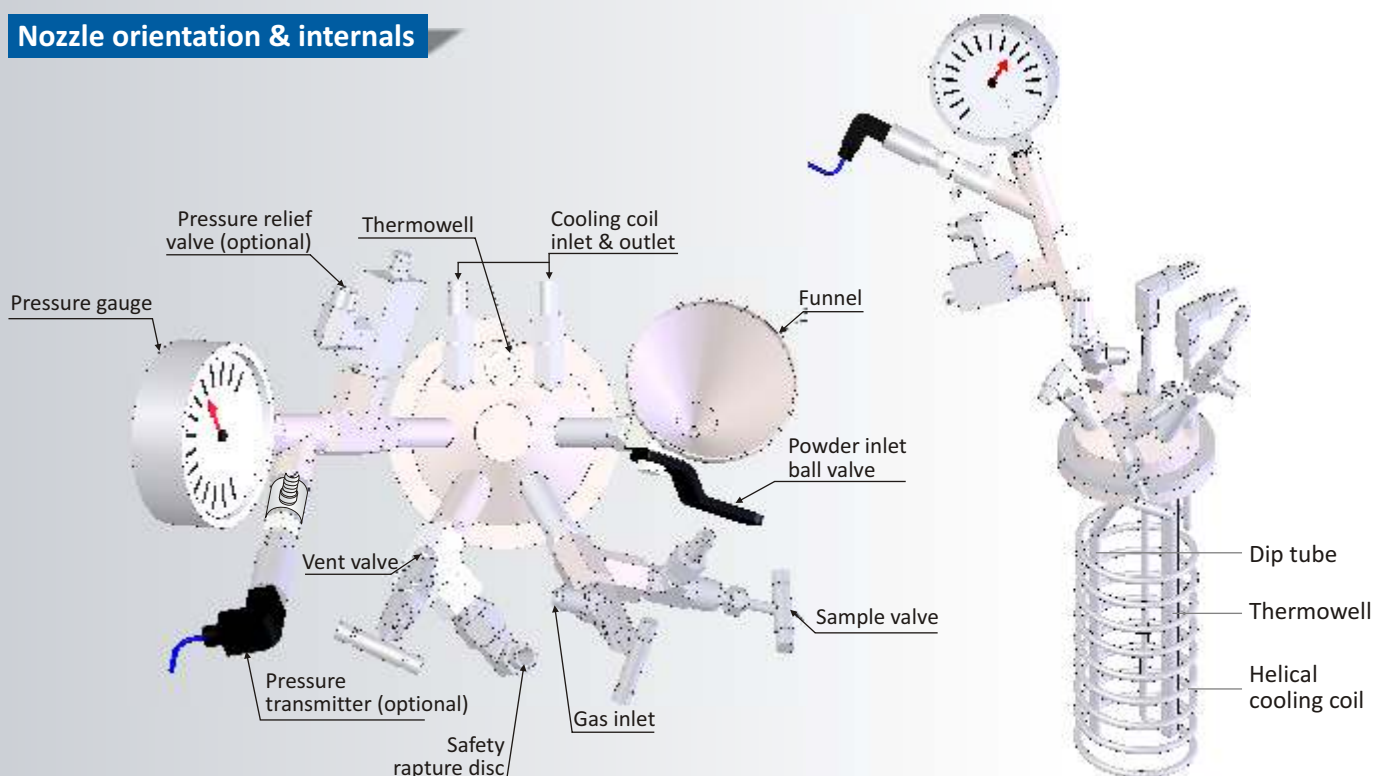
Volume	10 ltr					
Model No.	P 3113	P 3115	P 3123	P 3125	P 3133	P 3135
Design Pressure	100 bar		200 bar		350 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	183					
Vessel Internal Height (mm)	400					

Volume	20 ltr				25 ltr			
	P 3213	P 3215	P 3223	P 3225	P 3313	P 3315	P 3323	P 3325
Design Pressure	100 bar		200 bar		100 bar		200 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	248							
Vessel Internal Height (mm)	495				595			

Volume	50 ltr				100 ltr			
	P 3403	P 3405	P 3413	P 3515	P 3503	P 3505	P 3513	P 3515
Design Pressure	50 bar		100 bar		50 bar		100 bar	
Design Temperature	300°C	500°C	300°C	500°C	300°C	500°C	300°C	500°C
Vessel I/D (mm)	355		343		456		440	
Vessel Internal Height (mm)	558		600		699		739	

Note: The above ratings are only for SS316, Hastelloy C & Inconel materials, for other materials the ratings will change depending on its stress values & maximum allowable temperature as per ASME code for which refer page 21 in material of construction.

Nozzle orientation & internals



Valve details

Vessel volume	Needle Valve	Ball Valve	Flush Bottom Valve
50 ml - 250 ml	1/8"	—	—
500 ml - 5 ltr	1/4"	1/4"	10 mm
10 ltr - 25 ltr	1/2"	3/4"	15 mm
50 ltr - 100 ltr	1/2"	1"	25 mm

Technical specifications for non-stirred pressure vessel standard models

Sr.	Description	Specification																											
A	Material of Construction	SS 316 wetted parts																											
B	Head mounting style	Removable head and vessel design																											
C	Standard Nozzles, Valves & Fittings	<p>External Valves & Fittings: Pressure gauge, safety rupture disc, gas inlet and liquid sampling needle valve with common dip tube, vent needle valve, solenoid valve at inlet of cooling coil (50 ml to 250 ml), ball valve for powder / liquid inlet (10 ltr to 100 ltr), flush bottom valve (10 ltr to 100 ltr)</p> <p>Internal Fittings: Serpentine cooling coil (50 ml to 250 ml), Helical cooling coil (500 ml to 100 ltr), dip tube, thermowell with RTD PT 100 sensor</p>																											
D	Gasket	PTFE up to 300°C and metallic grafoil gasket up to 500°C																											
E	Closure Type	Split clamp with clamp bolts																											
F	Mounting & Dimensions (W x D x H) mm	<table border="1"> <thead> <tr> <th>Mounting</th> <th>Vessel Volume</th> <th>Dimensions</th> </tr> </thead> <tbody> <tr> <td rowspan="4">SS Table Top</td> <td>25 ml, 50 ml, 100ml, 250 ml</td> <td>275 x 230 x 500</td> </tr> <tr> <td>500 ml</td> <td>320 x 270 x 630</td> </tr> <tr> <td>750 ml</td> <td>320 x 270 x 630</td> </tr> <tr> <td>1 ltr</td> <td>355 x 310 x 710</td> </tr> <tr> <td rowspan="6">Floor Stand</td> <td>2 ltr</td> <td>355 x 400 x 990</td> </tr> <tr> <td>5 ltr</td> <td>420 x 355 x 990</td> </tr> <tr> <td>10 ltr</td> <td>585 x 560 x 1600</td> </tr> <tr> <td>20 ltr</td> <td>600 x 560 x 1650</td> </tr> <tr> <td>25 ltr</td> <td>600 x 560 x 1650</td> </tr> <tr> <td>50 ltr</td> <td>675 x 675 x 1700</td> </tr> <tr> <td>100 ltr</td> <td>780 x 780 x 1750</td> </tr> </tbody> </table>	Mounting	Vessel Volume	Dimensions	SS Table Top	25 ml, 50 ml, 100ml, 250 ml	275 x 230 x 500	500 ml	320 x 270 x 630	750 ml	320 x 270 x 630	1 ltr	355 x 310 x 710	Floor Stand	2 ltr	355 x 400 x 990	5 ltr	420 x 355 x 990	10 ltr	585 x 560 x 1600	20 ltr	600 x 560 x 1650	25 ltr	600 x 560 x 1650	50 ltr	675 x 675 x 1700	100 ltr	780 x 780 x 1750
Mounting	Vessel Volume	Dimensions																											
SS Table Top	25 ml, 50 ml, 100ml, 250 ml	275 x 230 x 500																											
	500 ml	320 x 270 x 630																											
	750 ml	320 x 270 x 630																											
	1 ltr	355 x 310 x 710																											
Floor Stand	2 ltr	355 x 400 x 990																											
	5 ltr	420 x 355 x 990																											
	10 ltr	585 x 560 x 1600																											
	20 ltr	600 x 560 x 1650																											
	25 ltr	600 x 560 x 1650																											
	50 ltr	675 x 675 x 1700																											
100 ltr	780 x 780 x 1750																												

Enquiry guide for non-stirred pressure vessel customized models

Enquiry code structure is **Standard Model no-A-B-C-E-F-H-I-J** where A, B, C, E, F, H, I & J options can be selected from below tables. The below options will be in place of standard supply. For example 500 ml, 100 bar, 300°C, Hastelloy C, fixed head autoclave with ATEX Zone1 certified, heater & panel will read as **P 2113-HC6-K-EZ-ATP**

Options

A Material of Construction

SS 316 L	316L	Inconel 625	IN5
Hastelloy C 276	HC6	Nickel 200	NK2
Hastelloy C 22	HC2	Titanium Gr. 2	TI2
Hastelloy B	HAB	Zirconium 702	ZR7
Monel 400	MN4	Tantalum	TAN
Inconel 600	IN6	Tantalum lined	TNL

B Head Mounting Style

Fixed head with manual vessel raising lowering (50 ml to 750 ml)	K
Fixed head with manual vessel raising lowering & tilting 500 ml & 750 ml)	KT
Fixed head with pneumatic vessel raising lowering (500 ml to 25 ltr)	P
Fixed head with pneumatic vessel raising lowering & tilting (500 ml to 25 ltr)	PT
Fixed head with hydraulic vessel raising lowering (50 ltr & 100 ltr)	H
Fixed head with hydraulic vessel raising lowering & tilting (50 ltr & 100 ltr)	HT

C Valves & Fittings*

Serpentine cooling coil (500 ml - 100 ltr)	SCC
Ball valve powder inlet (500 ml - 5 ltr)	BVP
Flush bottom valve (500 ml - 5 ltr)	FBV

E Closure Type (up to 2 ltr)

Threaded with 'O' ring-FKM (Viton) up to 225°C (25 ml - 250 ml)	CV
Threaded with 'O' ring FFKM (Kalrez) up to 275°C (25 ml - 250 ml)	CK
Split clamp with 'O' ring-FKM (Viton) up to 225°C & 100 bar, 500 ml - 2 ltr	CV
Split clamp with 'O' ring FFKM (Kalrez) up to 275°C & 100 bar, 500 ml - 2 ltr	CK

F Mounting & Overall Dimensions (approx)

Mounting	Volume Reactor	Reactor dia. with control panel (W x D x H) mm	Code
SS Trolley	25 ml, 50 ml, 100 ml, 250 ml	1010 x 410 x 850	TL
	500 ml	1010 x 410 x 880	
	750 ml		
	1 ltr	1040 x 410 x 890	
	2 ltr	1040 x 410 x 1140	
	5 ltr	1100 x 410 x 1140	
	10 ltr	1310 x 585 x 1750	
	20 ltr	1310 x 600 x 1800	
	25 ltr	1310 x 600 x 1800	
	50 ltr	1500 x 675 x 1850	
100 ltr	1550 x 780 x 1900		

H Heating Style

Electric ceramic band heater	EC
Electrical ex-proof IIB + H2 certified	EA
Electrical ex-proof ATEX Zone1 certified	EZ
Electrical ex-proof Class 1 Div 2 certified	EC
Welded SS 304 jacket with insulation	JS
Welded SS 304 jacket with electrical ceramic heater	JH
Limpet Coil SS 304 with insulation (50 L & 100 L)	LC

I Control Panel

SS control panel with programmable PID temperature controller & high temperature alarm	STD
Ex-proof group IIA/IIB zone 1 certified	F2B
Ex-proof group IIC zone 1 certified	F2C
Ex-proof class 1 div. 2 certified	C12
Ex-proof ATEX zone 1 certified	ATP
Touch screen	TSP

J Certifications**

Design approval as per ASME code by notified body	DAC
CE-PED 2014/68/EU	PED
ASME U stamp coded	ASU
ATEX certified reactor 2014/34/EU	ASA
CE marked panel & electrical parts	ECE
UL/CSA marked panel & electrical parts	USC

Note: 1) Customer is advised to select best suited options for most optimized price & delivery.

2) For other optional accessories please refer page 44.

3) All above options may not be available / possible with all models.

4) Customization of volume, material, pressure, temperature etc. may be possible on request.

5) Customised power supply can be offered on request.

6) Overall dimensions are indicative, they may change depending on the optional accessories or specific design modifications opted.

*All option specified in C are addons & multiple/ all of them can be availed at the same time.

**Country specific certifications like CRN for Canada, AS1210 for Australia & DOSH for Malaysia can be offered on request.

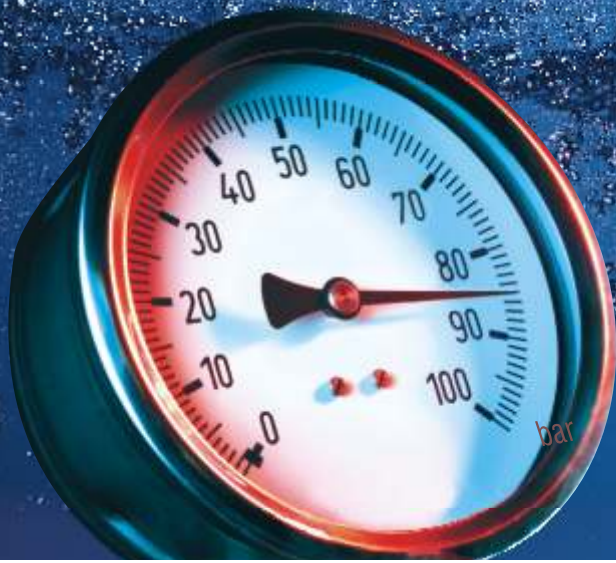
Some of our valued customers



Some of our valued customers



At Amar **PRESSURE** and **FLOW** is our religion



WORLDWIDE PRESENCE

Exports to over 50 countries worldwide with distributors for sales & service in following countries

- Australia
- Colombia
- Germany
- Mexico
- Portugal
- Slovakia
- Thailand
- Azerbaijan
- Czech Republic
- Iran
- Netherlands
- Russia
- South Africa
- Turkey
- Brazil
- Egypt
- Israel
- Peru
- Romania
- South Korea
- UK
- Cambodia
- Estonia
- Italy
- Phillipines
- Saudi Arabia
- Spain
- USA
- China
- France
- Malaysia
- Poland
- Singapore
- Taiwan
- Vietnam

Sales & service support available from following places in India

- Ahmedabad
- Bangalore
- Hyderabad
- Kolkatta
- Mumbai
- New Delhi



AMAR EQUIPMENTS PVT. LTD.

Since 1974.

6, Parmar Industrial Estate, Bail Bazaar, Kale Marg, Kurla (W), Mumbai - 400 070. India.

Tel: +91-22- 6225 5000 • Website: www.amarequip.com • E-mail: sales@amarequip.com / export@amarequip.com



- High Pressure Autoclaves • Multiple Reactor Systems • Gas Induction Reactors • Ex-Proof & Automated Pilot Plants • Glass Autoclaves
- Super Critical Fluid Extraction • HPHT Corrosion Testing • Magnetic Drive Couplings & Agitators • Lab ANF

- Metal Micro Rectors • Glass Flow Reactors • Photochemical Reactors • Packed Bed Tubular Reactors
- Continuous Stirred Tank Reactors • Heating Cooling Circulators