

29.- Dead-end SiC ceramic membranes

Title and name of product or technology	
CoMeTas Aqua Solution – dead-end SiC ceramic membranes	
Abstract	
Silicon Carbide (SiC) ceramic membrane elements utilizing dead-end filtration principle. The ceramic membranes are available for MF and UF. The membrane elements show superior flux, filtration properties and energy/construction savings compared to sand filters. +90 % reduced water consumption for backwash has been recorded compared to sand filters. The membranes are suitable in applications for pre-filtration before RO and pool/spa.	
Description including main features/advantages	
The membrane elements provide high filtration capacity per unit volume. One element (Ø144mm x L300mm with 3 micron pore size) yields 35 m ³ /h permeate flux at 0.2 bar TMP water at 20°C). SiC allows for harsh operating conditions: chemically resistant in pH 0-14, temperature resistant +1000°C and mechanical robust with TMP up to 10 bar.	
Innovative aspects	
The dead-end ceramic membrane is a further development of existing cross-flow membrane elements. The new dead-end elements excel with higher energy efficiency compared to cross-flow systems due to higher flux rates and the lack of a re-circulating loop. The membranes are an ideal alternative to sand filters. The number of sand filters installed worldwide is innumerable and water consumption for backwash overwhelming – full-size public pools alone accounts for a <i>registered</i> usage of 190 mill. m ³ waste water per year.	
Current and potential industrial users/domains of application	
The membranes are currently installed at larger public pools in Denmark and in household units for domestic waste water. Potential industrial users besides the pool industry, are desalination and industrial RO plants with the need of pre-filtration.	
Current state of development	
The membrane elements are manufactured in varying geometries with different pore sizes according to the application. The membrane elements have been tested in-house and pool systems have been verified by an external accredited approval institute. The membranes still need to be tested on a number of applications like sea/surface water and industrial waste waters.	

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