YMC ChromaCon

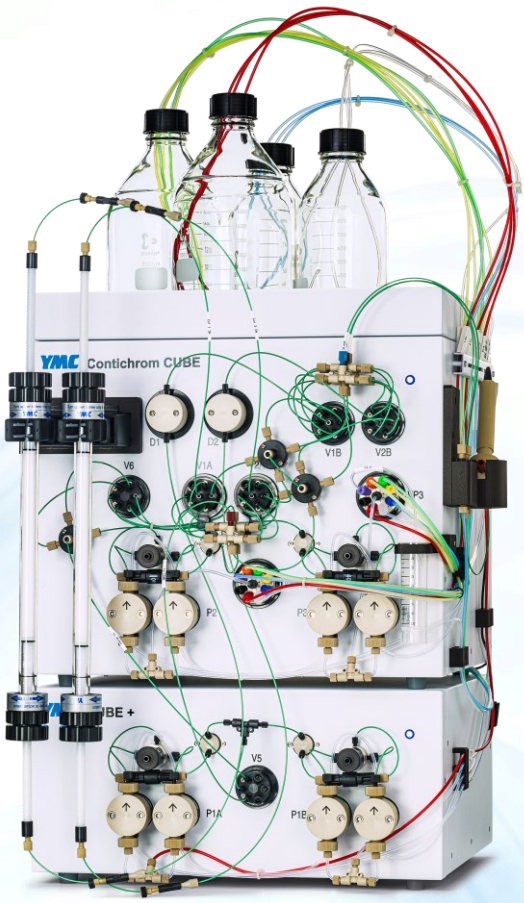
Contichrom® CUBE

A multi-purpose chromatography system designed for batch and twin-column purification

MCSGP® - CaptureSMB® - N-Rich®
Single Column Batch - Integrated Batch

The Contichrom CUBE

Twin-column chromatography system designed to improve process efficiency – get the most out of your process!



The **Contichrom CUBE** is a flexible purification system for process development of biotherapeutics such as proteins, mAbs, mRNA, peptides and oligonucleotides.

The unique twin-column design and software enables a greater range of functionality for optimal purification including batch, integrated batch and continuous counter-current processes.

The CUBE is a 100-bar system with a choice of 36 or 100 mL/min pumps. Accessories include multi-wavelength detectors, a large capacity fraction collector, and column thermostats.

Included : Batch, Integrated-batch, CaptureSMB, MCSGP & N-Rich

	System type	GMP standard	Pump flow range [mL/min] min - max		Pump flow range [L/h] min - max		Column i.D. range [cm] min - max	
CUBE 30	Benchtop	No	0.1	36	0.006	2.1	0.5	2.7
CUBE 100	Benchtop	No	0.5	100	0.03	6	0.8	5

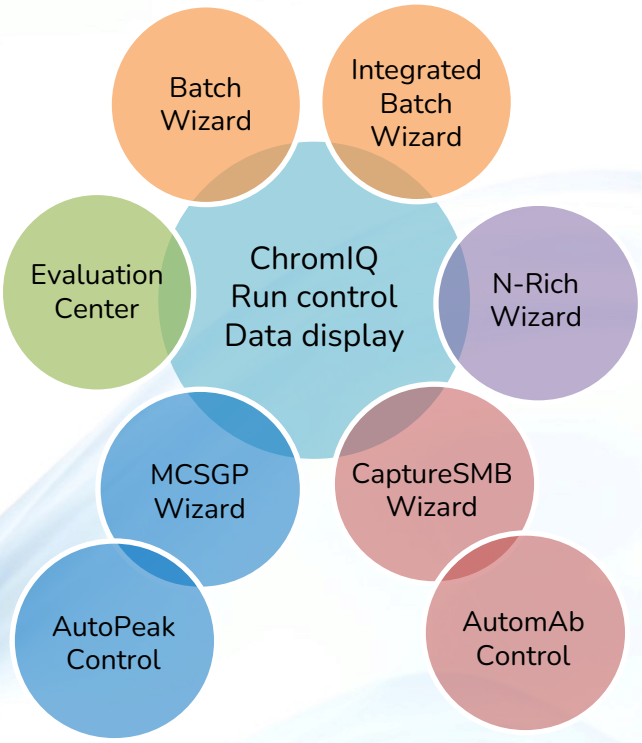
Our unique and highly efficient twin-column counter-current processes include **CaptureSMB®** for monoclonal antibody (mAbs) & mRNA purification, and **MCSGP®** for peptide and oligonucleotide purification. Additionally, the **N-Rich®** process allows the rapid enrichment of product-related impurities for CMC development.

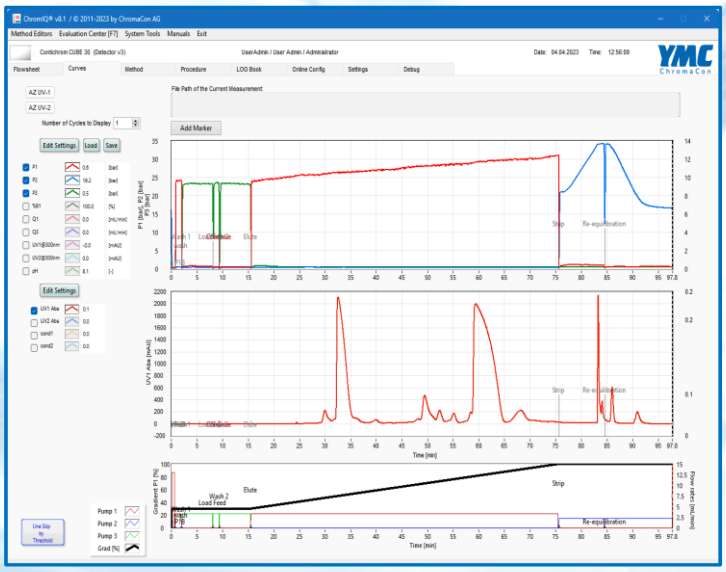
ChromIQ Software

The ChromIQ operating software controls the Contichrom CUBE system. It supports batch and continuous processes with an intuitive, user-friendly interface.

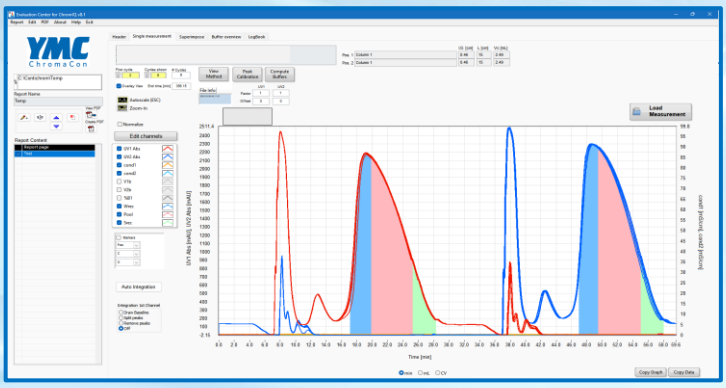
ChromIQ has easy step-by-step wizards for batch and integrated batch chromatography, and for conversion to more efficient Contichrom twin-column processes. ChromIQ also includes the **AutomAb®** and **AutoPeak®** dynamic process control functions.

ChromIQ also provides unique evaluation tools for continuous chromatography such as cyclical overlay and automatic integration of cyclical UV profiles.





ChromIQ



Evaluation Center

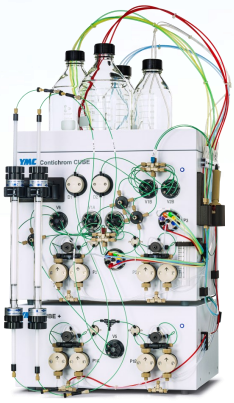
- ✓ Wizards for convenient method creation
- ✓ Dynamic process control
- ✓ Interactive run data visualization
- ✓ Evaluation tools for batch & continuous chromatography
- ✓ Easy data export (xlsx, csv, jpg)
- ✓ Pre-defined user groups with individual rights management
- ✓ Password protected user accounts
- ✓ Logging with time stamp and username
- ✓ OPC-UA support (optional)

MCSGP

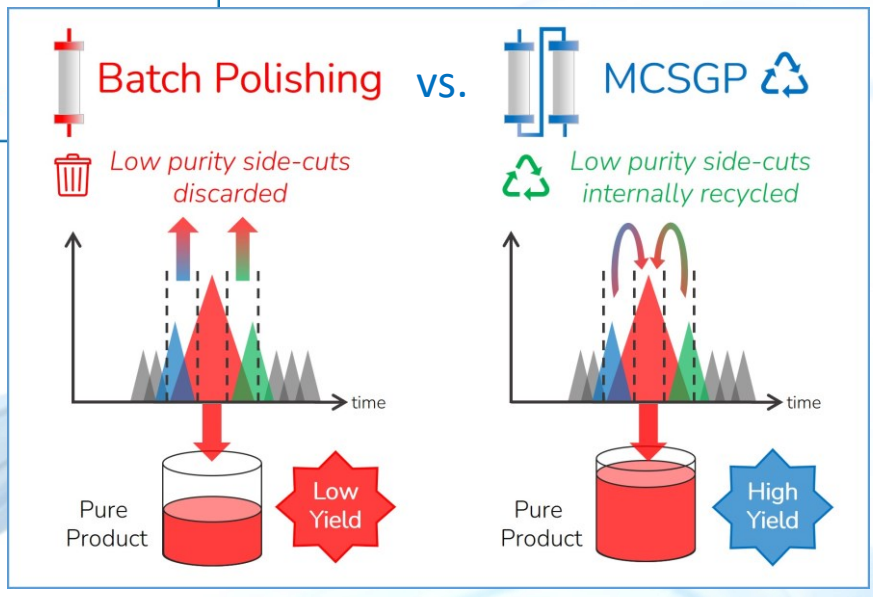
MCSGP

Continuous preparative chromatography with automated side-cut recycling

- Increase yield at target purity
- Eliminate re-chromatography
- Reduce QC burden
- Real-time batch release
- Increase project throughput
- 24/7 continuous manufacturing
- Dynamic process control
- Minimize environmental impact



Oligonucleotides Peptides mAbs
Recombinant proteins AAV mRNA
Small molecules Vaccines Blood plasma

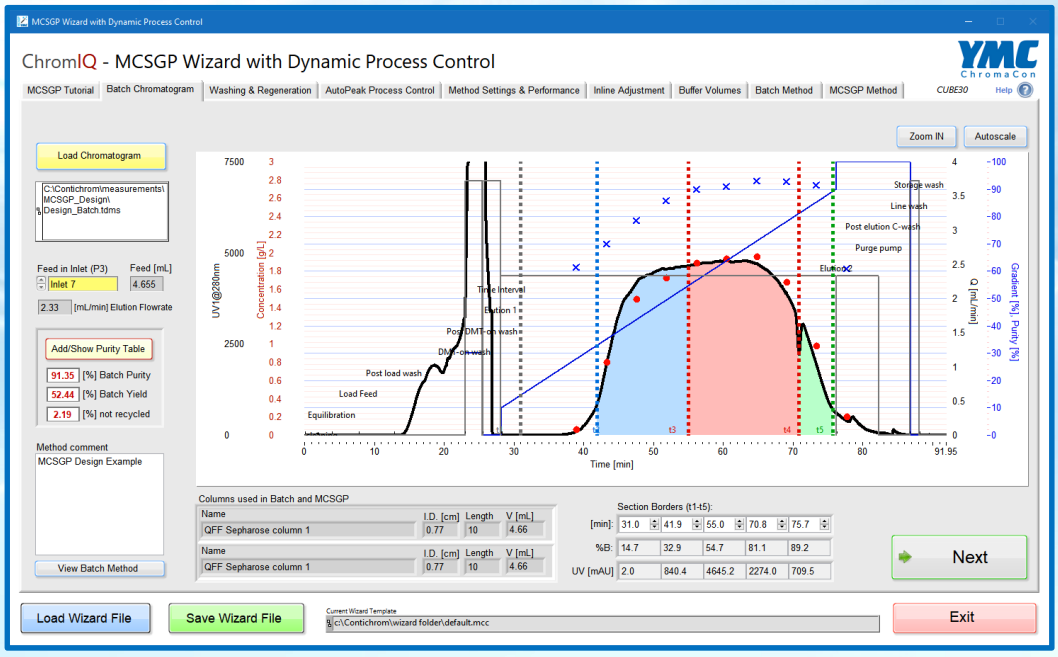


MCSGP Wizard for easy Batch to MCSGP method adaptation and process performance prediction

STEP 1:
Load batch run chromatogram and define product and recycling phases by Drag & Drop

STEP 2:
Define washing and regeneration steps

STEP 3:
Activate AutoPeak, set number of cycles and fractionation



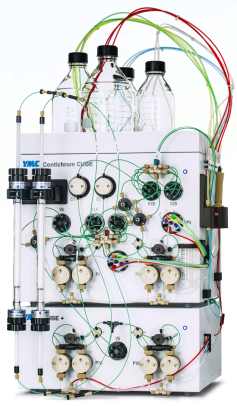
CaptureSMB

CaptureSMB

Continuous capture chromatography for maximum resin utilization

- Increase resin capacity utilization
- Decrease buffer consumption
- Increase productivity
- Decrease manufacturing footprint
- Dynamic loading control
- 24/7 continuous manufacturing

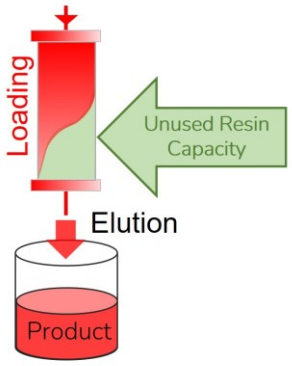
Minimize environmental impact



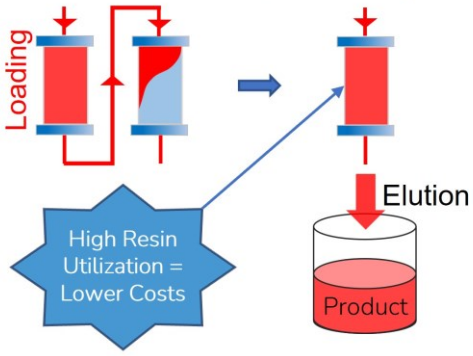
mAbs Bi-specifics mRNA Vaccines
Recombinant proteins Blood plasma

Batch Capture vs. CaptureSMB

Single column loading stops before product breakthrough



Max loading on the upstream column, breakthough captured by the downsteam column. Columns switch position & repeat.

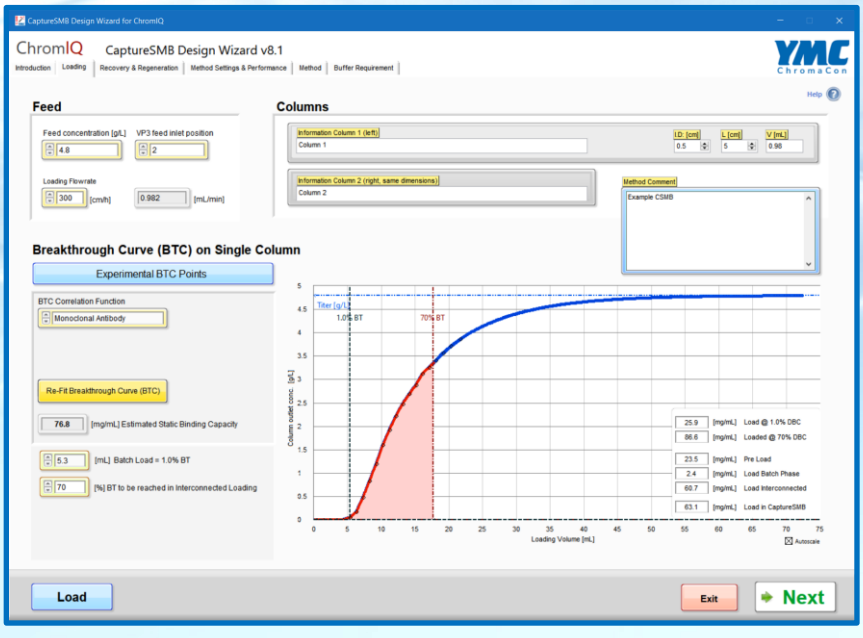


CaptureSMB Wizard for easy CaptureSMB method creation and process performance prediction

STEP 1:
Enter feed and column parameters and fit experimental breakthrough curve

STEP 2:
Define wash, elution and regeneration steps

STEP 3:
Activate AutomAb control, auto-generate method and receive performance prediction



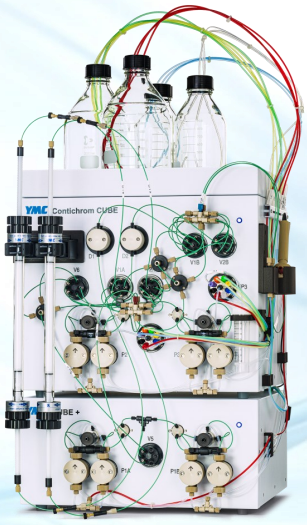
N-Rich

N-Rich

Automated enrichment and purification of impurities from complex matrices

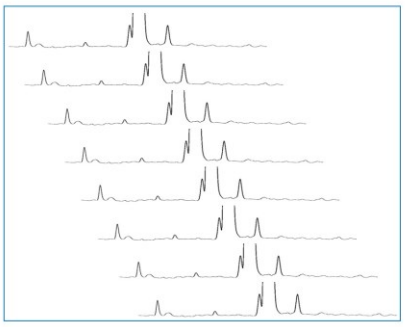
- ☑ Automated on-column enrichment
- ☑ Analytical purity, semi-preparative scale
- ☑ Achieve higher sample concentration
- ☑ Generate fewer fractions for pooling
- ☑ Less up-concentration needed
- ☑ Reduce manual handling
- Reduce solvent consumption

Impurities isolation from:
Oligonucleotides Peptides mAbs
Recombinant proteins AAV mRNA



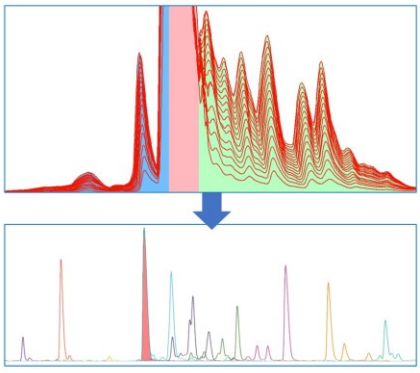
HPLC for Impurity Isolation vs. **N-Rich**

Fractionation and pooling of repetitive HPLC runs



100's of HPLC Runs needed

Automated on-column cyclical enrichment of impurities

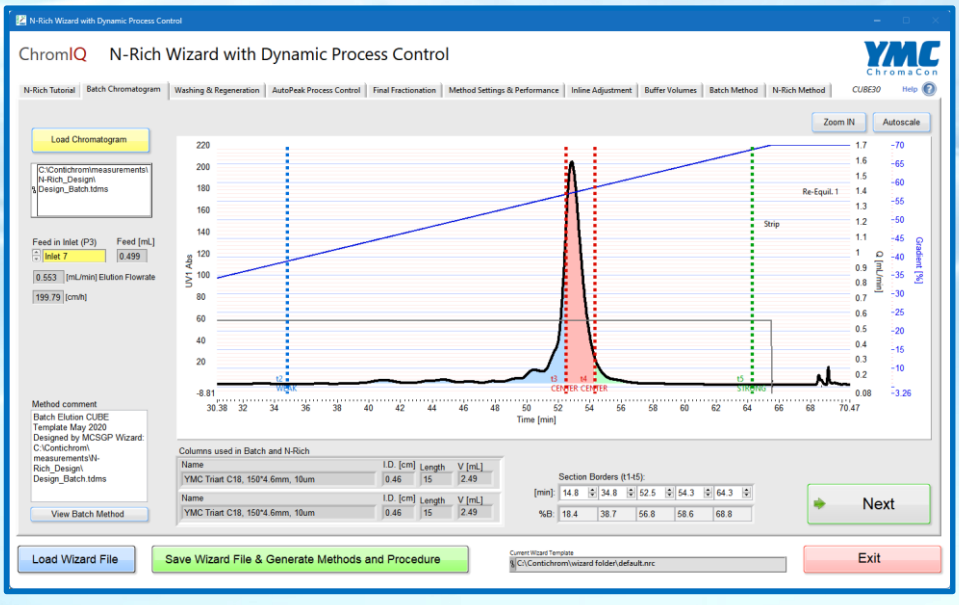


N-Rich Wizard for easy Batch to N-Rich method conversion

STEP 1:
Load batch run chromatogram and define enrichment zones by Drag & Drop

STEP 2:
Define washing and regeneration steps

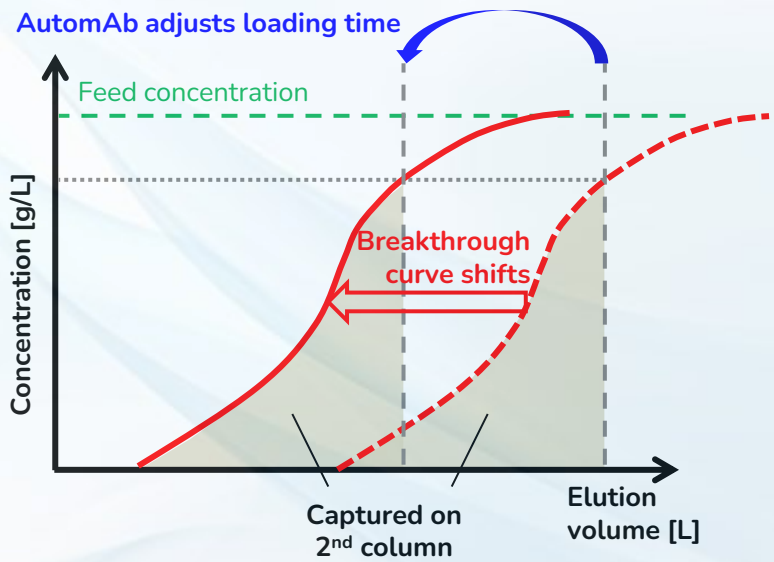
STEP 3:
Activate AutoPeak, set number of cycles and fractionation



Dynamic Process Control

AutomAb: Dynamic CaptureSMB process control

AutomAb control automatically optimizes a CaptureSMB process in terms of resin capacity utilization, ensuring high productivity and yield. AutomAb effectively compensates for process changes such as feed titer variations and column aging.

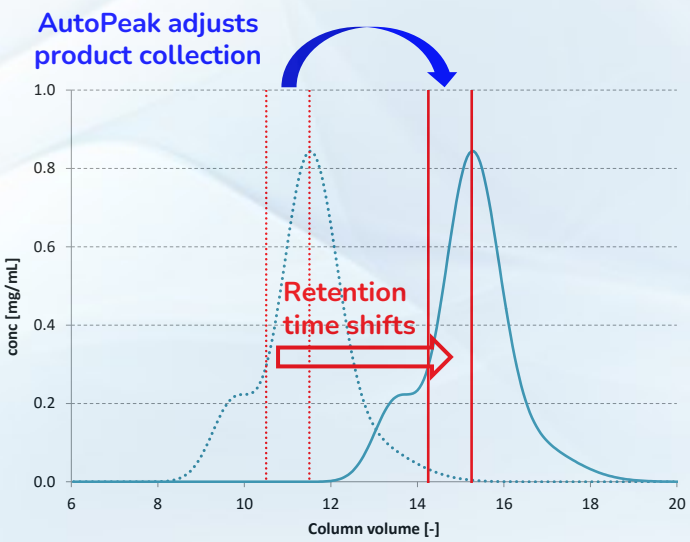


Advantages of AutomAb

- Works with minimum process knowledge
- Runs fully automatically
- Works with low and high feed titers
- Works with “dirty” feeds with a high impurity signal and low product feed concentrations
- Works without detector calibration

AutoPeak: Dynamic MCSGP process control

AutoPeak control allows MCSGP to continuously operate in an optimum range by compensating for retention time shifts due to variations in temperature, buffer quality, conductivity, pH, resin aging and packing quality. The resulting MCSGP process is very robust and will run at an optimum without sacrificing productivity.



Advantages of AutoPeak

AutoPeak compensates for peak shifts by adjusting the fractionation start

- Always the same product in same fraction
- Always the same product quality
- Perfect control of cyclic continuous processes

Technical Specifications

Contichrom CUBE 30/100

Process capabilities:	Batch (isocratic, gradient), integrated batch, CaptureSMB, MCSGP, N-Rich
Operating software:	User-friendly operating software with step-by-step wizards to help you to design batch chromatography runs and to convert them into more efficient Contichrom processes, such as MCSGP and N-Rich. ChromIQ also includes dynamic process controllers AutomAb and AutoPeak.
Software compliance:	ChromIQ software with essential elements of 21CFR Part 11 compliance: • Pre-defined user groups, administrators, R&D and production users • Rights management for individual user groups • User accounts are password protected • Logging with time stamp and username (non-deletable)
Pressure rating:	100 bar (10 MPa)/ 1450 psi
Recommended flow rate range:	• 0.1 – 36 mL/min (Contichrom CUBE 30) • 0.5 – 100 mL/min (Contichrom CUBE 100)
Buffer selection:	16 Inlets (2 x 8-fold buffer selection valve) 4 Outlets
UV detection:	2x external UV detectors with 4 variable wavelengths 200-600 nm recorded simultaneously
Conductivity monitoring:	2 Conductivity sensors (1-250 mS/cm)
pH monitoring	1-14
Pump type	4 High precision double-piston-pumps with active seal wash (2x single inlet gradient pumps, 2x isocratic pumps with 8x inlets each)
Valves:	6 Reliable multi-position valves
Computer hardware:	Stand-alone All-in-One computer (Windows, 64 bit, full HD resolution, 1920 x 1080 or higher) with ChromIQ software
Other:	Cold room compatible Large buffer tray Portable & compact Runs resins and membrane stationary phases
Dimensions:	CUBE module 1: 450 mm x 509 mm x 370 mm (20.0" x 17.7“ x 14.6") CUBE module 2 : 450 mm x 509 mm x 214 mm (20.0" x 17.7“ x 8.4") The CUBE modules are stackable. External detector modules (stackable) each 280 mm x 463 mm x 135 mm (11.0" x 18.2“ x 5.3")
Weight:	CUBE module: 30 kg CUBE+ module: 17 kg
Materials:	High pressure side capillaries: PEEK Low pressure side tubing: FEP Fittings: PEEK

Contichrom CUBE Accessories

Enhancing system performance and convenience

The Contichrom CUBE comes with two external multi-wavelength detectors (200-600 nm), to record 4 selectable wavelengths each. Fraction collectors are available in two different sizes and several rack options for maximum flexibility.

Fraction collectors FOXY R1 and R2

Several rack types available:

- 50 mL tubes
- 15 mL tubes
- 96-well plates
- 6 mL tube bottles
- More...

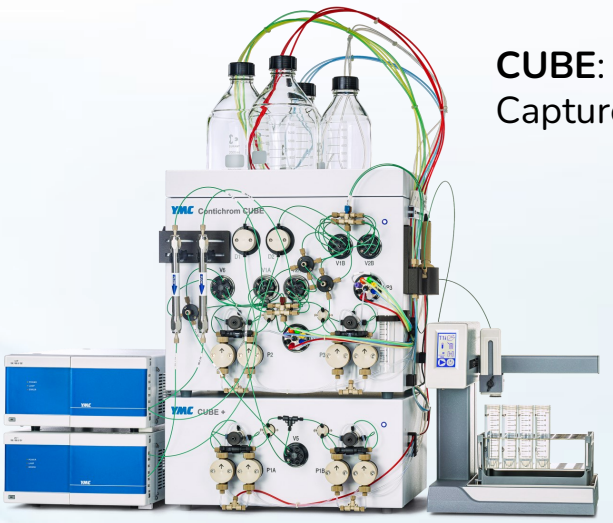
External variable 4-channel multi-wavelength detector (200-600 nm)

Column thermostat (5-85 °C, Max flow rate = 5 mL/min)

Optional injection valve system with injection loops of 500 µL up to 20 mL allowing application of different sample volumes

Contichrom - A Platform for Scalability

Processes developed on the Contichrom CUBE scale easily to the **Contichrom TWIN LPLC** or the **Contichrom TWIN HPLC**.



CUBE: Batch, Integrated batch, CaptureSMB, MCSGP, N-Rich

Contichrom TWIN LPLC: Batch, Integrated batch, CaptureSMB

Contichrom TWIN HPLC: Batch, Integrated batch, MCSGP

Both shown are Model 100 of the platform series.

	System type	GMP standard	Pump flow range [mL/min] min - max		Pump flow range [L/h] min - max		Column i.D. range [cm] min - max	
TWIN 100	Skid	Yes	10	650	0.6	40	5	10
TWIN 300	Skid	Yes	30	3300	1.8	200	10	20
TWIN 500	Skid	Yes	125	8300	7.5	500	20	45
TWIN 1000	Skid	Yes	300	16600	18	1000	30	60

After Sales Services

Training, Maintenance & Repair, Process Development Support, Process Modelling Services

After sales support is an important consideration in a system‘s procurement evaluation. We offer:

- Preventative Maintenance Services (on-site) with an annual subscription including discounts based on contract duration and number of systems
- Ad hoc repair and maintenance services (on-site).
- Real-time technical support by phone, e-mail or through remote access, providing thorough guidance beyond the initial installation and training.
- Customized workshops, on-site or off-site (CaptureSMB, MCSGP, N-Rich, Integrated-Batch or other topics).
- Support services for process development and scale-up .
- Process modelling services.
- Annual scheduled workshops on continuous chromatographic purification.

We offer comprehensive and cost-effective Preventive Maintenance and Repair Service packages.

Worldwide Preventive Maintenance and Repair Service packages.
On-site and off-site service with fast turnaround times.

For details, please inquire about a quote at your local YMC ChromaCon representative.

Contact

Contact us now to find out how you can solve your separation challenges more easily

Regional contact at YMC:

Americas:
Email: info@ymcpt.com
Web: www.ymcamerica.com

Europe:
Email: info@chromacon.com
Web: www.chromacon.com

Asia:
Email: sales@ymc.co.jp
Web: www.ymc.co.jp

Your local representative:

YMC ChromaCon