

仕様一覧 Specifications			
机型	FRIENDLY-UF	Model	FRIENDLY UF
膜面积	0.65m² (长750mm)	Membrane Area	0.65m² (Length 750mm)
重量	80kg (无水时)	Weight	80kg (W/O Water)
电源 / 容量	三相 200V / 1.5KW	Power Supply/ Capacity	3-phase 200V / 1.5kW
运转压力 / 流量	0.5 ~ 0.6MPa / 20 ~ 30L/min	Operation Pressure/ Flow Rate	0.5 ~ 0.6MPa / 20 ~ 30L/min
处理能力	15 L/h ~ 25 L/h	Target Treatment Capacity	15L/h ~ 25L/h
耐热	60℃	Heat Tolerance	60℃
主机尺寸(W×D×H)	730×995×1617mm	Main Unit Dimensions (WxDxH)	730 x 995 x 1617 mm
外部输入	装置停止信号	External Input	System Stop Signal
外部输出	统一异常表示	External Output	Batch Error Signal
	原液供给信号		Original Waste Liquid Supply Signal
	浓缩液排出中信号		Concentrated Liquid Discharge Signal

系列规格 Series Specifications						
机型 Model	FRIENDLY-UF 系列 FRIENDLY-UF Series					
膜面积(m²) Membrane Area (m²)	0.9	1.8	2.7	3.6	4.5	5.4
重量(无水时)(Kg) Weight (W/O Water) (Kg)	180	220	280	320	380	420
电源 / 电压 Power Supply	三相 200V 50 / 60Hz 3-phase 200V 50/60					
电容量 (KW) Electric Capacity (KW)	3.5	3.5	4.5	4.5	8.0	8.0
运转压力 (MPa) Operation Pressure (MPa)	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7	0.5~0.7
流量 (L/min) Flow Rate (L/min)	20~30	40~60	60~90	80~120	100~150	120~180
处理能力(L/h) Target Treatment Capacity (L/h)	25	50	75	100	125	150
耐热(℃) Heat Tolerance (℃)	60	60	60	60	60	60

FRIENDLY-UF

水溶性含油废液膜处理装置
Water-soluble Oil Containing Waste Liquid
Membrane Treatment System

独自的分离膜技术实现了废液量大幅度减量减容

Waste liquid is reduced substantially by unique separation membrane technology

水溶性含油废液膜处理装置
Water-soluble Oil Containing Waste Liquid Membrane Treatment System

FRIENDLY-UF

近几年，在机械加工等各种各样的现场从安全性·冷却效果·作业环境的改善考虑而使用水溶性油剂。这些水溶性油剂通常用水稀释 5～10 倍的程度，据说现在使用的加工油剂 90％是水溶性油剂。但是，使用后的含油废液处理难度高，现状是其中大半直接变为工业废物，在其燃烧处理时会排出大量的二氧化碳。
FRIENDLY-UF采用其独自的分离膜技术，使水溶性含油废液有效地浓缩分离从而达到大幅度的减量减容，为「环境保护」「降低成本」提供支援。

To improve safety, cooling effect and work environment in various sites such as mechanical processing water-soluble oil solution is used in recent years. These water-soluble oil solution is usually diluted about 5 to 10 times with water, and 90% of oil solution is water-soluble. However, treatment of oil containing waste liquid is difficult and most of the waste liquid is disposed as industrial waste. A massive amount of CO₂ is being discharged at the time of incineration. Utilizing our unique membrane separation technology, FRIENDLY UF can ensure the separation and concentration of water-soluble oil so that large amount of waste oil is reduced and satisfy “environmental protection” and “reduction in cost”.



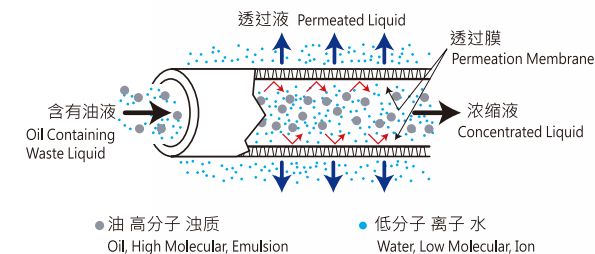
特 长 Features

- ◆ 不使用吸附剂·凝聚剂等，使乳化的油分能有效地浓缩分离。（99%除去）
- ◆ 废液量能浓缩减容到1／10～1／20。※根据废液的种类·浓度而不同。
- ◆ 因废液的浓缩分离大幅度减少了工业废物的处理费用。
- ◆ 干净的透过液可以回收再利用，即经济又环保。
- ◆ 分离膜可以清洗，因此能长期使用。
- ◆ 进行了特殊分离膜处理，因此不会产生淤渣。
- ◆ 全自动运转，任何人都可以简单操作。
- Ensures separation and concentration of oil emulsified in water without using adsorbent or flocculating agent. (99% Oil Removal)
- Reduces waste liquid to one tenth or up to one twentieth. *It differs depending on the kind and the density of waste liquid.
- Separation and concentration of liquid can reduce the cost of industrial waste disposal significantly.
- Environment-friendly and economical, because the permeated liquid can be collected and reused.
- The membrane is washable and therefore usable for a long time.
- There is no occurrence of a sludge by adoption of special separation membrane process.
- Easy operation by the full automatic operation.

分离膜的原理 Principle of Separation Membrane

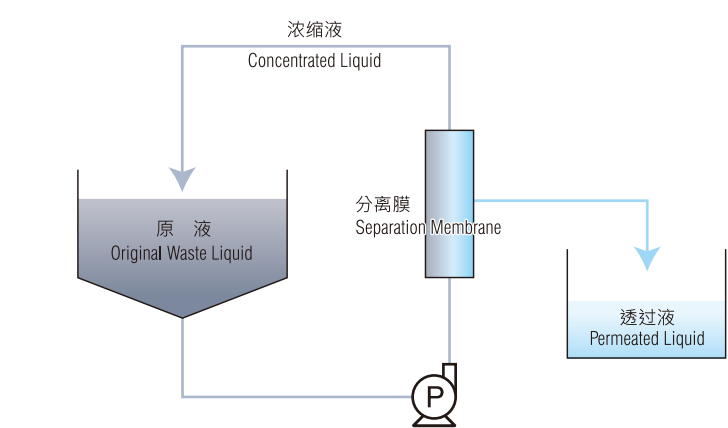
采用独自的分离膜技术使油废液有效分离
Separates Oil Containing Waste Liquid by Utilizing Unique Membrane Separation Technology

让含油废液通过紧贴在多孔纤维内部的分离膜，只让水（包括低分子·离子）透过，和油分（包括高分子·混浊物）分离。分离膜内变为高端流状态，维持高效透过率的同时不堵塞网眼可以进行安定的处理。另外，通过海绵球定期进行自动洗净，或者根据情况用药品洗净，使分离膜经常保持干净的状态。此分离膜具有耐热性·耐药性的优点，适用于多种多样的用途。



When oil containing waste liquid passes through a separation membrane on the inner side of a porous fiber, only water (including low molecular and ion) is passed and it is separated from oil (including high molecular and emulsion). Inside the membrane is maintained turbulent flow and it is excellent in permeation. Stable processing which doesn't cause clogging is possible. Also, the separation membrane can be always kept clean by periodic automatic cleaning with sponge balls and situational chemical cleaning. This separation membrane is excellent in a heat resistance and chemical resistance, so that it can be adopted to a variety of uses.

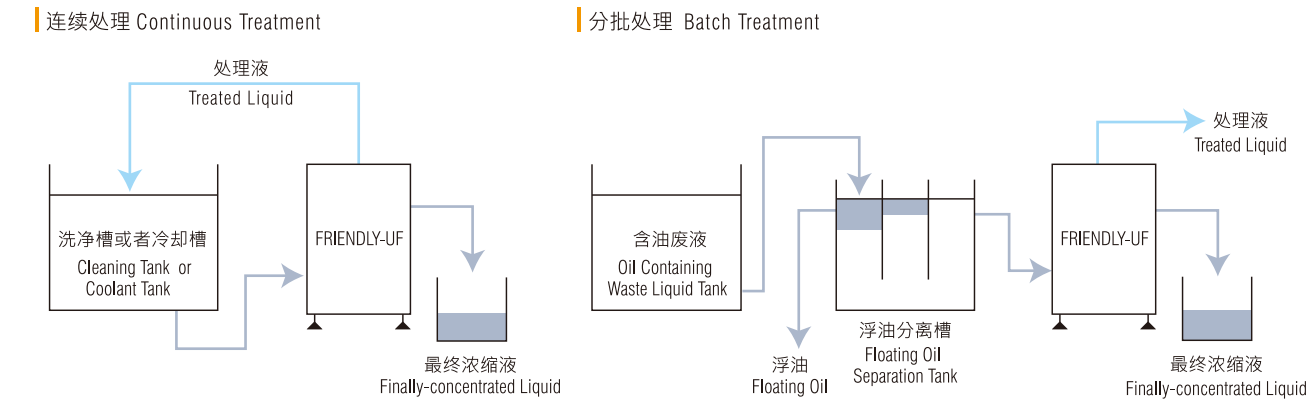
系统流程图 Flow



原液通过分离膜只有水(包括低分子·离子)透过，浓缩液再次返回到原液槽。通过连续循环原液只让透过液透过，原液浓缩减容到1／10～1／20。※根据废液的种类·浓度而不同。随着透过液的排出原液槽的水位降低，直到到达目标水位时运转结束。
When original waste liquid passes through the separation membrane, only water is permeated and the concentrated liquid is sent back to the circulation tank. When original waste liquid is circulated continuously, it is concentrated and reduced to one tenth or up to one twentieth because only the permeated liquid is extracted. * It differs depending on the kind and the density of waste liquid. As permeated liquid is discharged, water level of the original waste liquid circulation tank lowers. Operation ends in the time of reaching the target water level.

设置例 Installation Example

容易选择安放场地，根据使用目的能进行最适宜的处理。
Small Footprint and Suitable for Intended Application.



再利用或者通过最终处理 (FRIENDLY※或者机油净化槽) 排放到下水道。
※FRIENDLY・・・减压蒸馏方式的水溶性处理装置
Reuse or drainage discharge by extended treatment (FRIENDLY* and existing septic tank)
*FRIENDLY: Water-soluble waste liquid treatment system using reduced-pressure distillation method

用途 Application

对在各种各样的加工成形过程中排出的废液可有效进行处理。
Effective to Treat Waste Liquid Produced from Various Process.

洗净废液·切削废液·研磨废液·压缩机排放废液·洗车废液·铸造废液·高频率冷却液废水·压延冷却液废水等
Cleaning waste liquid, cutting waste liquid, polishing waste liquid, compressor drainage, car wash waste liquid, die casting waste liquid, high-frequency coolant waste liquid, rolling coolant waste liquid and others.