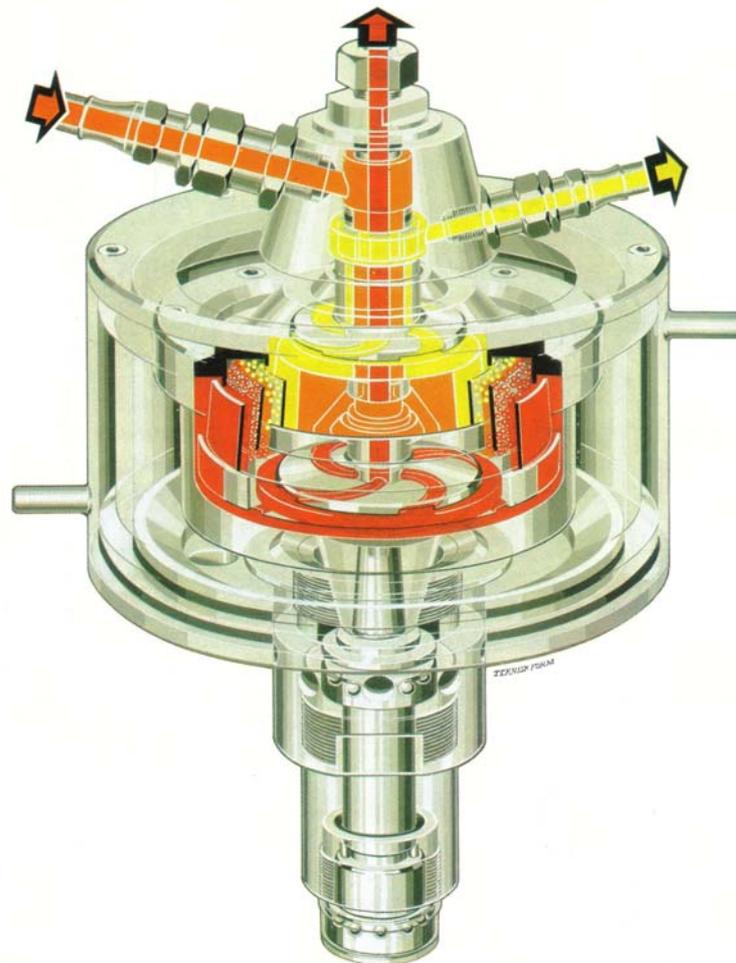


MEAB

THE H-CENTRIFUGE – A LIQUID-FLOW CENTRIFUGE FOR ABSOLUTE PHASE SEPARATION.



The **H-CENTRIFUGE** is a specially designed liquid-flow centrifuge, which separates a mixture of two immiscible solvents very rapidly into two extremely pure phases.

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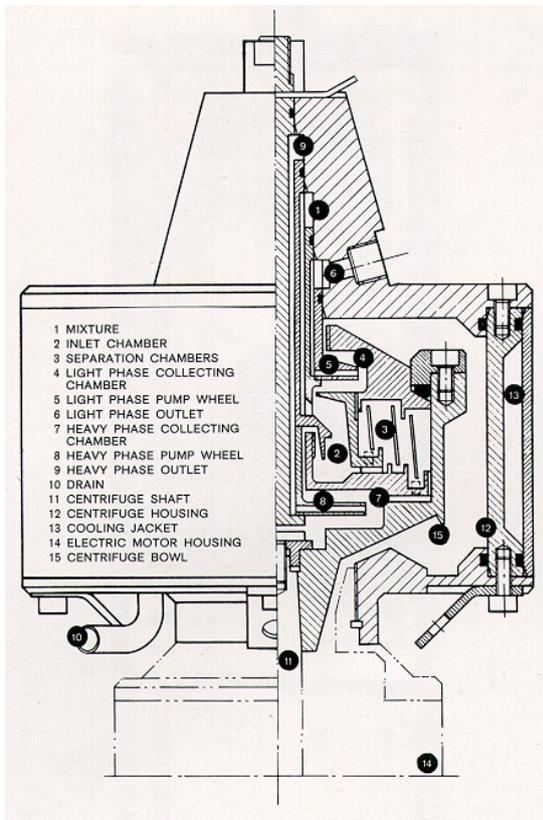
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Technical description

A three-dimensional concept of the centrifuge is shown in the cut-away drawing below.



The liquid mixture enters centrally and is accelerated to the rotational speed within the inlet chamber. After acceleration, the mixture is forced into the separation volume, which contains eight chambers, symmetrically arranged around the axis and totally isolated from each other. In this arrangement the mixture has a zig-zag motion, imposed by peripheral partition walls and interspersed baffle ridges. The separated phases are discharged (the light phase from the upper collecting chamber and the heavy phase from the lower one) by pump wheels, which are individually designed to provide the appropriate pressure and avoid excessive frothing of the liquids.

The centrifuge bowl is fixed directly on to the motor shaft. The elastic suspension mounting of the shaft allows rotation at overcritical conditions at low rotational speeds. This also allows the bowl to rotate about its center-of-gravity axis and therefore reduces bearing strain. The H-centrifuge is made of corrosion resistant titanium and can therefore be used for extraction from solutions containing most mineral acids.

The continuous liquid-flow H-Centrifuge is a unique centrifugal separator, developed to cover the requirement for rapid and absolute phase separation of a liquid mixture of two immiscible solutions (e.g. wa-

ter and kerosene). The centrifuge is characterized by a comparatively high speed of rotation (10-35,000 rpm), short hold-up time (0.05-2.5 sec), high liquid flow throughput (25-300 l/h) and extremely high phase separation efficiency, better than 99.9 % in both phases.



The centrifuge is at present manufactured in a small (H-10, total flow capacity 100 l/h) and a medium (H-33, total flow capacity 300 l/h) sized version. The smaller version (H-10) can be fitted with different heads, consisting of a mixer unit, flow meters and necessary valves to make a mixer-(centrifugal)settler unit. The larger (H-33) centrifuge is used in the AKUFVE-110 instrument.

Applications

The H-centrifuge was developed about 40 years ago and specially designed for solvent extraction research together with the AKUFVE instrument. At present, some hundred units have been installed in advanced research laboratories in many countries.

The H-centrifuge has been used for small-scale remote processing of very hazardous substances, where a one-step separation was sufficient owing to high chemical separation factors and the high separation efficiency of the H-centrifuge. Multi-stage H-centrifuge batteries employing the H-10 version with electrical drive, have been developed for selective isolation of short-lived substances, as e.g. radioactive fission products with half-lives below 10 seconds. This so-called SISAK-system is now in operation in European nuclear research centers.