

FRIENDLY-Plus

复合型水溶性废液处理装置
Combined Water-soluble Waste Liquid Treatment System



<http://www.cosmotech-jp.com> E-mail: KYOTO@cosmotech-jp.com

12-2 Fukakusa Zendoji-Cho, Fushimi-ku, Kyoto, 612-8433, Japan
Tel: +81 75 621 7431 Fax: +81 75 621 7473



Registered to ISO 9001

Registered to ISO 14001

Registered establishment: Cosmotech Co., Ltd. headquarters and Kyoto Factory.

Registered coverage: Design, development, manufacturing, sales, installation and maintenance of peripheral equipments for printing and book binding. Equipments certified according to ISO 9001 are fountain solution refrigerating circulator, roller chiller, powder spray system, fountain solution filtration system and double sheet detector.

Distributor



向更高端挑战！减少对环境的破坏！

以[环境保护]为根本，对能处理各种各样废液的减压蒸馏式的水溶性废液处理装置FRIENDLY进行了进一步的完善。独特的分离膜技术和减压蒸馏方式的组合，使以前难以处理的乳化液系含油废液可以处理到能直接排放到下水道的程度。
通过使用**FRIENDLY-Plus**，进一步实现了环境保护，为您提供更经济，安全的解决方案。

Water-soluble waste liquid treatment system **FRIENDLY** using reduced-pressure distillation method made further progress. By a combination of unique separation membrane technology and reduced-pressure distillation system, emulsion-based oil containing waste liquid can be processed to the degree by which sewage drainage is possible. COS-MOTECH proposes advanced environmental protection, safety and cost performance through this combined water-soluble waste liquid treatment system **FRIENDLY-Plus**.

环境保护 Environmental protection
安全性 Safety
经济效益 Economical efficiency

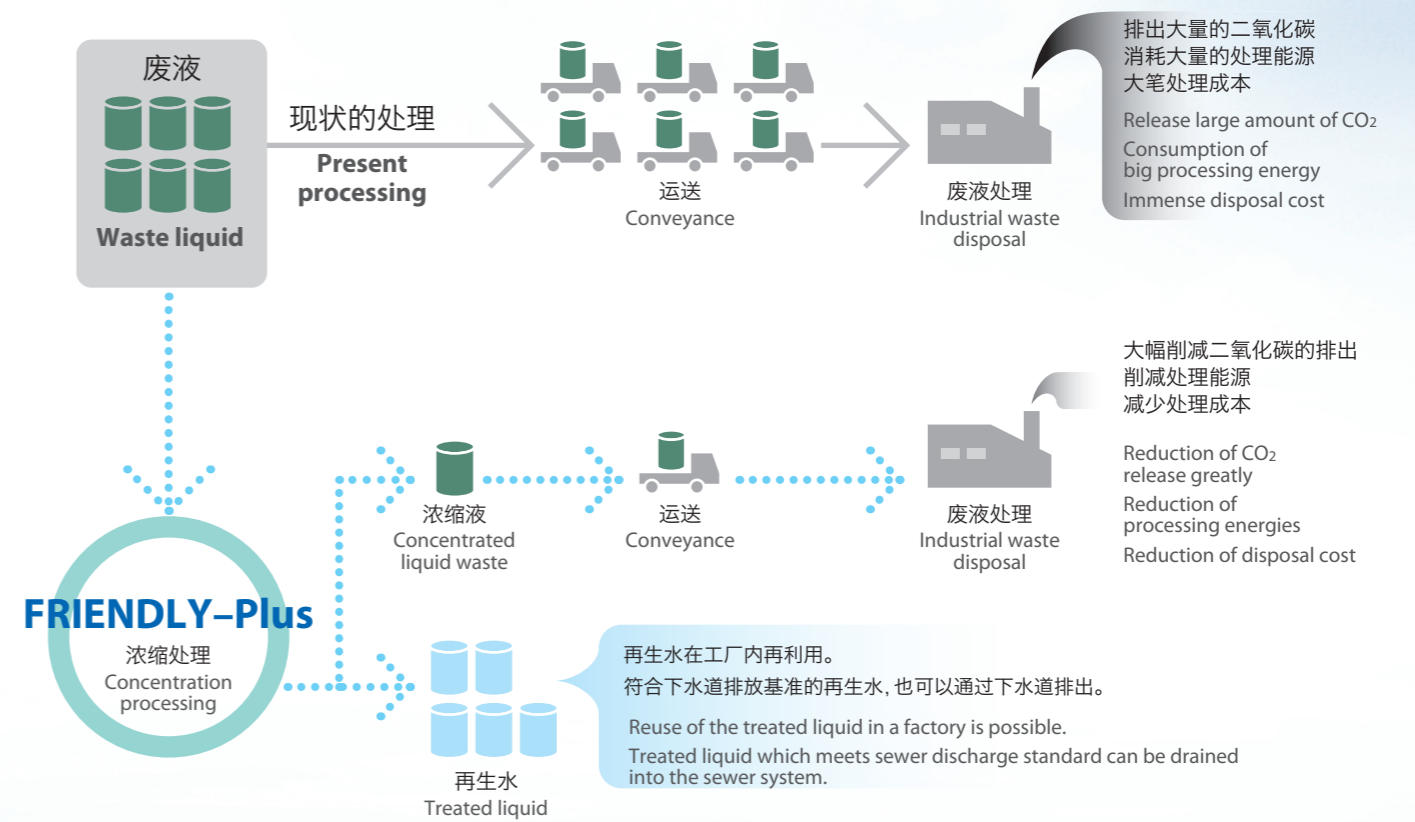


大幅度削减废液的排出量

以前，在生产工厂产生的废液都是直接委托给工业废物处理公司进行处理。如此现状下如果采用**FRIENDLY-Plus**，不需要发生大笔费用就可以大幅度削减废液量，从而可以大幅度节省废液处理费用。
乳化液系的含油废液可以处理到能直接排放到下水道的程度。

Discharge amount of waste liquid is reduced substantially

Conventionally, waste liquid generated in a production site has been processed by requesting to an industrial waste disposal company. The amount of waste liquid in which an industrial waste disposal company takes over such the present condition is sharply reducible by introducing **FRIENDLY-Plus** without spending big expense. Emulsion-based oil containing waste liquid can be processed to the degree by which sewage drainage is possible.



Aiming at Exalting Technology. Reduction in Environmental Burden.



分离膜技术和减压蒸馏技术的融合

Technology that utilizes both separation membrane and reduced-pressure distillation

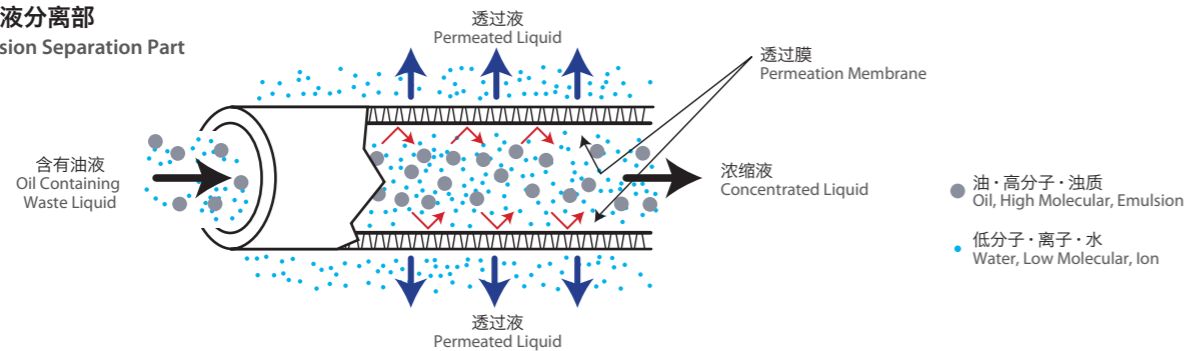
采用独特的分离膜技术使油废液有效分离

让含油废液通过紧贴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。分离膜内变为高湍流状态，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，使分离膜经常保持清洁的状态。此分离膜具有耐热性·耐药性的优点

Oil containing waste liquid is surely separated by unique separation membrane technology

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.

乳化液分离部 Emulsion Separation Part



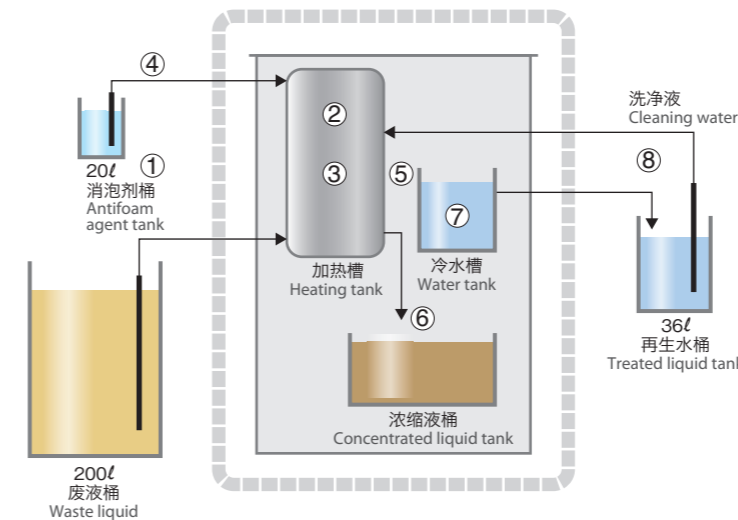
通过高效地减压蒸馏方式进行安全的处理

不使用火源，用减压蒸馏的方式，利用低于常压的压力降低沸点，让废液在低温下沸腾。水温保持低温状态，因此不易发生因加热引起成分的化学反应或者分解，处理过程中产生的异味以及有害物质的极少安全方式。

A safe and efficient process by reduced-pressure distillation system

Distillation under reduced pressure lowers boiling point of water and it makes water to be boiled at a low temperature by making pressure lower than ordinary pressure. Since water temperature can be kept low, it is safe method with which chemical reaction or decomposition of ingredients can hardly be caused by heating.

减压蒸馏分离部 Reduced-pressure Distillation Part



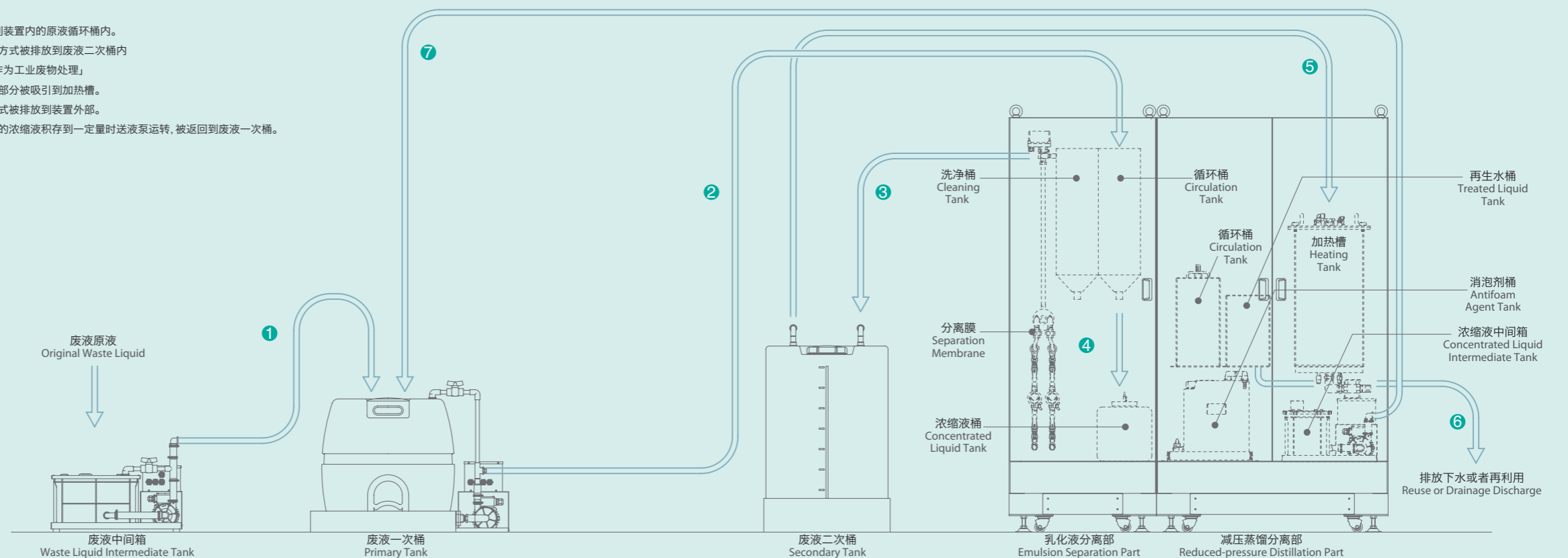
- ① 从废液桶吸引废液。
 - ② 浓缩锅内减压。
 - ③ 浓缩锅加热，低温沸腾。
 - ④ 添加消泡剂，防止沸腾时发生泡沫。
 - ⑤ 产生的蒸气流到冷冻机部使其变成再生水。
 - ⑥ 浓缩锅内将剩余的浓缩废液反复进行数次浓缩后，储存在浓缩桶。
 - ⑦ 再生水暂时储存在机器内的冷水槽，然后再储存在外部的再生水桶。
 - ⑧ 机器外部的再生水自动洗净时再次吸引到浓缩锅。
- ① Waste liquid is sucked into the heating tank.
 - ② Internal pressure of the heating tank is decompressed.
 - ③ The heating tank is heated and boils at low temperature.
 - ④ Antifoam agent is added in order to press down bubble generated during boiling.
 - ⑤ Steam flows into a refrigerator. It is cooled and changes to treated liquid.
 - ⑥ The concentrated liquid remaining in the heating tank is collected in the concentrated liquid tank after going through several rounds of concentration.
 - ⑦ Treated liquid is accumulated in the internal tank of the main unit then sent to the external tank.
 - ⑧ Treated liquid in this external tank is sucked into the heating tank when cleaning mode.

FRIENDLY-Plus 流程图

FRIENDLY-PLUS Flow Diagram

- ① 废液在废液中间箱内积存到一定量时送水泵运转，废液被转运到废液一次桶内。
- ② 根据乳化液分离部的供给信号，废液一次桶的送水泵运转，一定量的废液被转运到装置内的原液循环桶内。
- ③ 乳化液分离部被分离出来的透过水在洗净桶内积存到一定量后，通过自由落差的方式被排放到废液二次桶内
- ④ 在乳化液分离部分分离出来的浓缩液通过自由落差的方式被排放到浓缩液桶。→（作为工业废物处理）
- ⑤ 减压蒸馏分离部的加热槽内达到系统设定的真空值后，废液二次桶内的透过水一部分被吸引到加热槽。
- ⑥ 减压蒸馏部分分离出来的再生水在再生水桶内积存到一定量后，通过自由落差的方式被排放到装置外部。
- ⑦ 减压蒸馏部分分离出来的浓缩液被排放到装置内的浓缩液中间箱，浓缩液中间箱内的浓缩液积存到一定量时送液泵运转，被返回到废液一次桶。

- ① When a certain amount of waste liquid is accumulated in a waste liquid intermediate tank, waste liquid is transferred to a primary tank by a water pump.
- ② Pump mounted at the primary tank is activated by a supply signal from emulsion separation part, and a certain amount of waste liquid is transferred to a circulation tank inside the system.
- ③ After a certain amount of permeated liquid which is separated at the emulsion separation part is accumulated in a cleaning tank, permeated liquid is discharged to a secondary tank by natural drop.
- ④ Concentrated liquid which is separated at the emulsion separation part is discharged to a concentrated liquid tank by natural drop. → Disposed as industrial waste.
- ⑤ When inside of a heating tank reaches a default degree of vacuum, a certain amount of permeated liquid in the secondary tank is aspirated to the heating tank.
- ⑥ After a certain amount of treated liquid which is separated at the reduced-pressure distillation part is accumulated in a treated liquid tank, treated liquid is discharged to outside of the system.
- ⑦ Concentrated liquid which is separated at the reduced-pressure distillation part is discharged to a concentrated liquid intermediate tank inside the system. A certain amount of concentrated liquid is accumulated in the intermediate tank, concentrated liquid is returned to the primary tank by a water pump.



安全有效的处理系统

A safe and efficient processing system

高处理能力

- 实现了高浓缩倍率, 大幅度削减了废液处理费用。
实绩值: 水溶性废液最大可以浓缩到 1/20
- 可以对应各种水溶性废液。
处理实绩: PS 版用显影液、润版液废液、柔版印刷废液、切削废液(水溶性)、水性涂料废液、食品废液等

便利性和经济性

- 只需要少量的电和消泡剂
- 因进行 24 小时连续自动运转, 从而减轻劳动负荷。
- 分离膜和浓缩锅具有自动洗净机能。
- 触摸屏使操作简单便捷

High Processing Ability

- High concentration rate is realized and industrial waste disposal cost is reduced sharply.
Actual performance records: Aqueous waste liquid can be condensed to a maximum of 1/20.
- Various aqueous waste liquid can be processed.
Processing past records: CTP developer waste, dampening solution waste, cutting oil waste, painting waste, food waste, etc.

Convenience and economical efficiency

- The only required things are a little electricity and antifoam agent.
- Mitigation of labor load by 24-hour continuation automatic operation.
- Automatic cleaning function of the heating tank and a separation membrane.
- Improvement in the operativity by a touch panel.



规格一览 | Specifications

形式 Model	FRIENDLY-Plus
机器构成 Configuration	乳化液分离部 Emulsion Separation Part 减压蒸馏分离部 Reduced-pressure Distillation Part 废液 1 次桶(容量: 约 200 ℓ) 带送液泵·搅拌泵 Waste Liquid Primary Tank (Capacity: Approx. 200ℓ) W/ Water Pump and Agitating Pump 废液 2 次桶(容量: 约 200 ℓ) Waste Liquid Secondary Tank (Capacity: Approx. 200ℓ)
电源 Power Supply	3相 200V 50/60Hz 3-phase 200V 50/60Hz
电气容量/电流 Electric Capacity/ Current	约 8.0KVA / 约 23.0A Approx. 8.0KVA/ Approx. 23.0A
处理方式 Treatment Process	UF膜(超滤膜)方式+减压蒸馏(热泵)方式 UF Membrane (Ultrafiltration Membrane) System + Reduced-pressure Distillation (Heat Pump) System
处理能力 Treatment Capacity	乳化液分离部 约 15 ~ 25 ℓ / h 减压蒸馏部 约 10 ℓ / h Emulsion Separation Part : Approx. 15~25ℓ/h Reduced-pressure Distillation Part: Approx. 10ℓ/h
对象废液 Target Waste Liquid	水溶性废液(包括水溶性含油废液) Water-soluble Waste Liquid (Incl. Water-soluble Oil Containing Waste Liquid)
主机尺寸(W×D×H) Main Unit Dimensions (W x D x H)	1800×1000×1968 1800 x 1000 x 1968 mm
制品重量 Weight	约 240Kg (运转时: 约 280Kg) Approx. 240kg (In Operation: Approx. 280kg)
运转条件 Operation Condition	周围温度 5 ~ 35℃、湿度 0 ~ 60% (无结露) Ambient Temperature 5 ~ 35 °C, Humidity 0 ~ 60% (Non-existence of Dew Condensation) 在不存在气压、粉尘、腐蚀性气体、挥发性气体的环境 Non-existence of Atmospheric Pressure, Dust, Corrosion Gas, or Volatile Gas
标准附属品 Standard Accessories	废液 1 次桶 (200 ℓ)、废液 2 次桶 (200 ℓ) 浓缩液桶 (20 ℓ × 2 个)、废液中间箱 (20 ℓ)、 消泡剂桶 (约 20 ℓ) 浓缩液中间箱 (20 ℓ) Waste Liquid Primary Tank (200ℓ), Waste Liquid Secondary Tank (200ℓ), Concentrated Liquid Tank (20ℓ x 2 pcs), Waste Liquid Intermediate Tank (20ℓ), Antifoam Agent Tank (Approx. 20ℓ), Concentrated Liquid Intermediate Tank (20ℓ)
消耗品 Consumables	消泡剂(请使用弊社推荐产品。) Antifoam Agent (We recommend you to use our recommended agent.)
选配 Options	• 废液中间箱(追加用)、再生水中间箱 • 浓缩液中间箱(追加用) • Waste Liquid Intermediate Tank (For Additions), Treated Liquid Intermediate Tank, • Concentrated Liquid Intermediate Tank (For Additions),

外形尺寸图 External Dimensions

