Stainless Steel Modules

Model Code: NPC-SMO-XXX

S.S. Modules for Ceramic membranes By Nano Palayesh Ceram

Model Code	Element Qty. per Module	Filtration Area(m^2) (Based on Largest possible element)
NPC-SMO-001	1	Up to 1.2
NPC-SMO-003	3	Up to 3.6
NPC-SMO-007	7	Up to 8.4
NPC-SMO-012	12	Up to 14.4
NPC-SMO-019	19	Up to 22.8
NPC-SMO-037	37	Up to 44.4
NPC-SMO-061	61	Up to 73.2
NPC-SMO-076	76	Up to 91.2
NPC-SMO-091	91	Up to 109.2
NPC-SMO-138	138	Up to 165.6
NPC-SMO-241	241	Up to 289.2

- **S.S. Grades:** 304, 304L, 316, 316L, Duplex, Super Duplex and any other grade by customer application.
- **Diameter of Ceramic Membrane Elements:** 25, 30, 40, 50 *mm*
- **Element Qty. per Module:** 1, 3, 7, 12, 19, 37, 61, 76, 91, 138, 241 *pcs*.
- **Length of Elements:** 500, 1000 and 1200 *mm*
- **Sealing Material:** EPDM, Rubber, Silicon, PTFE or any other grade by customer application.
- **Interface:** Flange, Clamp, Custom nozzle configurations available upon request.
- **Pressure Vessel:** 0-1.0, 0-1.6 *Mpa* , 0-2.5 *Mpa* and 0-4.0 *Mpa*
- **Operating TMP:** 0.5 – 3 *bar* (typical)
- **Filtration mode:** Crossflow
- **Crossflow velocity:** 2–5 *m/s* (depending on design)
- **Compatible With:**
  - MF / UF ceramic membrane elements
  - Single-channel and multichannel designs
  - Alumina / ZrO_2 / SiC membrane materials
- **Engineered for long-term durability in harsh conditions where polymeric membranes and conventional stainless-steel housings fail.**

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Application

Stainless-steel ceramic membrane modules are designed for demanding liquid-filtration processes where mechanical strength, chemical durability and long operational life are required. Their robustness makes them suitable for a wide range of industrial applications, including the following key sectors:

1- Water & Wastewater Treatment

Stainless-steel modules are widely used in municipal and industrial water treatment where stable, high-quality effluent is required. Typical applications include:

- Tertiary filtration and advanced wastewater polishing
- Removal of suspended solids, colloids and fine particles
- Pretreatment before RO/NF desalination systems
- Seawater Desalination / Brackish Water Pretreatment
- Reuse schemes for irrigation or industrial service water
- Treatment of domestic, greywater and decentralized wastewater streams
- Clarification of high-turbidity or variable-quality influent
- Power Generation & Boilers

These modules deliver long-term reliability under fluctuating loads and harsh operating conditions.

2- Oil & Gas, Refinery & Petrochemical

Ceramic membranes housed in stainless steel perform exceptionally well in oily, chemically aggressive and complex industrial effluents. Typical applications include:

- Produced water treatment
- Separation of free and emulsified oils
- Refinery wastewater polishing
- Pretreatment for reinjection, discharge or reuse
- Clarification of petrochemical process streams
- Removal of catalyst fines, polymers, and reaction residues

The modules tolerate surfactants, hydrocarbons, solvents and strong cleaning agents often present in these environments.

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3- Chemical & Process Industries

Stainless-steel modules support reliable performance in harsh chemical environments. Key applications include:

- Clarification of chemical process liquids
- Catalyst recovery and reuse
- Handling acidic, alkaline and solvent-containing streams
- Removal of pigments, particles and polymeric residues
- Pretreatment before biological or membrane polishing systems

Their resistance to corrosion, CIP chemicals and thermal cycling makes them ideal for continuous operation.

4- Mining, Metallurgy & Mineral Processing

The high mechanical strength of stainless-steel modules enables effective operation in abrasive and high-solid environments. Typical uses include:

- Clarification of mine water and tailings filtrate
- Removal of mineral fines and heavy metals
- Pretreatment before reuse or downstream treatment
- Concentration and recovery of valuable solids

The robustness of the modules minimizes wear and ensures long membrane lifetime in challenging feeds.

5- Metalworking & Manufacturing

Many industrial workshops and manufacturing lines rely on stainless-steel ceramic modules for liquid recycling and waste minimization. Applications include:

- Coolant and lubricant purification
- Cutting-oil separation and recovery
- Paint booth wastewater filtration
- Removal of metal fines, oils and surfactants
- Process water clarification for reuse

These applications benefit from the modules' high fouling resistance and easy cleanability.

6- Textile, Dyeing & Color-Intensive Industries

Ceramic membrane modules in stainless-steel housings are effective in the treatment of dye-rich and surfactant-loaded wastewater. Typical applications include:

- Dye, pigment and color removal
- Recovery of dyes and chemicals
- Clarification before RO/NF polishing
- Treatment of printing, dyeing and finishing wastewater

They provide stable flux and reduce downstream membrane fouling.

7- Pulp & Paper

The industry often deals with high concentrations of fibers, fines and organic material. Stainless-steel modules are used for:

- Fiber and solid recovery
- Whitewater clarification
- COD/BOD reduction and polishing
- Process-water recycling and reuse

Their mechanical durability supports long-term operation in abrasive environments.

8- Food & Beverage / General Industrial Water

Although not used directly on product-contact streams, stainless-steel modules are widely applied in:

- Process-water treatment
- Cleaning-water recycling
- High-turbidity water clarification
- Pretreatment for boilers, heat exchangers and RO units

They provide stable, consistent water quality for plant utility systems.