SAR Chem-Tech Solution



PRODUCT BROCHURE

"RELIABLE SOLUTION FOR ALL YOUR PROCESS NEED"



➢ ABOUT SAR

SAR is a partnership company established in 2018 and headquartered in Pune—India's hub of process engineering expertise. We specialize in providing reliable and cost-effective engineering solutions to the chemical and allied industries, focusing on Heat and Mass Transfer and Separation Processes.

Our Core Offerings

Process Equipment Manufacturing:

- Distillation Columns
- Heat Exchangers
- Pressure Vessels
- Storage Tanks

Turnkey EPC Projects:

- ZLD Systems (ETP, UF-RO, MEE, ATFD)
- NOx & Sox Gas Absorption Systems
- Solvent Recovery Units
- System Evaluation & Performance Optimization

Engineering Design:

- Basic and Detailed Engineering Documents

Procurement Assistance for key system components

Project Management Support

Plant Commissioning & Training



➢ Distillation Column

SAR is leading expert and solution provider for a range of distillation technologies. Distillation columns are core of process industry. We are expert in design & manufacturing of distillation columns as per process and mechanical design requirement. We offer column for Batch, Continuous, Stripping, Azeotropic, Extraction Distillation Process along with unique and extensive range of top-performance. Columns for atmospheric to vacuum and high pressure applications with conventional metallurgy to bonding with exotic materials are manufactured in our state-of-the-art manufacturing facility.

Material of Construction [MOC] Offered : - CS [IS 2062 Gr A/B, SA 516 Gr 60/70], SS 316, SS304, SS 316L, SS 304 L, SS904 ETC.





➢ Reboilers

Reboiler is equipment which heat the liquid stream received from bottom of distillation column to generate partially or completely vaporize stream, which is returned to the column bottom to mass transfer with countercurrent liquid flow. Steam or Thermic fluid usually provide the heat required for the vaporization. Proper reboiler operation is vital for effective distillation. We can develop a best possible design of reboiler to meet your requirement. CDPS offer range of Reboiler Such as

- Kettle Type Reboilers
- Thermosyphon Reboilers
- Forced Circulation reboilers





➢ Condenser

The Distillation process requires the vapor to condensed partially or completely to ensure reflux back to the column. Condenser play very critical role in this SAR offers suitable condenser for process requirement such as

- Top Mounted Condenser
- Vent Condensers







➢ Heat Exchanger

A heat exchanger is a device which transfers heat from one medium to another, a Hydraulic Oil Cooler or example will remove heat from hot oil by using cold water or air. Alternatively a Swimming Pool Heat Exchanger uses hot water from a boiler or solar heated water circuit to heat the pool water. Heat is transferred by conduction through the exchanger materials which separate the mediums being used. A shell and tube heat exchanger passes fluids through and over tubes, where as an air cooled heat exchanger passes cool air through a core of fins to cool a liquid.

TYPES:

Shell and Tube; Shell and Tube Heat Exchangers consist of a large number of small tubes which are located within a cylindrical shell. The tubes are positioned into the cylinder using a tube bundle or "tube stack" which can either have fixed tube plates

Plate Type; Plate Heat Exchangers operate in very much the same way as a shell and tube heat exchanger, using a series of stacked plates rather than tubes. Plate heat exchangers are usually brazed or gasketed depending on the application and fluids being used. Their compact stainless steel construction makes them an ideal choice for use with refrigerants or in food and beverage processing.







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➢ Reactors

Chemical Reactors / Jacketed Reaction Vessel consist of a Cylindrical vertical shell with standard Torispherical dish on both ends. A Jacket is provided on the Outside of the shell for Heating & Cooling Stiffener Rings are provided on shell in between the shell and jacket to give uniform circulation of the heating or cooling media and to intensify the vessel
Agitator assembly mounted on the Top dish of Reaction Vessel consists of Shaft supported by Lantern Assembly on the Top End containing Bearing Housing with Tapered roller bearing to withstand impact load and vibratory load ensuring smooth rotation of the Shaft. Shaft Can fitted with different types Of Agitator Such as Single Anchor, Double Anchor, Turbine & Propeller types. Baffles are also provided inside the shell as per the requirement.
Reaction Vessel offered are of superb range with the following features:
High durability and reliability - Less maintenance require
Available in various specifications & Capacity from 500ltr to 50,000ltr
High durability and reliability - Less maintenance require
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➢ Gas Scrubber & Chemical Scrubber

SAR offers Chemical Scrubbers, Gas Scrubbers, that are efficiently and effectively designed to remove gas pollutants. Often these pollutants are chemicals such as ammonia, chlorine, SOx & NOx compounds

These High-Efficiency Gas Scrubbers work by dissolving or absorbing the pollutant into the scrubbing liquid. The scrubbing liquid used will depend on the properties of the targeted pollutant. SAR Gas Scrubber systems incorporate high-quality design and construction for long-term, continuous operation while minimizing the equipment maintenance needed

Important design considerations for your Chemical/Gas Scrubber include:

- Pollutant Targeted
- Removal Efficiency
- Process Conditions





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➢ PILOT PLANT AND SKID

SAR Offers total solution in Pilot Plants from concept to commissioning. We offer turnkey Pilot fixed price solutions which helps customer for their R&D, Study of new products development etc. before going for commercial plant.

Modular fabrication can make economic sense for small pilot units where same commercial plant can be studied with low minimum investment. Skid mounted plants for Chemical, Speciality chemical and pharmaceutical plants can also developed and supply for continuous processing or batch-wise processing of small product quantities.

SAR applies its modular process plant design/build methodology and know – how to variety of applications, including.

- Small-volume chemical solvent recovery units, Extraction skid mounted plant
- Batch / Continuous pharmaceutical plants
- Auto/ Semi automatic operated plants and manual operation plant as well.
- Plants for producing market development quantities of new product for market establishment.
- Pre-built modular process pilot plants to replace existing facilities where space is an important consideration.
- Education purpose pilot plants and for research in educational University.







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➢ STRIPPER

Stripper column is a chemical equipment which is used for removal of components from liquid stream using vapour stream. This system can also be used to recontain pure solvent from the process fluid, Fatty acid removal in food industry, in ETP to minimize TDS, In Oil & Gas industry, for H2S Removal etc. Stripper Column is mostly preferred in those cases where heavy compound in water and light compound in the mixture of organics having volatile nature. SAR is expert in designing & manufacturing of Packed bed Column and Tray Stripper Column.





➢ PRESSURE VESSEL

A pressure vessel is a storage vessel or tank designed to hold fluids at high pressures . These include industrial compressed air receivers, flash vessel, reactor Vessel, crystallizer, small reactor for laboratories, and pressure vessel for testing high pressure component, storage vessel for liquified gases.

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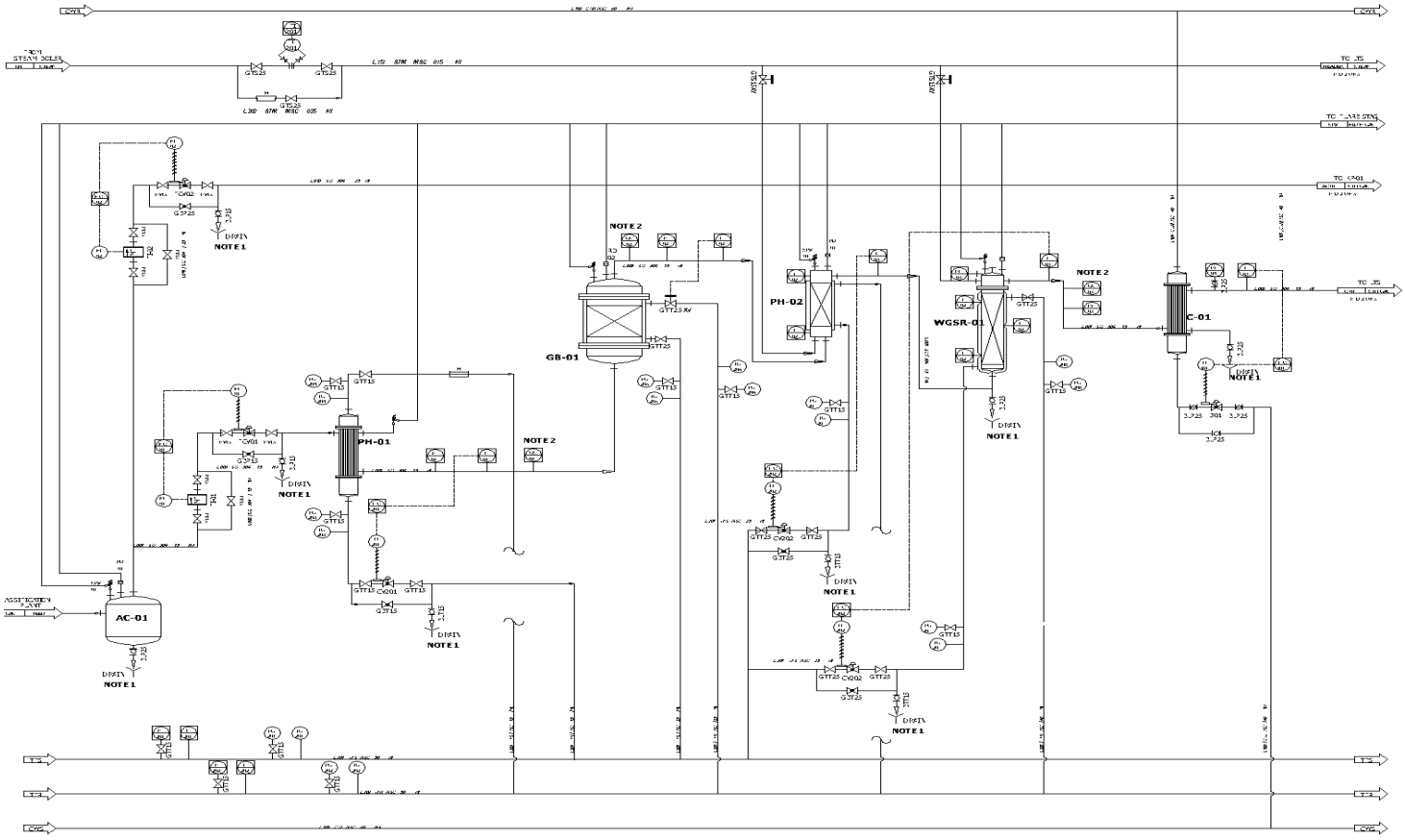
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➢ ENGINEERING SERVICES

SAR Chem-Tech Solution is one of the Perfect services & solution Provider company

- Plant audit, Energy consumption audits & solution on it.
- Conceptual studies & its applications
- Project Engineering & Project Management
- Project Feasibility Study
- Capacity and debottle necking Studies, Process Optimization
- Process Design with simulation and Hydraulics
- PFD's P&ID's and Plant Layout CAD Services
- Basic and Detail Engineering Services
- Turn-Key Separation Systems
- Plant Installation & Commissioning
- Basic and Detailed Engineering





➢ Single Fluid Heating & Cooling Systems

SAR design, manufacture and install single fluid heating & Cooling systems (SFHCS) in a number of standard and configurations. Heating systems are used in the manufacture of Bulk Drugs, API & Fine Chemicals and Batch processing. Typical SAR system application duties include;

- Individual hot & Cold thermal Fluid generator – Temperature Range 35 to 300°C
- Combined clean hot, cold & chilled thermal fluid generator – Temperature range -100°C to 300°C

Operational Benefits

- Stable, reliable and accurate results
- Clear visibility of system operational performance: Digital display, lights & alarms
- Operation safe
- No changeover between different utilities avoids cross contamination.
- Non corrosive and clean fluids means " No Corrosion" and " No Scaling"
- Thermal fluid having wide temperature range can be selected to provide flexibility.
- Single pipeline for Fluid Inlet and Outlet to process area reduces chances of leakages.
- Non water based utilities reduces risk for water reactive processes.
- Accurate temperature control to ±1°C can be achieved.
- Automated continuous temperature control without any interruption for changeover possible.
- Fast heating and cooling profiles can be achieved, reducing batch time.
- Programmable ramp based heating and cooling possible meeting requirement of critical processes like crystallization.
- Smooth temperature changeover avoids thermal shock to equipment as well as products.





➢ Hot Water Systems

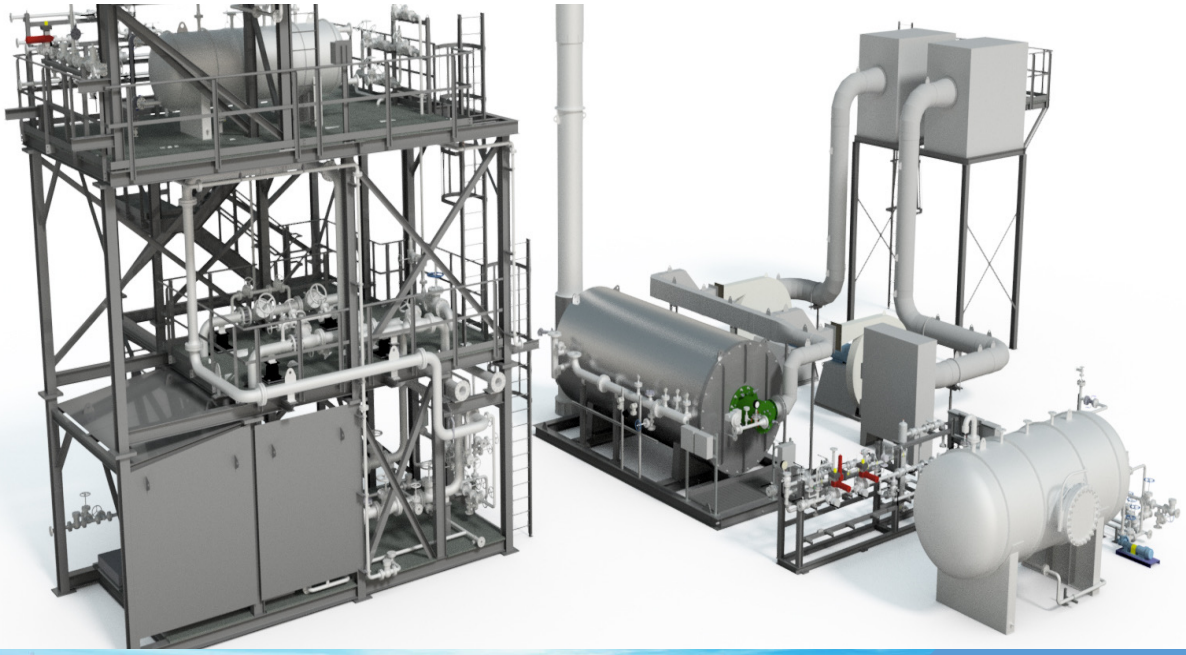
SAR provide a range of standard and hot water skid systems for use in the pharmaceutical, healthcare, food and beverage industry sectors in clean utilities.

Each SAR hot water skid system incorporate a stainless steel storage tank, hot water circulation pump, flexible stainless steel hose pipes, water heating system, sampling valves, drain valves and all sensor inlet valves. This is our entry level hot water utility system and can be adapted to the following application duties;

- Individual clean hot water generator – Temperature up to 95°C
- Combined clean hot & cold water generator – Temperature range 30°C to 95°C

Operational Benefits

- Consistent and reliable 100% quality water supply
- Stable and accurate sensor/instrumentation feedback for ideal system management
- Clear visibility of system operational performance: Digital display, lights & alarms
- Operationally safe
- Energy efficient
- Operational savings through increased productivity and process uptime.
- Quality, low maintenance, robust construction





➢ MULTIPLE EFFECT EVAPORATOR

Our evaporators are ideally suitable for concentrating a range of solutions / suspensions including highly heat sensitive liquids where original properties of the product have to be preserved and the stability of the product is vital.

We offer custom built plants, which can be specially designed and sized to optimize the operation cost vis-a-vis the initial investment. Single or multiple effect system using falling film, scraped surface and forced circulation either alone or in combination can be offered to meet product requirements.

The system can be offered as a package unit inclusive of pre-heaters, thermo compressors, vapour separators, transfer pumps, vacuum pumps and condensers and solvent stripping units.

The appropriate combination of Falling Film, Forced Circulation, Scrapped Surface type Evaporators along with Thermo vapour Re-compressor, Condensate and Product Flashing designed optimally, delivers the best efficiencies and ensures least operating cost.



- **Falling Film Evaporators**
  They are long tube evaporators most suitable for low temperature applications and for high thermal efficiency. They can be used for non-fouling and relatively non-viscous products.
- **Forced Circulation Evaporators**
  They are short tube evaporators with very high velocity in tubes. They are the conventional type preferred mostly for fouling and viscous products.
- **Rising Film Evaporator**
  They are thermally efficient and are for low temperature and foaming application. They are flexible enough to convert to forced circulation types.



➢ STATIC MIXER

SAR design good range of Static Mixer are well efficient in lowering the energy cost of your plant. All design mixer ensures constant operation. They also extra control option for manual and automatic operation. Our mixer is equipped with metal or plastic pipe with greatest internal elements. Static miser design works on a simple but operative technique. The main principle of static mixer is to mix two or more fluids with no maintenance, and energy saving due to the movement free technology. We supply numerous types of static mixer which are made up of excellent raw materials. We are also known for manufacturing the premium range of inline static mixer.



Operational Benefits

- **Chemical industries**: dispersing immiscible liquids in washing and extraction operation, Mix gases with air Dissolve gases into liquids such as NH3, SO2, Cl2 etc. mix Reactive chemicals in short length effectively, Heat and cool viscous material.
- **Water & Wastewater Treatment**: pH control of waste water with acid/bases, Flocculants dilution and addition to waste water, Dissolving CO2, O2, Cl2, Ozone into water.
- **Other Industry**: Food Industry, Pharmaceuticals, Pulp & Paper processing, Cosmetics & Detergents, Potable Water Treatment, power plant, Energy, Pollution Control, vegetable Oil Processing.
- Static mixer is also used for direct steam injection required in hot water system



➢ CLIENTAL LIST

SR. NO.	CLIENT	PLANT	CAPACITY	LOCATION
1	DEEPAK FERTILIZER & PETROCHEMICALS LTD	NOX SCRUBBER SYSTEM/ SULPHURIC ACID UNLOADING SYSTEM ETC	550 NM3/HR	TALOJA
2	ALKYL AMINES CHEMICALS LTD	AMINE GAS SCRUBBER SYSTEM	500 NM3/HR	PATALAGANGA
3	ZEHRON CHEMICALS PVT LTD	ZN CL2 CONCENTRATED SYSTEM (REACTOR)	2 KL	TALOJA
4	ALKYL AMINES CHEMICALS LTD	CO2(99%) GAS SCRUBBING SYSTEM	350 NM3/HR	KURKUMBH- PUNE
5	DEEPAK NOVACHEM TECHNOLOGIES LTD	HEAT EXCHANGERS	2 TO 15 M2	CHIPLUN
6	DECCAN EXPOTECH PVT LTD	CONTINEUOUS REACTION MASS PLANT	15 M3/HR	PUNE
7	PROJENTECH PVT LTD	AMMONIUM NITRATE STORAGE TANK	30 M3	PUNE
8	VINATI ORGANICS LTD	PSV & FLARE STACK SYSTEM	BEP	CHIPLUN
9	SHRIRAM INDUSRIES PVT LTD	METHANOL RECOVERY SYSTEM	6000 LPH	RAJASTHAN
10	KANCORE INGRIDIENT LIMITED	HEXANE ACETONE RECOVERY YSTEM	20 KLPD	KOCHI
11	KANCORE INGRIDIENT LIMITED	ACETONE WATER RECOVERY UNIT	15 KLPD	KOCHI
12	KANCORE INGRIDIENT LIMITED	ACETONE WATER RECOVERY UNIT	22 TPD	KOCHI
13	ROHA DYCHEM PRIVATE LTD	METHANOL RECOVERY UNIT	15 KLPD	ROHA
14	THERMAX GLOBAL PUNE	METHANOL PURIFICATION SYSTEM	PILOT PLANT	PUNE
15	DEEPAK NOVACHEM TECHNOLOGIES LTD	HIGH PRESSURE & TEMPRATURE TANK	0.1 & 0.3 kl	CHIPLUN

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