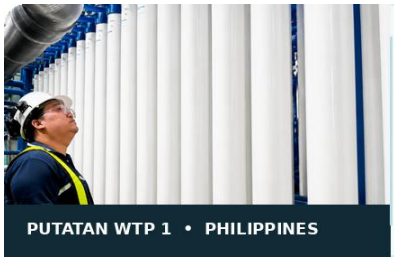
CERAMIC MEMBRANES WATCH | NO. 1 | 17 SEPTEMBER 2026

Ceramic UF moves from proof to infrastructure

Technology • Applications • Market intelligence



Putatan WTP 1, Philippines • Photo: Maynilad Water Services, June 2026 [2]

DRINKING WATER
160 MLD
Surat, India

CERAMIC RETROFIT
100 MLD
Putatan programme

UTILITY PROGRAMME
£500-800m
Scottish Water

EXECUTIVE SNAPSHOT

- Surat inaugurated a 160 MLD ceramic UF drinking-water plant after expanding a 50 MLD facility within the same site; treated-water turbidity is reported at ≤0.5 NTU. **[1]**
- Maynilad began a 100 MLD ceramic UF programme at Putatan that replaces polymeric UF. The first 50 MLD phase follows pilot work and a 20 MLD operating reference. **[2]**
- Scottish Water awarded a ceramic membrane programme valued at £500–800 million, initially extending to 2033 and beginning with Turriff WTW. **[3]**
- A Malaysian semiconductor reclamation contract provides a commercial signal for ceramic UF in high-tech industrial water reuse. **[4]**

REAL WORLD APPLICATIONS

PROJECT	APPLICATION	SCALE	STATUS
Surat [1]	Drinking water	160 MLD	LIVE
Putatan [2]	Surface water	100 MLD programme	SCALING
Scottish Water [3]	Multi site utility	£500–800m	AWARDED
Malaysia [4]	Semiconductor reuse	Not disclosed	CONTRACT
Laundry pilot [5]	Microplastics	8 weeks	PILOT

FIVE TRENDS TO WATCH

1 Infrastructure scale COMMERCIAL
Surat, Putatan and Scotland show that ceramic UF is entering long-term utility procurement. **[1–3]**

2 Polymeric to ceramic SCALING
Putatan is a full-scale replacement programme, driven by feed variability, cleaning tolerance and service life. **[2]**

3 Industrial reuse NEW
Semiconductor reclamation is an early commercial reference for difficult industrial reuse duties. **[4]**

4 Active treatment surfaces R&D
A Co/Cu ceramic membrane with ozone micro-nanobubbles produced reactions inside pores at nearly 8× the surface-ozonation rate. **[5]**

5 Circular ceramic materials R&D
A sludge-derived membrane route reported 42% lower global-warming potential and 35% lower primary-energy demand than its reference route. **[6]**

BIOSNAR EXPERT VIEW

The clearest signal in this issue is procurement confidence, not a new membrane material. At 20, 50, 100 and 160 MLD, the decision increasingly turns on lifecycle value: resilience to variable feed, recovery after fouling, cleaning tolerance, lifetime and footprint.

Ceramic membranes growing up. Ceramic membranes continue to become more competitive and are making the leap from industrial niche markets to higher-volume applications

WHAT WE ARE WATCHING NEXT

Putatan Phase 1 commissioning • operating data from Malaysia • Turriff execution • movement of laundry microplastic removal from pilot to full scale

INNOVATION STICK

1 **Nanoconfined bimetallic functionalized ceramic membrane with O3 micro-nano-bubbles for synergistic treatment of highly-salinity wastewater** *Ren, Zhai, Wang, Qiu, Yu, Cui, Cao and Xie. Water Research, April 2026.* A Co/Cu-functionalised membrane intensified catalytic ozonation inside its pores, where the reported reaction rate was nearly 8x the surface-ozonation rate.

2 **Recent advances and future perspectives in ceramic-based nanofiltration membranes: Material innovations, applications, and sustainability challenges** *Choi, Kim, Lee, Park, Kim, Jun and Rho. Environmental Research, March 2026.* A broad review of materials, selectivity, applications and sustainability barriers that provides a useful roadmap for ceramic nanofiltration development.

3 **Recycling aluminum-rich drinking water treatment sludge into ceramic membranes: Fabrication process and environmental impact assessment** *Li, Wu, Su, Chen, Rui, Peng and Teng. Process Safety and Environmental Protection, May 2026.* The waste-derived route reported 42% lower global-warming potential and 35% lower primary-energy demand than the reference manufacturing route.

4 **Removal of microplastic fibres in laundry wastewater by ceramic microfiltration: A case study** *Tarte, Johir, Vu, Ly and Nghiem. Case Studies in Chemical and Environmental Engineering, June 2026.* An eight-week pilot removed more than 97% of fibres while operating at 32-34 C, supporting reuse without cooling the laundry effluent first.

5 **Treatment strategies for winery wastewater reuse: Performance of ceramic membrane filtration and UV-A LED photo-Fenton oxidation** *Morais, Mendes, Rio, Peres, Lucas and Esteves. Journal of Environmental Chemical Engineering, February 2026.* The study compares ceramic filtration and advanced oxidation, showing why dissolved and biodegradable fractions must be addressed alongside membrane separation.

SOURCES

1 Enviro Control Surat 160 MLD 24 Mar 2026 | 2 Maynilad Putatan WTP 1 10 Jun 2026 | 3 Sell2Wales Scottish Water programme 24 Mar 2026 | 4 Acuriant Malaysia semiconductor reuse 16 Jun 2026 | 5 Ren et al Catalytic ceramic membrane 2026 | 6 Li et al Sludge-derived ceramic membranes 2026