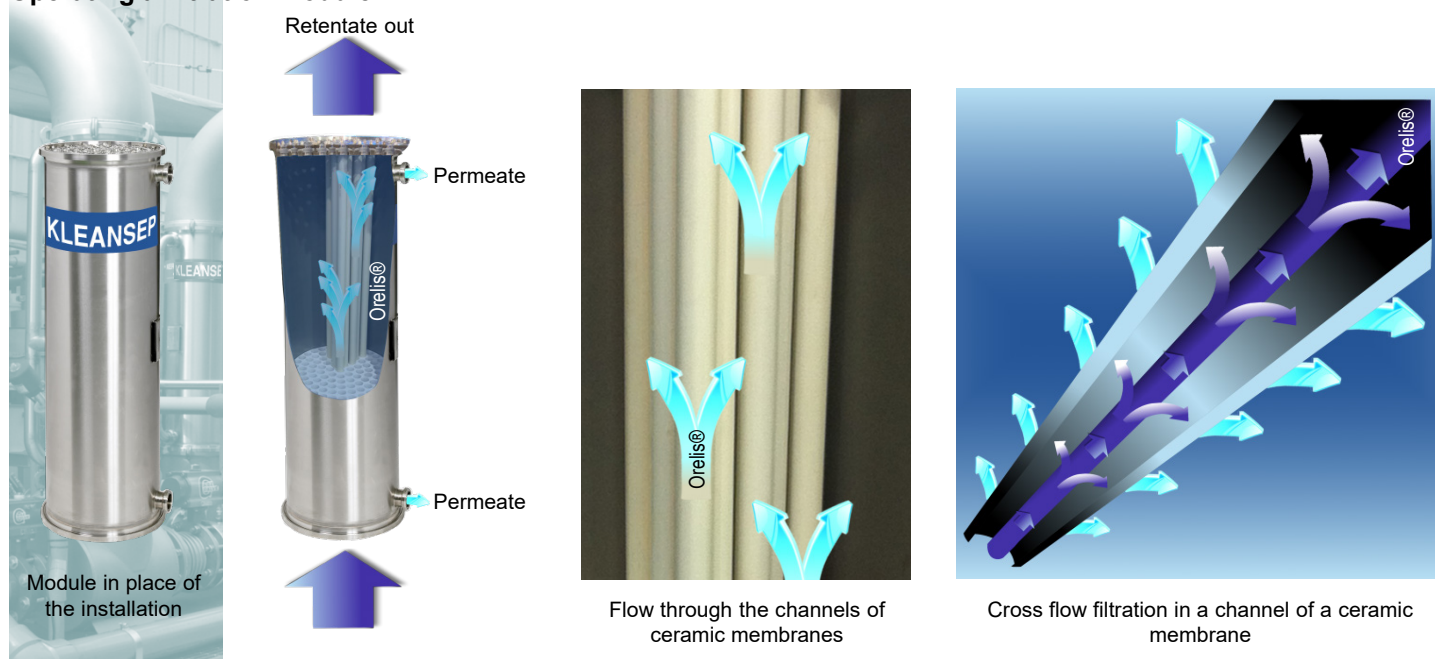


# Product sheet: KLEANSEP™ MODULE

## Ceramic modules Kleansep™ for cross-flow filtration

### Operating a filtration module



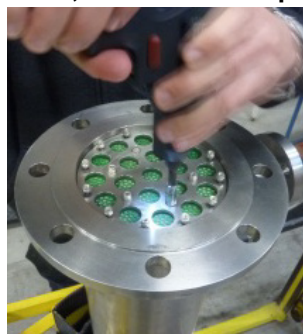
### 4 big stages for assembling of a ultra or micro filtration module, in our workshop



Membranes assembling



Implementation of the gasket



Installation and screwing of the tightening plate



Bubble test: sealing test integrity of housing, membranes and gaskets

### Tools

Orelis Environnement sells tools for handling modules in optimal safety conditions. The first tool is a machine with wheels that keep the module in its slip jaws. Then allowing the lift and take it securely to the installation. The tool-carriage also allows the reversal of the module during operations bubble test (this test is done on both sides).



Module keeps by jaws



Gripper

The second tool is a gripper which is marketed to allow the lifting of all models of modules, whether to clamp or flange, safely. Wearing safety boots is recommended throughout of handling modules.

This is another tool tightening plate extractor. It allows to easily remove the tightening plate slot to perform the maintenance of filtration modules.



Implementation of the extractor



Extraction of the plate

# Product sheet: KLEANSEP™ MODULE

## Ceramic modules Kleansep™ for cross-flow filtration

### Designing a Kleansep™ Module

A filtration module Kleansep™ is the assembly of a tubular stainless steel (or housing), and ceramic membranes and elastomeric gaskets. This assembly can be carried out in our workshop or on your site by our technical team.

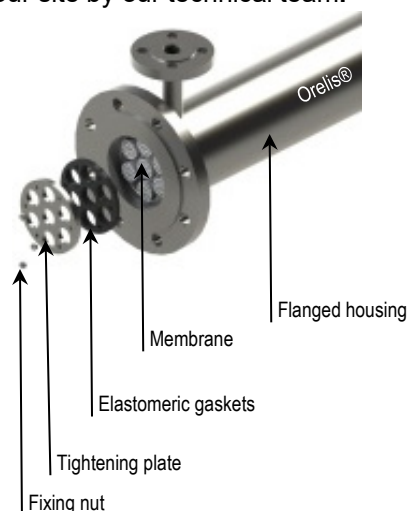


Diagram of a Kleansep™ flanged module K07

### Its advantages

The Kleansep™ filtration module is modular! The housing can be supplied in various types of steel, stainless steel 316L or 316Ti ... to filter all types of liquids, or almost. We propose in several models, that is to say it can develop from 0.16 to 62 sqm membrane area (depending on the quantity of membranes and membrane channel number). So it feels completely flow filter to reduce energy costs. The membranes are also very strong, they are resistant to chemical and thermal solicitations. The connection modules are available in different versions, to clamp SMS, flanged ISO or ANSI / ASME to meet existing standards and integrate more easily on an installation regardless of the country of use. And finally the seal is made by a single gasket, only two gaskets are required in a Kleansep™ module. They are very easy to set up and replace. They are available in various elastomers: NBR or EPDM or FPM or SILICONE to fulfill the constraints on their use. The elastomer was chosen for its ability to regain its original shape after cessation of stress.

### Presentation of the different type of module

Modules geometries	Membrane area in sqm		Clamp connection			Flanged connection		
			Retentate	Permeate	Picture	Retentate	Permeate	Picture
Module K01	0,16	0,5	SMS DN25	Micro-clamp 10/12		NA	NA	na
Module K03	0,48	1,5	SMS DN104	SMS DN25		ISO DN80	ISO DN20	
Module K07	1,08	3,5	SMS DN104	SMS DN25		ISO DN100	ISO DN20	
Module K19	2,95	9,5	ISO DN150	SMS DN25		ISO DN150	ISO DN20	
Module K37	5,7	18,5	ISO DN200	SMS DN38		ISO DN200	ISO DN32	
Module K72	11,52	36	NA	NA	NA	ISO DN300	ISO DN50	
Module K99	15,3	49,5	hook Ø 354 mm	SMS fitting DN51		ASME DN350	ASME DN65	
Module K138	22,08	69	Ø 441 mm	SMS DN76		ASME DN400	ASME DN65	

Different type of steel Stainless steel 316L or 316Ti or Titane or Uranus B6 or Hastelloy C22 or C276

### The filter modules are equipped with ceramic membranes

GEOMETRY OF MODULES		Number of channels - Membrane area in sqm						
Modules	Quantity of membranes	7	8	12	19	31	52	61
Module K01	1 membrane	0,16	0,2	0,2	0,25	0,33	0,5	0,45
Module K03	3 membranes	0,48	0,6	0,6	0,75	0,99	1,5	1,35
Module K07	7 membranes	1,12	1,4	1,4	1,75	2,31	3,5	3,15
Module K19	19 membranes	3,04	3,8	3,8	4,75	6,27	9,5	8,55
Module K37	37 membranes	5,92	7,4	7,4	9,25	12,21	18,5	16,65
Module K72	72 membranes	11,52	14,4	14,4	18	24,48	36	32,4
Module K99	99 membranes	15,84	19,8	19,8	24,75	32,67	49,5	44,55
Module K138	138 membranes	22,08	27,6	27,6	34,5	45,54	69	62,1

Our technical team is available to perform the maintenance in situ or in our workshop.  
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[www.orelis.com](http://www.orelis.com)