

One-page expertise description

Organisation: Brno University of Technology & Zena (SME)

Type of partner: University & SME (both partners can participate in a prepared project or only one of them)

WEBSITE: www.heatlab.cz, www.zena-membranes.cz

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Topic of interest:

All prepared projects in the call: 'Secure, Clean and Efficient Energy' where

Low Cost Heat Exchangers with Hollow Polymer Fibres

can be used.

Details:

SME company and Brno University of Technology, is finalising developments of three types of fine polymer capillaries heat exchangers.

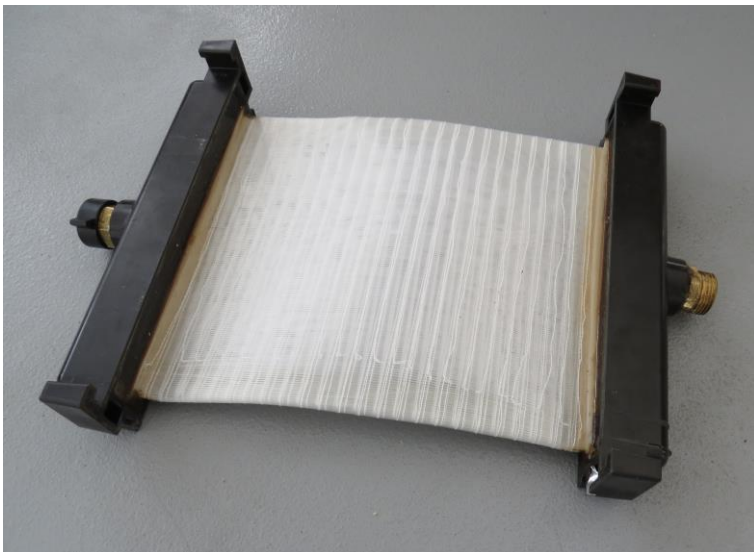
The capillaries have very small outside diameters (0.3 – 0.9 mm). Surprisingly high heat transfer coefficients are the results. The heat exchangers have low weights, occupy small volume and if produced in large numbers then they are low cost.

The fact that e.g. polypropylene is the used polymer, limits the temperature and pressure ranges of their applications. However, we strongly believe that such applications as HVAC, recuperation water / water etc. are very promising and cost / energy efficient. Standard operation parameters are pressure 5 bar, temperature 90°C, parameters for advanced exchangers are pressure up to 40 bar, temperature up to 160°C.

Fouling related problems can be solved using e.g. flexibility of fine capillaries. Our extensive experiments have proved it already.

The following pictures show three prototypes.

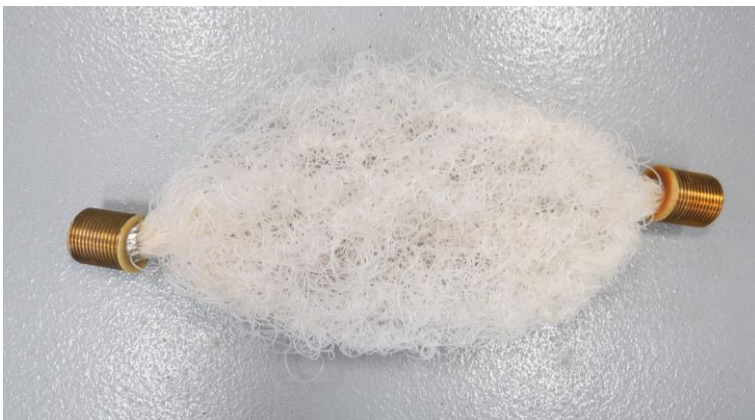
Textile - capillaries used as thread to manufacture heat transfer cloths.



Frames – Capillaries potted as frames of different dimensions; the frames are used to manufacture larger heat transfereer units.



Chaotic - chaotic shapes of capillaries potted into bundles to guarantee efficient contact of liquid / liquid or liquid / gas streams (patented).



We are interested in any sort of cooperation in applications.