The modular system for heat exchange between fluids and the open element for heat exchange between fluids in the modular system according to the present invention cover the same range of applications as the plate heat exchangers described above, but are provided with a particular view to simplifying the maintenance of the heat exchanger. Requirements as to special competence and/or a larger window of time are virtually eliminated. According to the present invention, the modular system will comprise a plurality of open elements, for example, 2-7 open elements, and a corresponding number of individual gaskets. Dismantling, cleaning and assembly are reckoned to be a job of about one hour for one man. Moreover, time consumed and replacement of gasket parts are so reduced as to become insignificant. Furthermore, the actual cleaning process will be so simple that all vessels will have available competence for carrying out this process, and can therefore maintain full control of the cooling capacity of the heat exchanger and thus also critical propulsive power.

WO 95/30867 A1 and NO 316475 B1 describe heat exchanger elements and the manufacture thereof, where it is known that the heat exchanger elements consist of a plate that is folded to form a plurality of slits, where the plate delimits the fluid to be heat exchanged, each fluid flowing in slits on either side of the plate.

EP 909 928 A1 relates to a heat exchanger unit that is used in connection with heat recovery in a building or house, where a plurality of folded plates are provided in a housing, so as to form the heat exchanger unit.

GB 512 689, US 2004/0206486 A1 and US 2009/0229804 A1 teach additional embodiments of heat exchangers and heat exchanger elements.

A common feature of the aforementioned documents is that they do not teach a modular system for heat exchange between fluids, where dismantling/assembly, cleaning and/or maintenance of the modular system has been simplified.

Embodiments~~An object~~ of the present invention ~~will therefore be to~~ seek to solve one or more of the problems or drawbacks mentioned above.

Embodiments~~Another object~~ of the present invention also seek~~will be~~ to provide a modular system and an open element for heat exchange between fluids that are maintenance-friendly.

Embodiments of the present invention relate to~~These objects are achieved by means of~~ a modular system for heat exchange between fluids and a plurality of open elements in the modular system as disclosed in the following independent claims, with additional features of the invention set forth in the dependent claims and the description below.

The present invention relates to a modular system for heat exchange between fluids, the system comprising two end plates wherein at least one end plate is configured with an inlet and outlet for each of the fluids that are to be heat exchanged, between which two end plates a plurality of open elements are arranged, where two open elements adjacent to one another are so

arranged that the sides of the adjacent open elements facing each other carry the same fluid. The open elements have features as described below.

The present invention also relates to an open element for heat exchange between fluids, the open element comprising a folded sheet material forming a plurality of slits, which slits constitute the fluids' flow paths, where the folded sheet material over at least part of its width and length is by means of stiffening devices~~is preferably~~ stiffened. The ends of the folded sheet material are further sealed by means of an end seal, where the folded sheet material comprises an open frame, the folded sheet material being~~is further~~ arranged in the~~an~~ open frame consisting of a bottom and top frame configured with an open portion, each of the ends of the open frame being configured with two through holes which form inlets and outlets for each of the fluids. The open frame only covers the edges of the folded sheet material.

An open element according to the present invention should be understood to mean an element which exposes essentially the whole surface of the folded sheet material when the folded sheet material is arranged in the open frame. The surface of the open element's folded sheet material is then fully accessible for a simple cleaning process from both sides of the open element, without the folded sheet material having to be dismantled from the open frame.

The number of open elements arranged between the two end plates may vary. For example, in one embodiment of the present invention four open elements may be arranged between the end plates, but it will be understood that both greater and smaller numbers of open elements can be used according to the present invention.

For assembly of the end plates and the open elements arranged between the end plates, at least one elongate element is used. The end plates will then be configured with at least one through hole, slot, cut-out or the like, where the at least one through hole, slot, cut-out or the like in each end plate are coincident to allow the elongate element to be passed through them so as to assemble the end plates and the intermediate open elements.

The at least one elongate element may be welded to one of the end plates and connected to the other end plate by means of a threaded connection, nut, rapid coupling etc., but it should be understood that the at least one elongate element may also be connected to the end plates in other ways, for example, by a threaded connection, nuts, rapid couplers etc.

When assembling the modular system for heat exchange between fluids according to the present invention, a desired number of open elements will be arranged one after the other between the two end plates. The end plates will then be brought towards each other, whereafter one or more elongate elements are used to assemble the end plates and the intermediate open elements.

The elongate elements may, for example, be constituted of a bolt, bar or the like.

Preferably the modular system for heat exchange between fluids also comprises at least an inlet filter, which filter is suitably connected to the inlet for one of the fluids. The inlet filter will then reduce the danger of blockages in the modular system.