

25.- Envopur® spiral-wound membrane modules with new type of spacer (tubular spacer)

Title and name of product or technology	
Envopur® Spiral-wound membrane modules with new type of spacer (tubular spacer)	
Abstract	
The tubular spacer technology joins economics of spiral-wound modules and free flow of capillary modules. The feed spacer forms free flow channels within the module without any obstruction because of ligaments across the direction of flow (like in parallel spacers or diamond spacers).	
Description including main features/advantages	
Tubular spacers are made by thermoplastic forming. Width of spacer may be varied according to specifications up to 50 mil. Tubular spacers may be introduced in 4" and 8" spiral wound modules, compatible to conventional equipment in UF, NF and RO treatment. Tubular spacers may be favourably used for filtration of complex heterogeneous wastewaters which tend to form precipitates or agglomerates during concentration of the feed.	
Innovative aspects	
<ul style="list-style-type: none"> - Beneficial combination of properties of spiral wound and capillary membrane elements - Interchangeable with conventional spiral wound elements - Improved tolerance towards colloidal and suspended organic matter 	
Current and potential industrial users/domains of application	
Industrial wastewater (paper industry, surface refinement, photovoltaic's...), leachate treatment, acid filtration	
Current state of development	
Pilot scale, patent pending	

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