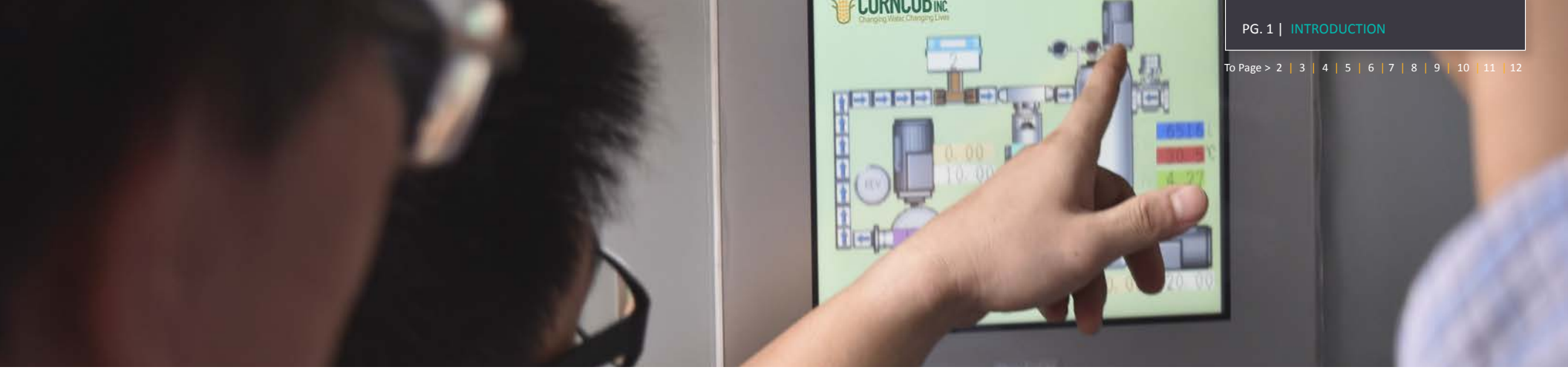
CORNCOB INC.
Changing Water, Changing Lives

CORNCOB II

DYNAMIC - MEMBRANE FILTRATION SYSTEM

DIGITAL PRODUCT OVERVIEW BROCHURE



We Didn't Just Recreate a Membrane Filtration System

WE INVENTED A GAME CHANGER

Join Our Mission: Changing Water, Changing Lives.

CORNCOB INC. is committed to the innovation of membrane filtration systems that will help users, around the world, achieve optimized process performance, lower capital and operating costs, increase profitability, and reduce overall water footprint on society. Through our mission we envision to bring Water Equality to humanity, one drop at a time.

> "The methodologies behind the CORNCOB II 'HVCF' Dynamic-Membrane™ Filtration System are nothing less than groundbreaking engineering and bound to transform both municipal and industrial water filtration for years to come."

CORNCOB INC.
Changing Water, Changing Lives

www.corncobinc.com | 1-262-513-8890 | 819 W. College Ave., Waukesha, WI 53186 | USA

The CORNCOB II Dynamic-Membrane™ Filtration System — KEY WORKING PRINCIPLES

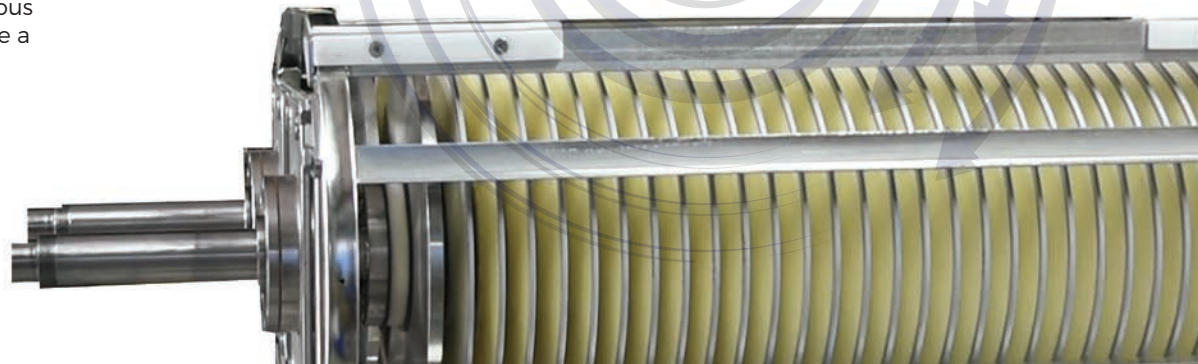
The CORNCOB II Dynamic-Membrane™ filtration system, with its proprietary high-velocity cross flow (HVCF) disc configuration is the perfect membrane filtration system!

Current membrane processes rely on high-energy pumping to recirculate fluid through a series of static membranes to achieve high cross-flow velocity.

The CORNCOB II system's pressure enclosure houses an innovative Dynamic-Membrane™ cartridge. During operation, the double-sided membrane discs rotate in the fluid. The rapid rotational action creates high surface relative velocity, between the fluid and membrane surface, resulting in maximum cross-flow velocity.

The benefits of moving the membranes, not the fluid, are numerous including higher long-term flux, significant cost savings, alongside a 50% plus reduction in energy requirements.

A Smart, Advanced Filtration System Based on 'HVCF' Dynamic-Membrane™



Supplying Pivotal Solutions to Industries and Municipalities —

VALUE PROPOSITIONS

A simple one-step process design delivers positive results for concerns including sufficing regulatory requirements, increasing project ROI and promoting global sustainability.

CORNCOB II's innovative membrane technology permits solids to be taken in with minimal need for pretreatment and delivers high undiluted concentrate yields. Also, suspended and dissolved solids are separated down to their smallest molecular degree. The self-cleaning membranes demand notably less energy and need no backwash or process chemicals.

The pressurized system is completely enclosed and requires a small footprint area. A fully automated 'plug-n-play modularized system.

ENERGY	• OVER 50% ENERGY REDUCTION
WATER	• REUSABLE WATER • ZERO DISCHARGE
TREATMENT	• MINIMUM TO NO PRE-TREATMENT OR CHEMICALS NEEDED
BACKWASH	• NO BACKWASH • NO DOWNTIME
SOLIDS	• LARGER FEED SOLIDS • HIGHER CONCENTRATIONS • SAME SOLIDS PROPERTIES
SYSTEM	• SMALL FOOTPRINT • FULLY ENCLOSED • FULLY AUTOMATED
COSTS	• ROI • REDUCED CAPITAL AND OPERATING COSTS

Committed to global **water sustainability**

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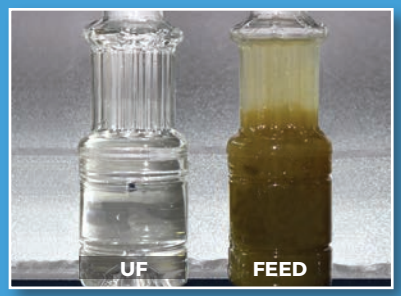
On-Site Testing —
THE RESULTS ARE CLEAR



TTET Union Soybean Plant
Taiwan — ROC

WHAT: WWTP ACTIVATED SLUDGE
Upgrading wastewater treatment to MBR for reuse.

WHY: ROI, Water Reuse

HOW: Provide MBR upgrade in one step to produce reusable water.

County Landfill
Minnesota — USA

WHAT: LANDFILL LEACHATE
Processing Leachate to separate water from heavy metals and other 140 chemicals.

WHY: ROI, On-Site System

HOW: Provide filtration in one step to meet less than 25% groundwater standards.

Food Processing Plant
California — USA

WHAT: LYE WATER
Treating caustic solution from processing corn and beans.

WHY: Reduce TDS for land application; further BOD/TSS reduction for city discharge option, Water Reuse.

HOW: Process for reusing the heaviest load from Lye Water and accomplish TDS/BOD/TSS reduction, while saving pH adjusting chemicals downstream.

Trailer Park Community
South Dakota — USA

WHAT: SPENTWATER
Processing domestic sewage to permitted levels.

WHY: Regulatory Requirement

HOW: Pretreatment to bring lagoon in compliance.

DYNAMIC-MEMBRANE

Dynamic-Membrane provides application flexibility with various disc diameters and pore sizes.

The standard Dynamic-Membrane shaft assembly includes multiple discs mounted on a rotating shaft. One or more shaft assemblies are then mounted on a removal structural cartridge, which is contained in a pressure housing. The disc cartridge and pressure housing make up the complete membrane module.

Each disc consists of a circular plate with membranes and underlying permeatesheets applied to both sides. Membranes are selected from the full range of pore sizes covering Micro, Ultra, Nano Filtration to RO (Reverse Osmosis). Discs vary in size from 1' to 3' in diameter.

OVER THE NEXT 20 YEARS WATER CONSUMPTION FOR GENERATING ENERGY WILL NEED TO INCREASE BY 85%.[1]

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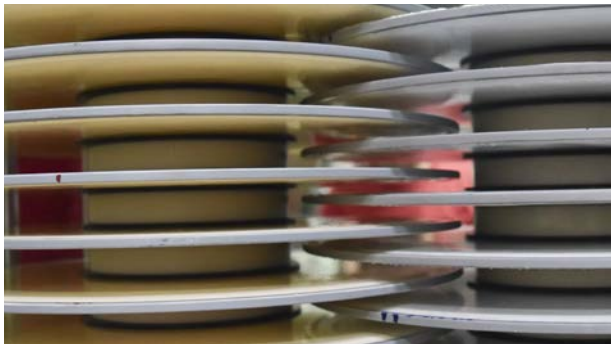
Robust shafts create optimal rotational speed which results in effective high-velocity cross flow. This affects efficient, continuous membrane surface cleaning resulting in higher flux and solids concentration.

Unique spacing between the discs allows larger solids and higher concentrations without plugging.

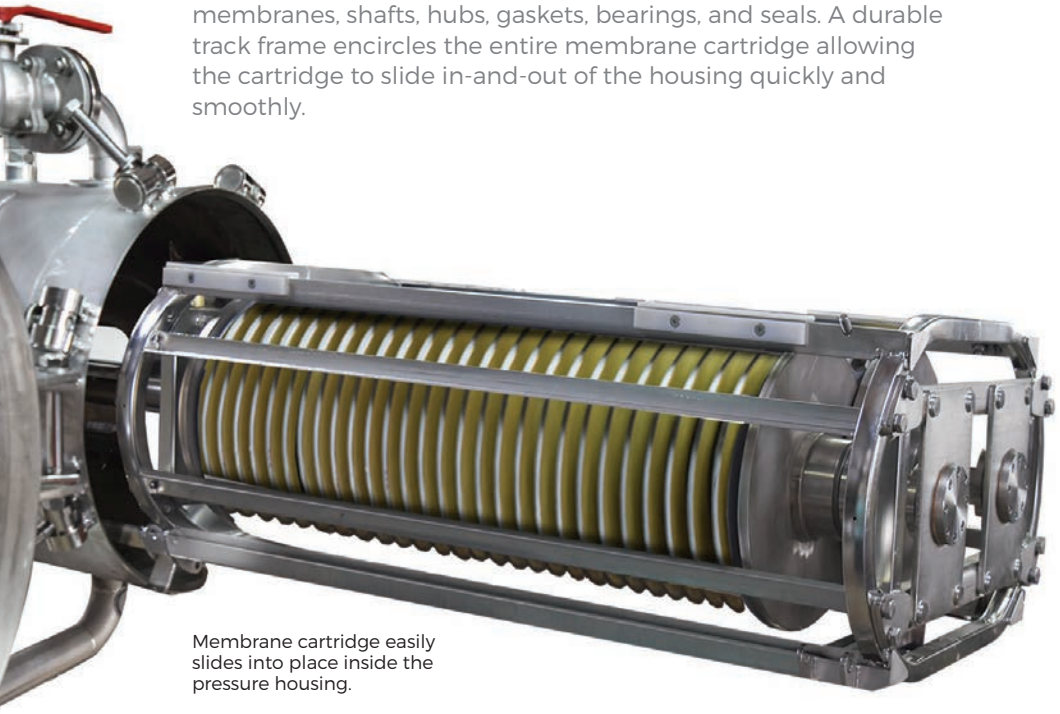


[1] https://www.weforum.org/agenda/2015/01/why-world-water-crises-are-a-top-global-risk/

DYNAMIC-MEMBRANE™

Slide-n-Place Membrane Cartridge.

The state-of-the-art proprietary membrane cartridge supports the Dynamic-Membrane assemblies including discs, membranes, shafts, hubs, gaskets, bearings, and seals. A durable track frame encircles the entire membrane cartridge allowing the cartridge to slide in-and-out of the housing quickly and smoothly.



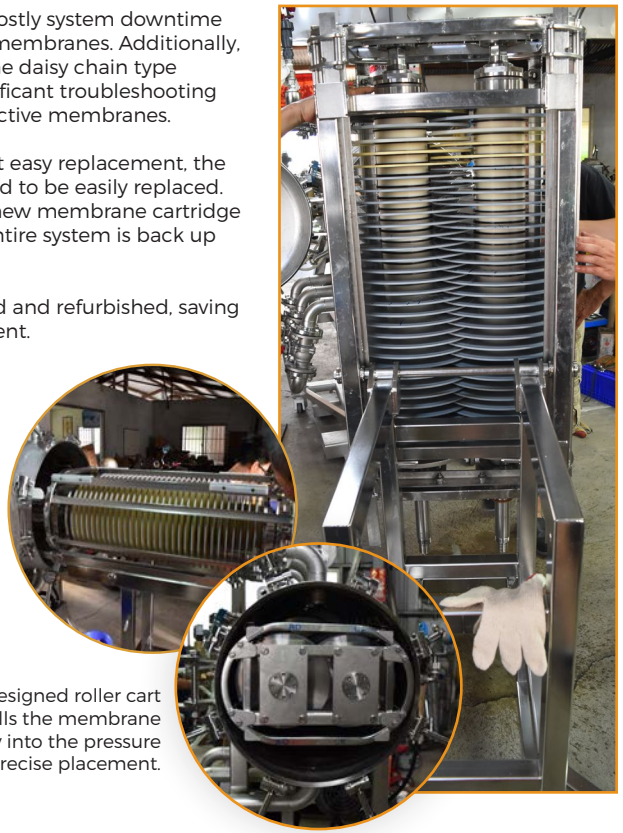
Membrane cartridge easily slides into place inside the pressure housing.

ULTIMATE TIME AND COST SAVER

Current day systems demand costly system downtime to replace a single or multiple membranes. Additionally, if system inefficiencies occur, the daisy chain type configuration can result in significant troubleshooting time in tracking down the defective membranes.

Distinctively designed to permit easy replacement, the membrane cartridge is designed to be easily replaced. In virtually less than an hour a new membrane cartridge can be swapped out and the entire system is back up and running.

The used cartridges are recycled and refurbished, saving both money and the environment.



A specially designed roller cart effortlessly tilts and rolls the membrane cartridge directly into the pressure housing to ensure precise placement.

Broad Applications

Dynamic-Membrane's ability to accomodate a broad range of feed types without plugging generates an open-door for endless applications:

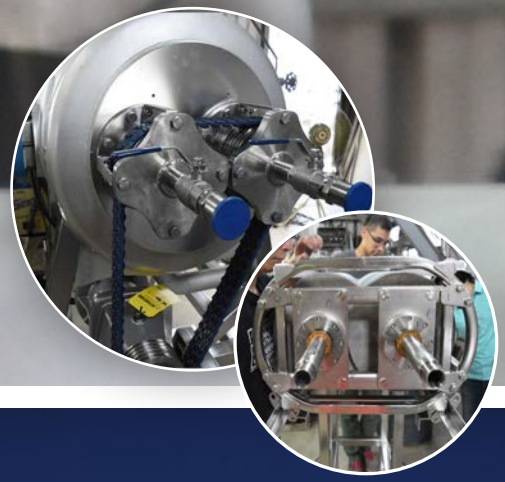
- Water Reuse / Reclamation
- Complete Spentwater Processing
- Potable Water Supply
- Solids / Ingredients Concentrating
- Liquid Purification

MUNICIPAL • INDUSTRIAL • COMMERCIAL • RESIDENTIAL

THE PRESSURE HOUSING

The CORNCOB II pressure housing is a fully enclosed unit that houses the Dynamic-Membrane cartridge and facilitates high transmembrane pressure, resulting in increased filtration rates. Pressure is dependent on the vessel size, which can range from 10-600psi.

The housing is manufactured to withstand a wide range of environments, including highly corrosive fluids. It can be made from 304, 316 Stainless Steel or coated Carbon Steel materials.



The drive end of the housing is penetrated by the permeate discharge pipes, including bearings and seals, which are extensions of the membrane cartridge.

WATER DEMAND WILL OUTSTRIP SUPPLY BY 40% BY 2030. [2]

BELT DRIVEN SHAFTS — Reinforced rubber belts drive the membrane shafts. The motor/belt alliance generates the rotational speed of the membranes and the high-velocity cross flow.

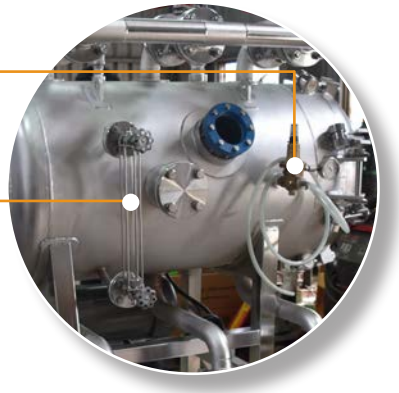
The belt drive is powered through a VFD to automatically control disc rotation.

[2] http://www.eiris.org/files/research%20publications/EIRISWaterRiskReport2011.pdf

THE PRESSURE HOUSING

Major Components

PRESSURE RELIEF VALVE
When pressure exceeds set maximum level fluid is automatically released out of the housing, guarding against potential damage.



MULTIPLE INLET FEED NOZZLES
Operator has control over flow patterns.

'CIP' SIGHT GLASS
External viewing mechanism allows system operator to visually monitor water levels during 'CIP'.

PRESSURE TRANSMITTER
Digital pressure sensor aids in system automation, reduces operator oversight and guards against over-pressurization.

SWING DOOR CLOSURE
Easy release, multi-locking mechanisms seal the housing and enable quick access to membrane cartridge.

VIEWING PORTS (Optional)
In clean liquid applications, system operator can visually inspect membranes while observing the overall process in operation; allowing for adjustments to both feed and concentrates.

Feasability | Pilot Testing

ALFIE

'Alfie', the CORNCOB mobile pilot unit is on the move conducting field pilot / feasibility tests. 'Alfie' is a flexible pilot unit capable of various tests inside its 20-foot open door freight container. Our expert test team works on-site collecting and analyzing for the particular application in terms of treatment objectives.

CORNCOB PILOT TEST PROGRAM

THE SERVICE MODULE

The skid mounted, compact process service module includes all required components for the operation. It includes a feed pump, inlet / outlet piping, isolation valves, flowmeters, flow control valve, VFDs (variable frequency drives) and a control panel.

A reliable PLC/HMI interface system provides the operator a user friendly and intuitive method for full system control from the control panel or wireless tablet. The simple user interface uses touch screen control over the entire system and allows the operator to make adjustments and immediately observe the results.

Permeate pipes with ball valves allow for easy sampling during system operation.

CONTROL PANEL FEATURES
- HMI (Human Machine Interface)
- Flowmeters
- Pressure Sensor
- Alarm
- H-O-A
- Clog Indicator
- Emergency Stop Button
- Reset Button
- 4 Additional Power Receptacles

ANALYSIS SHOWS THAT 54% OF COMPANIES ARE EXPOSED TO WATER RISKS.[3]

Service module skids can be easily enlarged to support the process for larger applications that require multiple membrane modules.

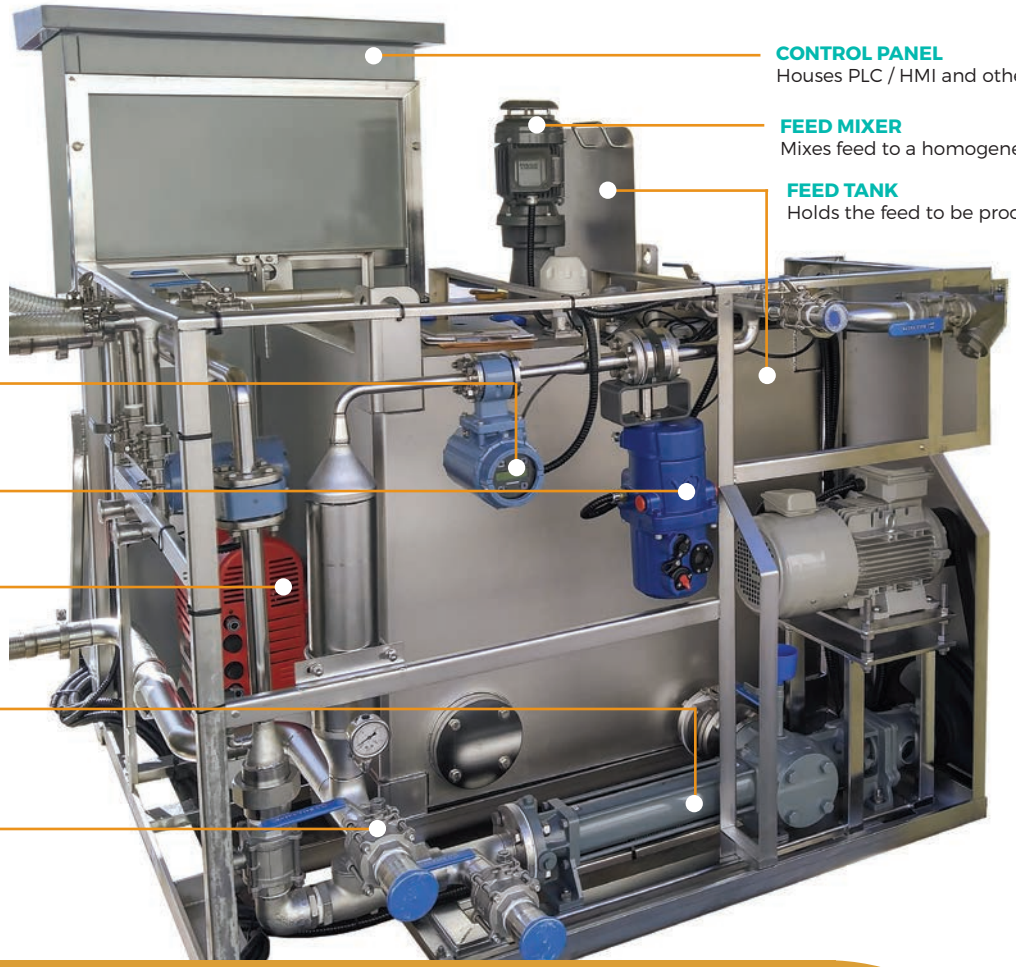
Built-in HMI (human machine interface) gives simple, hands on control to the entire process from either touch screen or wireless tablet, resulting in consistent process control and enhanced monitoring.

[3] http://www.eiris.org/files/research%20publications/EIRISWaterRiskReport2011.pdf

THE SERVICE MODULE

Major Components

PLUG & PLAY — The service module comprises a complete, fully automated 'Plug & Play' system. All feed, discharge, electrical connections are brought to a convenient location in the service module for easy commissioning.



CONTROL PANEL
Houses PLC / HMI and other electrical components.

FEED MIXER
Mixes feed to a homogeneous state.

FEED TANK
Holds the feed to be processed.

FLOW METERS
Senses the rate of fluid flow to the membrane module and from the concentrate discharge.

FLOW CONTROL VALVE
Controls pressurized flow of concentrate.

AIR COMPRESSOR
Provides pressure during two phase (air / water) 'CIP' cleaning.

FEED PUMP
Transfers fluid from the tank into feed lines leading to the membrane module.

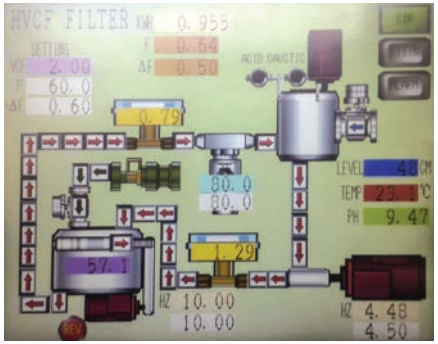
PRESSURIZED CONCENTRATE LINE
Transfers concentrate from the membrane module.

Automated 'CIP' Technology

CROSS FLOW DETECTION | PRE-CIP — When flux rates decrease, the system increases the disc rotational speed and can change direction, assuring maximum surface cleaning.

CIP is activated only when self-cleaning sequences detect the need, as opposed to using a timer, thus saving chemicals and reducing downtime.

An external viewing sight glass allows operator to visually monitor water levels during 'CIP' cleaning.

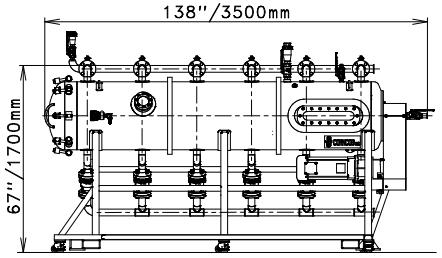


Models and Specifications (US/Imperial)

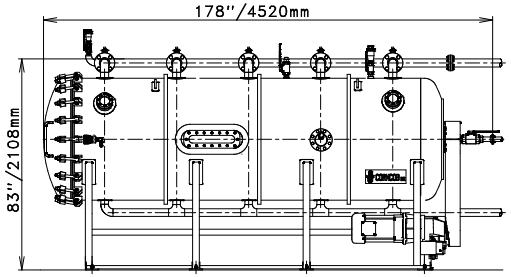
MODEL NUMBER	DIMENSIONS L x W x H (in)	SURFACE AREA (ft2)	NUMBER DISCS PER SHAFT	CAPACITY (GPD)* 30**	60**	100**
CCII-3 / 5000 x 352-GFD	254 x 75 x 99	5,000	3' x 176	150,000	300,000	500,000
CCII-3 / 4000 x 280-GFD	217 x 75 x 99	4,000	3' x 140	120,000	240,000	400,000
CCII-3 / 3000 x 210-GFD	177 x 75 x 99	3,000	3' x 105	90,000	180,000	300,000
CCII-3 / 2000 x 140-GFD	138 x 75 x 99	2,000	3' x 70	60,000	120,000	200,000
CCII-2 / 1500 x 252-GFD	178 x 60 x 83	1,500	2' x 126	45,000	90,000	150,000
CCII-2 / 1000 x 168-GFD	133 x 60 x 83	1,000	2' x 84	30,000	60,000	100,000
CCII-2 / 750 x 126-GFD	113 x 60 x 83	750	2' x 63	22,500	45,000	75,000
CCII-2 / 500 x 84-GFD	90 x 60 x 83	500	2' x 42	15,000	30,000	50,000
CCII-2 / 300 x 50-GFD	74 x 60 x 83	300	2' x 25	9,000	18,000	30,000
CCII-1 / 250 x 208-GFD	138 x 44 x 67	250	1' x 104	7,500	15,000	25,000
CCII-1 / 200 x 166-GFD	118 x 44 x 67	200	1 'x 83	6,000	12,000	20,000
CCII-1 / 150 X 124-GFD	98 x 44 x 67	150	1' x 62	4,500	9,000	15,000
CCII-1 / 100 x 84-GFD	78 x 44 x 67	100	1' x 42	3,000	6,000	10,000
CCII-1 / 75 x 62-GFD	67 x 44 x 67	75	1' x 31	2,250	4,500	7,500
CCII-1 / 50 x 42-GFD	57 x 44 x 67	50	1' x 21	1,500	3,000	5,000
CCII-1/30 x 24-GFD	50 x 44 x 67	30	1' x 12	900	1,800	3,000

* 1 GPD = 0.0038 CMD 1.7 LMH = **GFD

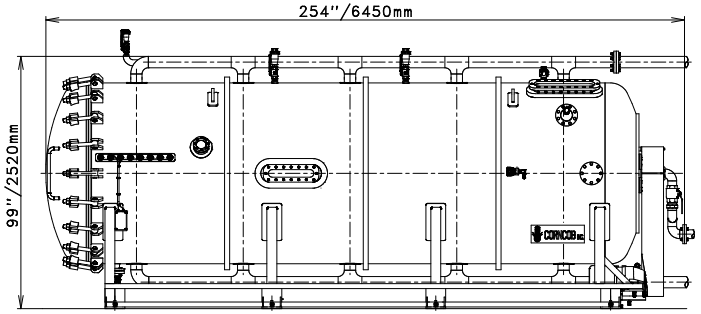
MODEL CCII – 1/250 x 208-GFD

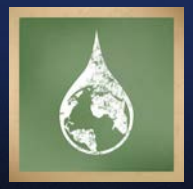


MODEL CCII – 2/1500 x 252-GFD



MODEL CCII – 3/5000 x 352-GFD



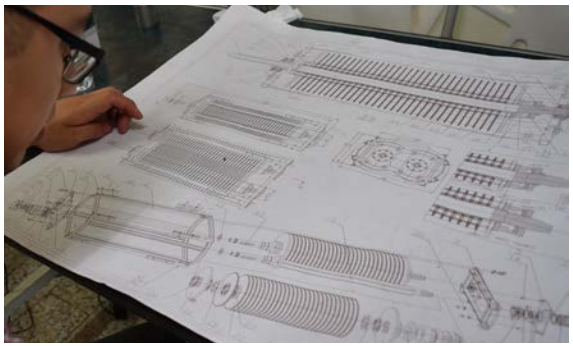


TWO-THIRDS OF THE WORLD POPULATION WILL LIVE IN WATER STRESSED COUNTRIES BY 2025.[4]

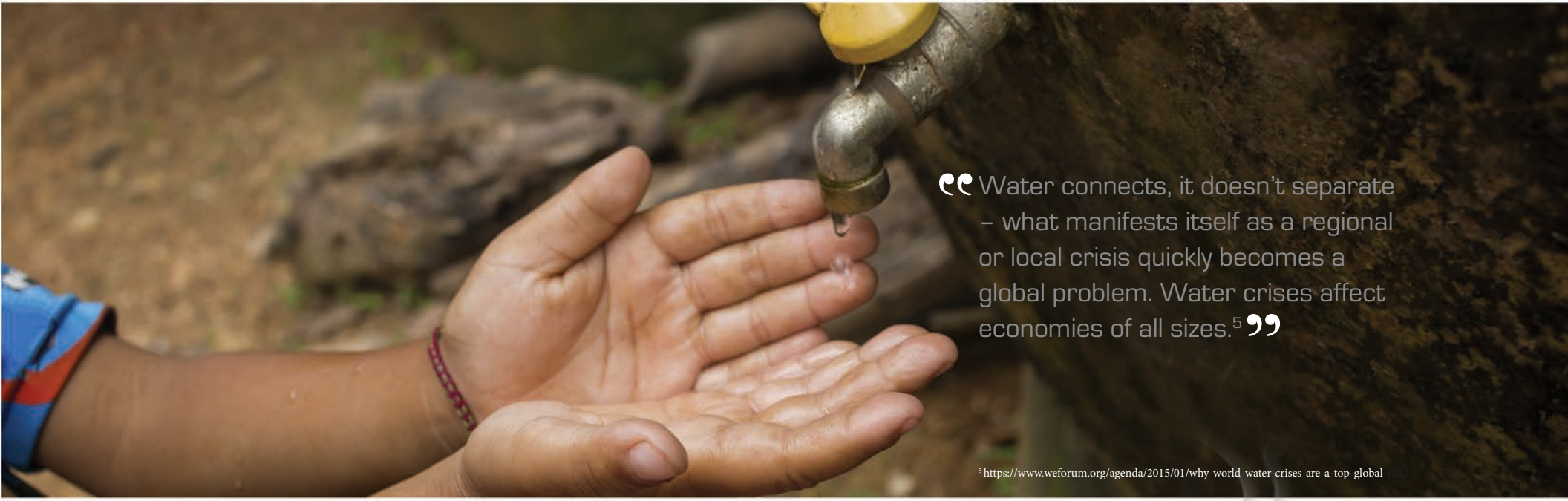
Application Flexibility

CCII membrane modules are available in a wide variation of sizes and configurations. Modules can be multiple to create a customized filtration system to fit specific applications.

The wide range of models creates a cost-effective solution for new-builds, expansions or standby units.



[4] https://www.weforum.org/agenda/2015/01/why-world-water-crises-are-a-top-global-risk/



> "Water connects, it doesn't separate – what manifests itself as a regional or local crisis quickly becomes a global problem. Water crises affect economies of all sizes.[5]"

[5] https://www.weforum.org/agenda/2015/01/why-world-water-crises-are-a-top-global

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