

XPure Industrial Carrousel Systems for Separation, Purification, and Recovery

XPure Continuous Ion Exchange/Chromatography Simulated Moving Bed Industrial **Carrousel** Systems

- Preferred technology to perform a continuous separation, purification, and recovery with any feed solution
- Reliable, continuous systems due to the use of high-quality components and materials
- Features easy, straight-forward controls
- Industrial bulk IX process design



Headquarters/home office

XPure
Schipholweg 73-75, 2316 ZL LEIDEN
The Netherlands

XPURE LAB

Alexander Fleminglaan 1
2613 AX Delft
The Netherlands

+31 71 524 4000

info@xpure-systems.com

WWW.XPURE-SYSTEMS.COM

A ProPharma Group brand

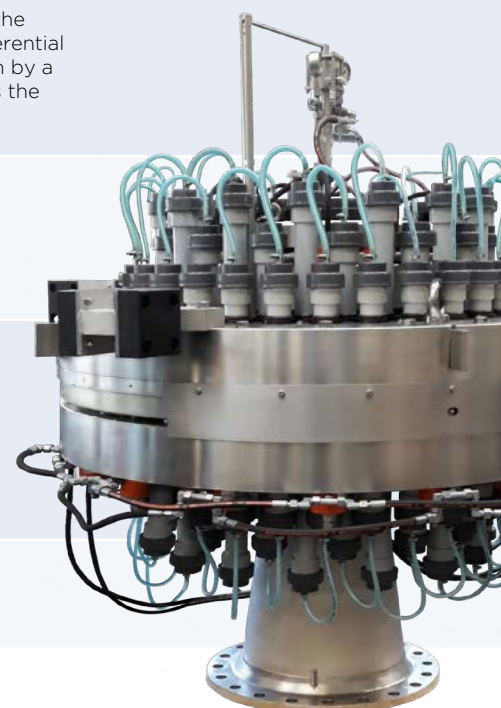
XPure-C Configuration

The system comprises the following:

- ✓ Multi liquid fluid distributor valve with individual inlet and outlet for every single resin tank (columns)
- ✓ Rotating valve system centered in the middle of turntable carrying all resin tanks
- ✓ Smart hydraulic sealing system based on high purity PTFE seal material
- ✓ With 16 up-to 30 columns
- ✓ Easy control system with intuitive operator interface, adaptive to client's standard DCS/SCADA system

System Specifications

Item/Material of Construction	Specifications
Rotating valve Hastelloy-C/AISI316L/EPDM/PTFE	A centrally positioned rotating valve acts as fluid distributor system between <ul style="list-style-type: none"> • At one side - the stationary valve part - managing central inlet and outlet process streams • At the other side - the rotating valve part - connecting each individual resin tank, both inlet and outlet, with the relevant process stream that is entering, leaving, or connecting to an adjacent resin tank position. • An active sealing system is an integral part of the valve assembly. A hydraulic aggregate is an auxiliary system, connected to the sealing system Valve port bore ½"-3" (DN10-DN80), adequate to handle the largest individual flow rates (up to 40 m ³ /h single port, and up to 120 m ³ /h for 3 in parallel flow-configured ports)
Pumps Centrifugal pumps, possibly magnetically driven – Gear pumps – Positive displacement pumps	At least 4 pumps to handle every distinct inlet fluid: feed-wash/rinse-elution and equilibration buffer-regenerant. MoC suitable for most chemically aggressive fluids. Each pump will be assessed on flow rate, head, and chemical resistance. Typical operating pressure range: 2-5 bar
Buffer/storage tanks PP, AISI316L (coated), PES	We can provide engineered storage tanks to support in- and outgoing flows to peripheral downstream processes.
Columns/resin tanks PP, PES, AISI316L with optional coating, CS-RL¹	16-30 columns carefully designed to accommodate resin inventory and resist all chemical fluids, equipped with bottom and top flow distributors that retain the resin particles Size can be from 100 l up to 5 m ³ (and larger), L/D typically 1-1.5. All columns are mounted on a carousel turntable that is configured around the central rotating valve Typical design pressure: 10 bar Fluid distributor system will be integral part of the resin tanks. A minimum dead volume related to the effective bed volume is one of the essential design criteria.
Piping PP/PVC-C, AISI316L	Piping which connects the (rotating part) multi-port distributor valve to the resin tanks Piping to configure the specific process design at the stationary part of the valve system (bottom part). This enables both serial and parallel connections between adjacent resin tanks. Piping & connections are process specific, eg, industrial or dairy/pharma quality
Sensors	In- and online sensors can be (optionally) installed and integrated in the control system pH - Conductivity - UV/VIS - (Optical) Refractive Index Absolute encoder to monitor and control the valve position is standard part of the scope
Turntable C-steel with solid multi-layer coating	The resin tanks-carrying turntable will be designed to mount the resin tanks in a stacked configuration and positioned circumferential related to the rotary valve system. The turntable will be driven by a dedicated servo drive and gear box. The turntable also moves the rotating valve part in a synchronous fashion.
Control Cabinet Epoxy coated or stainless steel or other on request	Sizing dependent on magnitude of system and MCC Typically (WxHxD) 800x1200x400 mm Touch screen Operator Interface mounted in cabinet door and/or SCADA
Control system	Carousel system control is plc based Dashboard for parameter values, trends, settings, rotating valve status, process status/progress Alarm history Mode for manual, semi-automatic and full automatic operation
Utilities	No instrument air needed Electricity power 3x400/240 VAC or US equivalent



¹ CS-RL: carbon steel - rubber lined