

PRESSURE and **FLOW** Reactors

About AMAR

Serving Industry Since 1974

New 50000 sqft state-of-the-art manufacturing facility

Largest exporter of pressure & flow reactors in India

Expertise in custom designing high pressure & flow systems

Inline with government's MAKE IN INDIA campaign

Exports to over 50 countries worldwide

Over 6000 successful installations worldwide

More than 2000 delighted customers globally

Manufacturing on CNC/VMC & automated machines

Unmatched quality & safety standards

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

Prompt & efficient after sales service

Highly skilled & trained team of more than 200 personnel



ISO 9001:2015



CERTIFICATE

Management system as per
ISO 9001 : 2015

The Certification Body TUV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

AMAR EQUIPMENTS PVT. LTD.
Valiram Sons, LBS Marg, Bhandup (West),
Mumbai - 400 075, Maharashtra,
India



operates a management system in accordance with the requirements of ISO 9001:2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope:
Design and Manufacture of High Pressure Autoclave, Tubular Reactors, Micro Reactors and Pilot Plant Assemblies with related Pressure and Safety Accessories.

Certificate Registration No: 44 186 884147
Audit Report No: 2.4-03012009

Valid from 26.09.2021
Valid until 26.09.2024
Initial certification 25.05.2009

Certification Body
at TUV NORD CERT GmbH

Mumbai, 26.09.2021

TUV NORD CERT GmbH Langemarkstrasse 20 45141 Essen www.tuv.com/cert-gmbh

TUV India Pvt. Ltd., 801, Pankaj Plaza - I, L.B.S. Marg, Chhatrapati (W), Mumbai - 400 085, India www.tuv.com/india



CE-PED

Certificate

Quality-Assurance System
acc. to Directive 2014/68/EU

Certificate no.: 01 202 INDIO-19 0039

Name and address of the manufacturer:
Amar Equipments Pvt. Ltd.
Unit No. 1,2,4,5,6,14 Parmar Industrial Estate,
Kale Marg Ball Bazar, Mumbai-400070

Herewith we certify that the above mentioned manufacturer operates a quality system according to the European Directive 2014/68/EU. The manufacturer has the permission to affix the following CE marking to pressure equipment described and manufactured in accordance to the scope covered by this Quality-Assurance System:

CE 0035
GS-System (Module H1)
(the GS-Markings (C, E, D, G, H) are covered by Module H1)

Issued acc. to Directive 2014/68/EU
Audit report no.: INDIO-19 0039

Area of validity:
Design and manufacture of High pressure Autoclave/Reactors/Pressure vessels, Tubular Reactors/Micro Reactors & Pilot Plants with assemblies with related pressure and safety accessories, see annex to certificate

Manufacturing plant:
Amar Equipments Pvt. Ltd.
Unit No. 1,2,4,5,6,14 Parmar Industrial Estate,
Kale Marg Ball Bazar, Mumbai-400070

Valid until: May 20, 2022

Cologne, May 21, 2019

A. Meyer
Dir.-ing. (FH) Roman Althaus




TUV Rheinland Industrie Service GmbH
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An-Ordnung-Schein, D-01109 Köln

www.tuv.com

TUVRheinland®
Precisely Right.

ASME U



CERTIFICATE OF AUTHORIZATION

The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:
AMAR EQUIPMENTS PVT. LTD.
Unit No. 6, Parmar Industrial Estate
Ball Bazar, Kale Marg
Kurla (west)
Mumbai, Maharashtra 400070
India


SCOPE:
Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)

AUTHORIZED: April 26, 2020
EXPIRES: April 26, 2023
CERTIFICATE NUMBER: 54313

David S. Tuttle
Board Chair, Conformity Assessment

Joseph Beaman
Managing Director, Conformity Assessment

The American Society of Mechanical Engineers



STIRRED PRESSURE AUTOCLAVES



- Volume: 100 ml – 100 ltr.
- Pressures up to 350 bar @ 500°C.
- SS316, Hastelloy, Monel, Inconel, Titanium, Zirconium.
- Zero leakage magnetic coupling.
- Ex-proof, CE / CSA certified electricals, PED / ASME, U stamp certified pressure reactors

PLANT SCALE PRESSURE REACTORS



- Volume: 100 ltr – 10000 ltr.
- Pressures up to 100 bar @ 300°C.
- Material: SS316, Hastelloy, Inconel, Titanium, Zirconium.
- High mass transfer gas induction impeller / PBT impeller.
- Zero leakage magnetic coupling.
- Ex-proof, CE / CSA certified electricals, PED / ASME, U stamp certified pressure reactors.

PARALLEL SYNTHESIZER



- Volume: 100 ml – 2 ltr.
- Pressures up to 350 bar @ 500°C.
- SS316, Hastelloy, Monel, Inconel, Titanium, Zirconium.
- 4 or 6 parallel reactors.
- Fully automated with SCADA software.

ECO CATALYST SCREENING



- Volume: 25 ml x 7 Nos.
- Pressures up to 100 bar @ 200°C.
- For high throughput catalyst screening.
- Bottom stirred parallel reactors..



PRESSURE REACTOR & SYSTEMS

GLASS AUTOCLAVES



- Volume: 100 ml – 2 ltr.
- Design pressure: Up to 10 bar.
- Design temperature: Up to 300°C.
- Material: SS316, Hastelloy, Glass.
- Interchangeable metal & glass autoclaves.

MAGNETIC DRIVE COUPLINGS / STIRRERS



- For reactor volume: 50 ml to 10000 ltr.
- Design pressure: full vacuum to 700 bar
- Material: SS316, Hastelloy C
- For high vacuum distillation in RBF
- Mixer with inline motor & coupling
- High torque coupling up to 1000 Nm

PRESSURE VESSELS



- Volume: 100 ml – 10000 ltr.
- Pressures up to 700 bar & temperature up to 600°C.
- SS316, Hastelloy, Monel, Inconel, Titanium, Zirconium.
- PED / ASME, U stamp certified pressure vessels.

ACID DIGESTION BOMB



- Volume: 50 ml to 750 ml.
- Pressures up to 200 bar @ 250°C.
- Material: SS-316 with PTFE liner & cap.
- Microwaveable acid digestion bombs.

SHAKER HYDROGENATOR



- Volume: 100 ml – 2 ltr.
- Design pressure: Up to 20 bar for metal vessels and 3 bar for glass vessels.
- Design temperature: Up to 200°C for metal vessels and up to 150 °C for glass vessels.
- Material: SS316, Hastelloy C

SUPERCRITICAL FLUID EXTRACTION



- Volume: 100 ml – 1000 ltr.
- Design pressure: Up to 700 bar.
- Feed capacity of 0.24 to 2400 kg/day.
- For extraction of herbs, spices, essential oils, oleoresins, flavours, fragrance, colours.
- Decaffeination of tea & coffee.
- Textile dyeing of fabrics, drying of aerogels.
- Synthesis of nano particles

HPHT CORROSION TESTING



- Volume: 500 ml – 100 ltr.
- Design pressure: Up to 350 bar.
- Design temperature: Up to 600°C.
- Material: SS316, Hastelloy C, Inconel, Titanium
- For static, dynamic, recirculating loop & electrochemical corrosion studies.

GAS HYDRATE FORMATION SYSTEM



- Volume: 100 ml – 100 ltr.
- Pressures up to 350 bar @ 100°C.
- Glass window with camera to observe gas hydrate formation.
- Material: SS-316, Hastelloy, Inconel, Titanium.
- For analysis of effectiveness & efficiency of thermodynamic & kinetic gas hydrate inhibitors.



HIGH PRESSURE CUSTOMIZED SYSTEMS

Amar has expertise to design, manufacture & integrate customised high pressure reactor systems with all accessories, utilities, automation on a common skid for various applications.

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



10 ltr. Fully automated Ex-proof alkoxylation pilot plant



High pressure polytest reactor system



High pressure Ex-proof distillation skid



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



Continuous emulsion polymerization pilot plant



AUTOMATED & EX-PROOF PILOT PLANTS



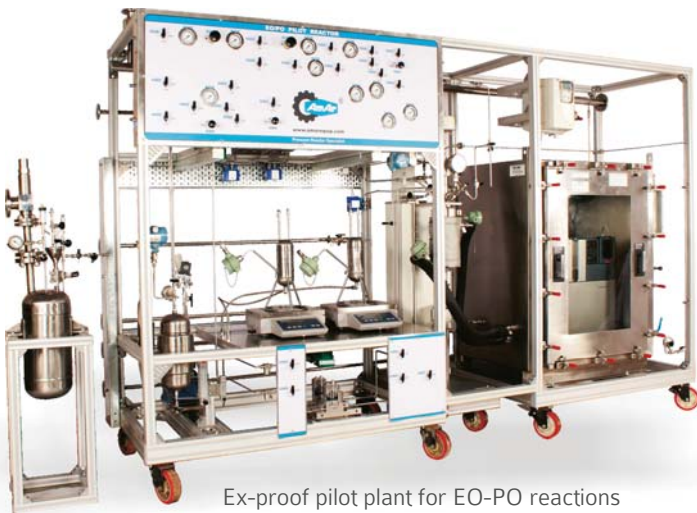
Complete turn-key solutions can be offered for lab to plant scale with desired design, safety & hazardous area certification.



500 ltr. Hydrogenation pilot plant with catalyst filter & recycle



100 ltr reactor with hydraulic lifting arrangement



Ex-proof pilot plant for EO-PO reactions



Multipurpose pressure reactor with column distillation assembly

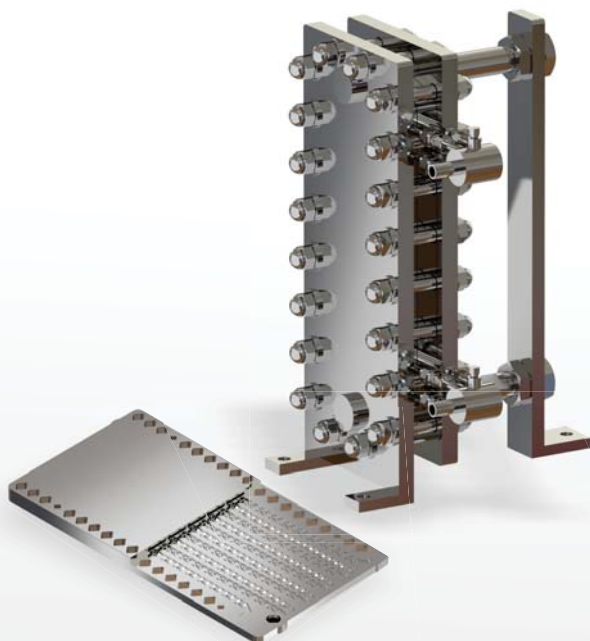


Fully automated & semi continuous pilot plant for styrene butadiene emulsion polymerization with pneumatic vessel raising, lowering & tilting

Ex-proof autoclave with load cell arrangement



AMaR-2: METAL MICROREACTOR



- Volume: 1 ml to 2 ltr.
- Flow rate: Up to 720 lph.
- Up to 20 bar & -50°C to 200°C.
- Material: SS316 / Hastelloy C.
- 3D printed microreactors.
- Ideal for fast liquid-liquid reactions with high exothermicity.

AMaR-3: CONICAL 3D FLOW REACTOR



- Volume : 1 ml to 2 ltr.
- Flow rate: up to 720 lph.
- Up to 100 bar & -50°C to 350°C.
- Material: SS-316 / Hastelloy C.
- Ideal for fast & exothermic immiscible liquid-liquid and gas-liquid reactions.

AMaR-4P: PINCHED TUBE REACTOR



- Volume: 100 ml – 200 ltr.
- Flow rate: Up to 10,000 lph.
- Up to 50 bar & -50°C to 350°C.
- Material: SS316, Hastelloy C.
- Production scale versatile reactor suitable for various liquid-liquid or gas-liquid exothermic reactions, liquid-liquid extraction.

MULTI-FLO REACTOR



- Cost-effective starter set for proof-of-concept studies.
- Interchangeable reactor modules of AMaR-2, AMaR-3, AMaR-4, AMaR-4P with heating cooling.
- Up to 50 bar & -50°C to 350°C.
- Material: SS316, Hastelloy C.

TUBULAR REACTOR WITH STATIC MIXER



- Volume: 100 ml – 200 ltr.
- Flow rate: up to 10,000 lph.
- Up to 100 bar & -50°C to 350°C.
- Material: SS316, Hastelloy C.
- Optional static mixer elements for better mixing.
- Ideal for pilot to plant scale liquid-liquid, gas liquid & slurry applications.

SLURRY-FLO REACTOR



- Volume: 250 ml to 1 ltr.
- Up to 50 bar & -30°C to 300°C.
- Material: SS316, Hastelloy C.
- Multiple agitated cells connected in series.
- Each cell temperature control and sampling.
- Ideal for lab to pilot scale liquid slurry reactions and slow reactions with high residence times.

CONTINUOUS STIRRED TANK REACTOR



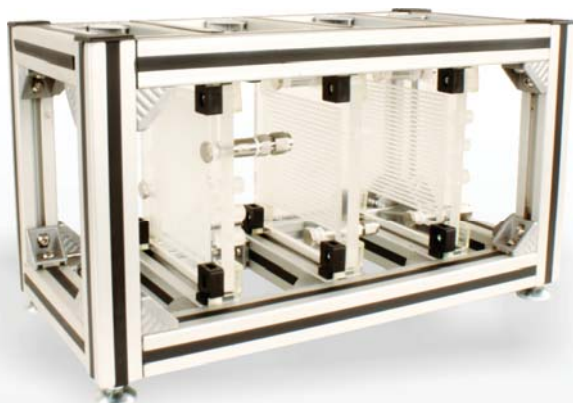
- Volume: 100 ml to 10000 ltr.
- Up to 350 bar @ 500°C.
- SS316, Hastelloy, Monel, Inconel, Titanium, Zirconium.
- Single or multiple reactors connected in series.
- Multiple inlets and outlets for addition & transfer / removal of gases & liquids.

PHOTO-FLO REACTOR



- Volume: 12 ml to 200 ml.
- Flow rate: Up to 150 lph.
- Up to 18 bar & -20°C to 150°C.
- Material: PFA.
- Jacketed PFA coil around light source UV lamp.
- Ideal for applications like photo halogenations, photo alkylation, vitamin D production, etc.

GLASS MICROREACTOR



- Volume: 0.1 ml to 50 ml.
- Up to 15 bar & 300 °C
- Material: Glass, quartz, silicon, glass-silicon compounds.
- Integrated multilayer glass construction for mixing, reaction & heat transfer.

SOLI-FLO REACTOR



- Homogeneous and heterogeneous reactions in same setup using interchangeable tubular attachments.
- Volume 1 ml to 16 ml.
- Up to 350 bar @ 500°C.
- Material: SS316, Hastelloy C.
- Ideal for gas-liquid-solid & vapor phase chemistries.

PACKED BED REACTOR



- Volume : 10 ml to 100 ltr
- Up to 350 bar & 1100°C
- For catalyst screening, oxidation, reforming, hydrogenation, liquefaction, fischer tropesch process, hydro-cracking, trickle bed reactions, vapor phase reactions, catalyst testing, fluid catalytic cracking, etc.

FLUIDIZED BED REACTOR



- Up to 12 bar & 1050°C
- Solid feed: Batch / continuous
- For syngas generation, pyrolysis reactions, biomass / coal gasification reactions, etc.

ELECTROCHEMICAL FLOW REACTOR



- Volume: 5 ml to 3000 ltr.
- Design pressure: Up to 2 bar & 120°C.
- Wetted part: PTFE.
- Graphite, lead, copper, platinum, aluminium, iron, titanium, Mg, SS, Zn, Cu/Ni electrodes.

LIQUID LIQUID SEPARATOR



- Flow rate: Up to 12 lph.
- Design temperature: Up to 120°C.
- Wetted part: PTFE.
- Advanced membrane-based liquid-liquid separation.
- Highly efficient than gravity based separations, even for challenging emulsions.

HEATING COOLING CIRCULATORS



- Single fluid closed loop system from -90 °C to 250°C.
- Heating cooling bath circulators from -70°C to 175°C.
- High temperature circulators from ambient to 350°C.
- Chillers up to -15°C.
- Suitable for reactor volume from 10 ml to 3000 ltr.

AGITATED NUTSCHE FILTER & DRYER



- 1 ltr – 100 ltr slurry volume.
- Design pressure: -1 to 4 bar.
- Design temperature : - 20°C to 150°C.
- Material: SS316, Hastelloy C.
- 0.005 m² to 0.5 m² filtration area.



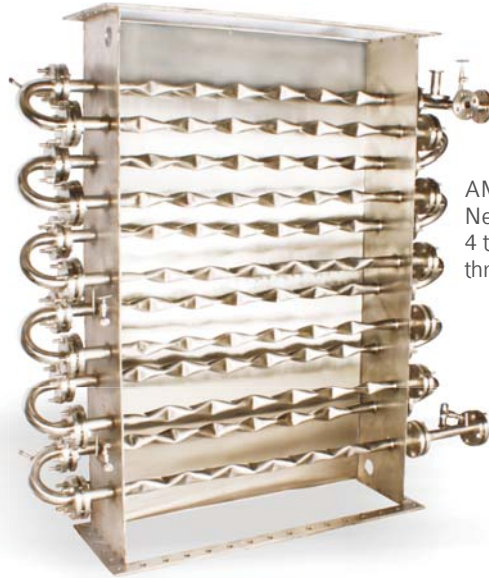
SCALED-UP FLOW REACTOR SYSTEMS

Amar has expertise to design, manufacture & integrate commercial flow reactor systems with pumps, accessories, utilities, automation on a common skid up to 10000 lph. for various applications.

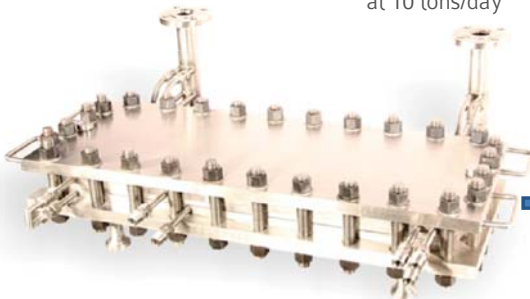
AMAR-4, 10Ltr
N-alkylation with
600 LPH throughput



AMAR-4P, 12 ltr
Neutralization
4 tonnes/day
throughput



AMaR-2 + AMaR-4P
for nitration reaction
at 10 tons/day



AMAR-4P, 50 ltr.
for decyclization
at 1000 lph

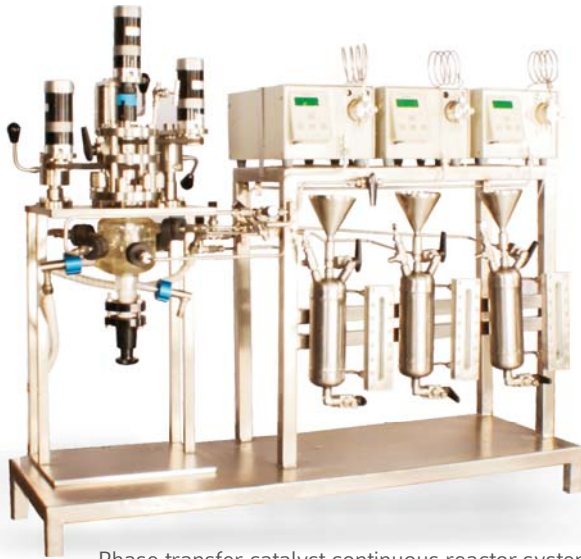
AMAR-4P, 2 ltr
Acetylation at 100 lph



CUSTOMISED FLOW REACTOR SYSTEMS



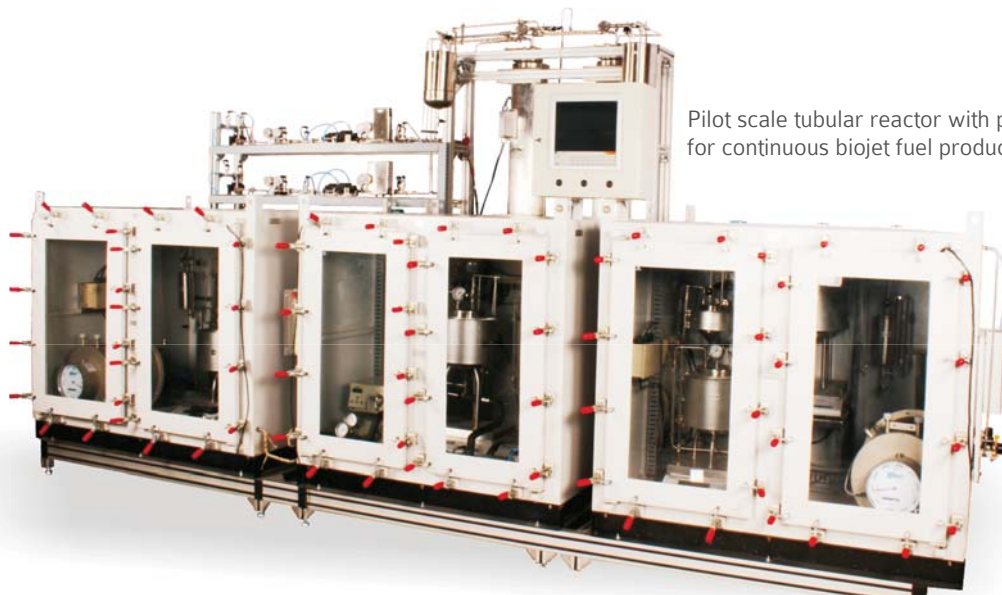
Complete turn-key solutions for lab to plant scale can be offered with desired design, safety & hazardous area certification.



Phase transfer catalyst continuous reactor system with simultaneous 3 different impeller speeds at 3 different levels



High pressure CSTR for hydrogenation



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



Pyrolysis reactor system



CSTR for hydro-cracking of heavy hydrocarbon oils



OUR VALUED CLIENTELE



Aarti Drugs Ltd.



OUR VALUED CLIENTELE



CLIENT TESTIMONIALS

"Product quality is very nice and available within committed time frame, All the Equipment received from Amar is very reliable in performance. Service from Amar is always appreciated. "Excellent service !!!!!!!!"

Dr. Dahyabhai Tandell,
Head Development Manager,
Bayer Limited

"We have been dealing with Amar Equipment for long time. Overall, I can say that Amar Equipment is a very Reliable, progressive and Innovative Equipment manufacturer and willing to make extra efforts to develop new design and also fairly economic in comparison to international manufacturers."

Dr. Chinmoy Nandi, V.P.-R&D,
NOCIL LTD

"The quality and performance of the supplied system is excellent and was delivered within the stipulated time frame. We have no hesitation recommending Amar as a quality supplier of high value orders."

Solvay Research and Innovation Center



AMAR EQUIPMENT PVT. LTD.

📍 Valson Textile Mills, LBS Road, Bhandup (W), Mumbai - 400078, INDIA.

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