

ENGINEERING PACKAGES



PROCESS ENGINEERING EXPERTISE

Goel Glass Inc. delivers specialized, turnkey process packages and skid-mounted systems for the chemical, pharmaceutical, and specialty materials industries. By combining chemical engineering design with precision Borosilicate Glass and fluoropolymer fabrication, our process packages provide complete solutions for aggressive chemical environments where conventional metals and alloys fail.

CORE PROCESS PACKAGES & CAPABILITIES

1. Wiping Film Evaporator
2. Continuous Distillation System
3. Solvent Recovery
4. Rotating Disc Extraction Column

ENGINEERING SCOPE & DELIVERY

Every package is engineered from first principles—covering process simulation, P&ID generation, 3D piping layouts, structural frame fabrication in 304/316 stainless steel, electrical instrumentation, PLC/SCADA control automation, and on-site commissioning.

WIPING FILM EVAPORATOR

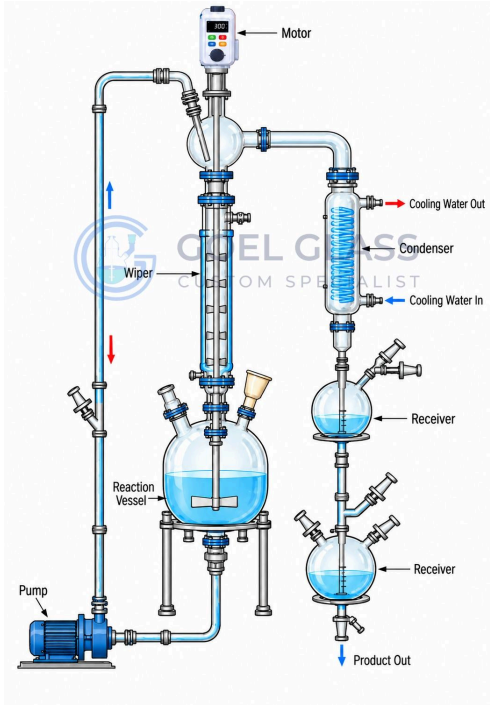
Goel Glass Wiped Film Evaporators are designed for gentle processing of heat-sensitive compounds under deep vacuum. Their rotating PTFE wiper system creates a thin, continuously renewed film for rapid evaporation, efficient heat transfer, and minimal residence time, reducing thermal degradation and hot spots

CONSTRUCTION

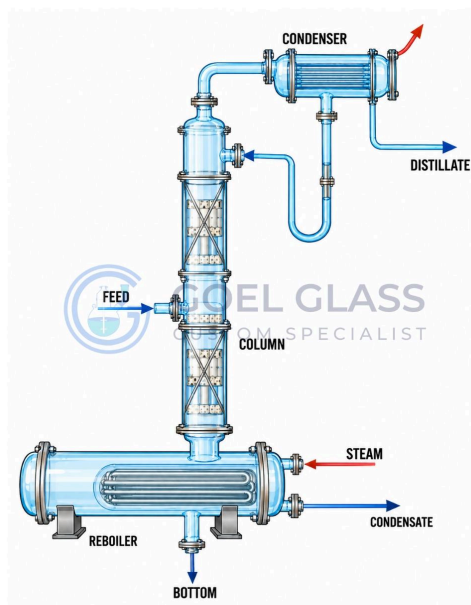
The wiper assembly is constructed entirely from chemical-grade Borosilicate glass support rods and pure virgin PTFE wiper blades, delivering absolute corrosion resistance against hot acids, halides, and aggressive solvents. Overhead motor agitation is driven by a variable-speed geared drive motor with an AC frequency inverter, coupled with a hermetic high-vacuum mechanical shaft seal rated for deep vacuum service.

Thermal fluid heated up to 150°C is continuously circulated through the outer glass jacket. Overhead vapors pass into an attached descending glass coil condenser and graduated receiver assembly, while concentrated bottom residues discharge continuously through a vacuum-balanced bottom receiver or peristaltic discharge pump.

Model	Size DN (mm)	HTA (M²)
WFE3	80	0.35
WFE4	100	0.47
WFE6	150	0.70



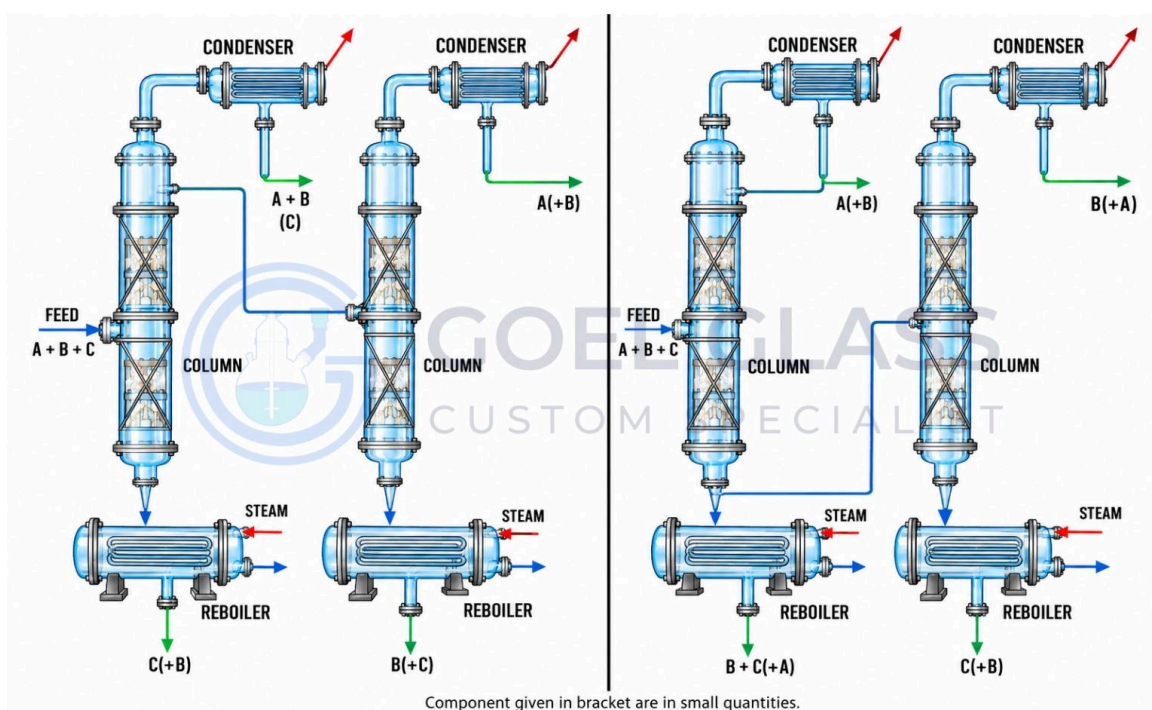
CONTINUOUS DISTILLATION SYSTEM



Goel Glass designs, engineers, and supplies turnkey Continuous Distillation Systems fabricated from high-purity Borosilicate Glass 3.3 and virgin PTFE. Unlike batch distillation units that experience cyclic downtime, fluctuating thermal gradients, and variable composition cuts, continuous fractionating columns maintain steady-state thermodynamic equilibrium, delivering uniform high-purity product streams 24/7 with minimal energy expenditure.

The continuous column comprises an upper rectifying section and a lower stripping section separated by an optimized feed preheater and liquid distributor. Raw feed is continuously metered into the column at an optimal thermal stage. Vapors ascending through structured or random borosilicate packings encounter counter-current reflux liquid descending from the overhead condensation system, facilitating intimate vapor-liquid mass transfer. Bottom residues are continuously circulated through a glass thermosiphon or falling-film reboiler, with top distillate and bottom effluent withdrawn simultaneously at steady-state rates.

For multi-component separations requiring the isolation of three or more distinct chemical fractions, Goel Glass provides multi-column fractionation trains configured in series (\$n-1\$ columns for \$n\$ components), arranged according to relative volatility and separation difficulty (direct split or indirect split trains).

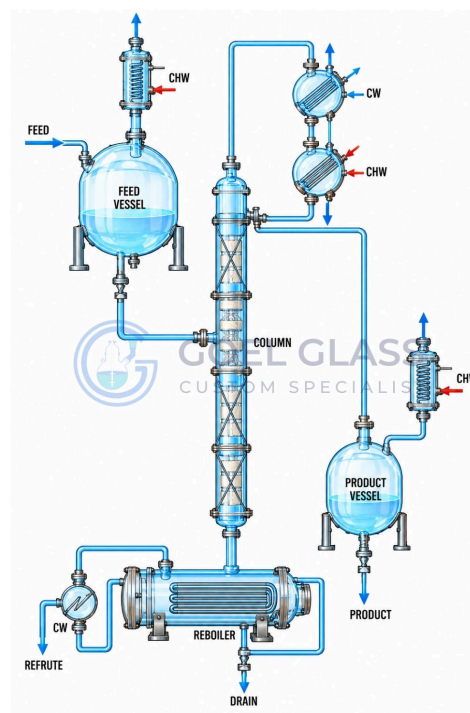


SOLVENT RECOVERY

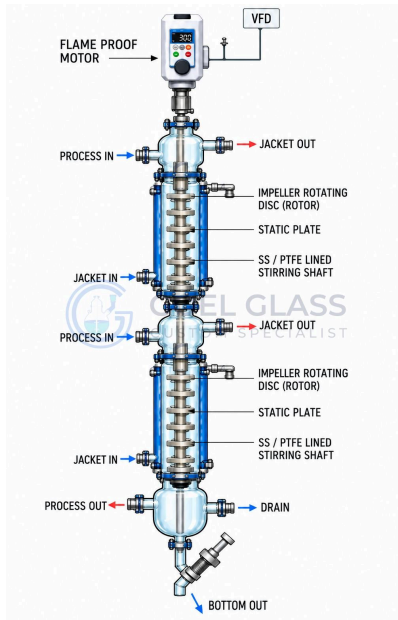
Goel Glass designs and supplies efficient Solvent Recovery Plants for recovering and reusing contaminated solvents across various industries. With capacities ranging from a few kg/day to several tons/day, these systems help reduce fresh solvent costs and minimize solvent disposal expenses.

KEY ENGINEERING FEATURES

1. Continuous Steady-State Operation: Continuous feed metering with automated level and reflux split control.
2. Exceptional Chemical Inertness: Wetted path in Borosilicate 3.3 and virgin PTFE eliminates trace metal leachates.
3. High-Efficiency Packing: Low pressure drop Raschig or structured packing minimizes bottom reboiler temperature.
4. Skid-Mounted Modular Framework: Pre-assembled modular stainless steel support frame with walkover platforms.



ROTATING DISC EXTRACTION COLUMN



Goel Glass manufactures high-efficiency Rotating Disc Extraction Columns (RDC) engineered for demanding liquid-liquid extraction processes where classical thermal distillation is unviable—such as close-boiling mixtures, thermal-cracking compounds, azeotropes, and temperature-sensitive biologicals. Liquid-liquid extraction leverages selective solute solubility differences rather than vapor pressure differentials to isolate high-value target compounds.

The RDC column is an agitated compartment contactor consisting of alternating stator rings fixed to the glass column wall and flat rotor discs mounted on a centrally rotating shaft. As two counter-current liquid phases pass through the column, the rotating discs generate controlled shear forces that disperse the dispersed phase into finely uniform droplets, greatly maximizing interfacial contact area without causing intractable emulsion formation.

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