

# kemtech

## **High Pressure Coolant System**

- Variable Flow Using Inverter Control
- With Hydro-Cyclone Filters

## **Oil Separator System**



## MANAGEMENT PHILOSOPHY

Based on honesty and trust, we will help our customers realize lasting value so we can help society have the brightest future possible.

How With passion, a healthy work ethic, and understanding our customers as our foundation, we

- shall create a corporate culture that allows us to adapt to any changing business environment;
- shall become a strong company that grows with our customers by meeting their concerns with the latest technology and or after service care.

---

## VISION

To do our best as market leaders so our customers can do theirs.

---

## OUR CORE SPIRIT

To challenge the world with passion so as to create enhanced value for ourselves and our customers.

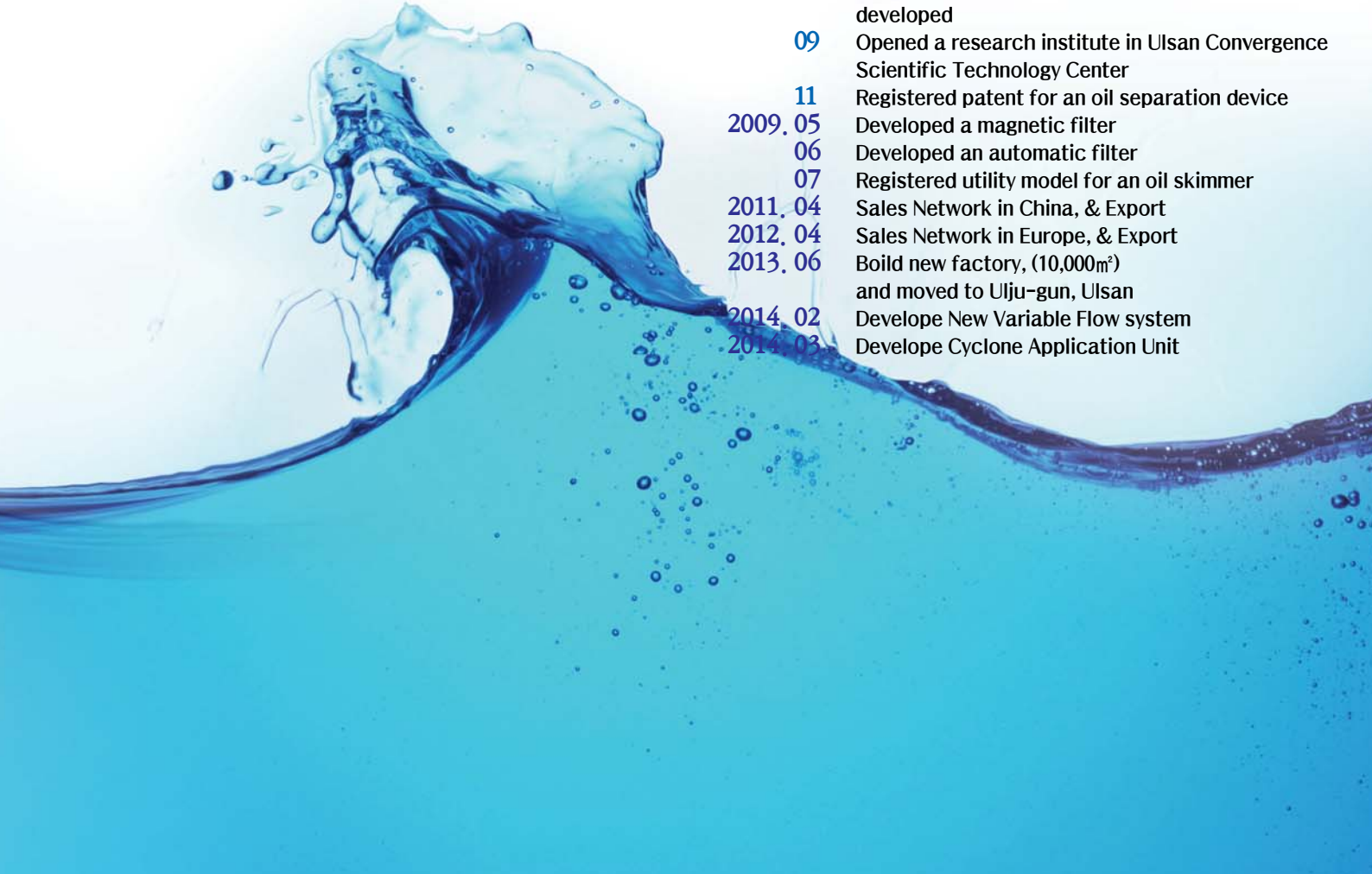
---

## MISSION STATEMENT

Kemtech is focused on continuously changing so as to create enhanced value for all in a relentlessly predictable way so that our customers through constant cooperation are visibly happy, and completely satisfied.



## COMPANY HISTORY

- 
- 1992. 04 Jesung Corporation was established
  - 1995. 02 Oil chiller was developed, sales started
  - 1997. 01 High-pressure cutting fluid device was developed, its sales started
  - 1999. 01 Factory moved  
(Ulsan Hyomoon apartment type factory)
  - 06 Coolant chiller was developed, sales started
  - 2001. 09 Water chiller was developed, sales started
  - 12 Design rights registration for cutting fluid filter
  - 2002. 03 CE certification for oil chiller
  - 2003. 05 Patent registration for cutting fluid filter device
  - 12 Design rights registration for high-pressure cutting fluid device
  - 2004. 06 Factory expanded (total 2,000m<sup>2</sup>)
  - 2006. 01 Amalgamated as on integrated corporation  
Kemtech Co., Ltd
  - 07 Oil chiller is export to Japan's Okuma started
  - 2007. 01 ISO 9001 certification obtained
  - 07 Oils separator was developed, sales started
  - 2008. 07 Utility cabinets for machining center were developed
  - 09 Opened a research institute in Ulsan Convergence Scientific Technology Center
  - 11 Registered patent for an oil separation device
  - 2009. 05 Developed a magnetic filter
  - 06 Developed an automatic filter
  - 07 Registered utility model for an oil skimmer
  - 2011. 04 Sales Network in China, & Export
  - 2012. 04 Sales Network in Europe, & Export
  - 2013. 06 Boild new factory, (10,000m<sup>2</sup>)  
and moved to Ulju-gun, Ulsan
  - 2014. 02 Develope New Variable Flow system
  - 2014. 03 Develope Cyclone Application Unit

**To do our best  
So our customers  
Can do theirs**



We, kemtech, will step toward the customers with products that can realize the value more that expected by the customers.





# Products Line-up

**To do our best  
So our customers  
Can do theirs**

We, kemtech, will step toward the customers with products that can realize the value more that expected by the customers.



Oil Separator



PFMG-Series Filters



PFMF-Series HPC



Utility Cabinet



VF-DF Series HPC



PF-CF Series HPC



# HIGH PRESSURE COOLANT SYSTEM

## I Necessity of High Pressure Coolant

Recent interest on high pressure fluid grew as machine tools tend to become high speed and high precision. Low pressure(below 14kgf/mm<sup>2</sup>) cutting fluid is blocked by the vapor barriers created by machine tools cutting speed. It loses cutting fluid function before it enters the cutting zone because of evaporation. On the other hand, high pressure(over 20kgf/mm<sup>2</sup>) cutting fluid can reach the cutting zone to achieve the following:

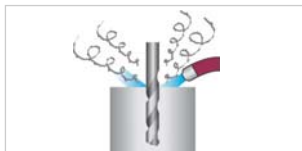
1. Smooth lubrication and cooling effect
2. Improvement in cutting capability
3. Improvement in tool lifetime by removing the phenomenon of chip re-cutting
4. Improvement in cutting surface roughness
5. Smooth chip removal effect
6. De-burring effect

In case 70kgf/mm<sup>2</sup> high pressure cutting fluid is used in the cutting of difficult-to-cut materials, the tool manufacturer Test shows the following results compare with the use of common cutting fluid.

1. 20% reduction in cycle time because of an improvement in cutting speed and feed
2. 50% improvement in tool lifetime

## II Hole Processing(Drilling, Boring and etc.)

### Low Pressure Cutting Fluid / Flood Coolant



Cutting fluid cannot reach a processing point and almost not cutting fluid is supplied to the tool.  
Peck cycle is used because chip discharge is difficult.  
Re-cutting often occurs because thread like chip surrounds the tool and tool holder.

### High Pressure Cutting Fluid / Through Tool Coolant(Spindle Through Coolant)



Cutting fluid is supplied to a processing point at the highest pressure.  
Chip is discharged effectively from a deep hole by reflected pressure and cutting fluid.  
The drill can perform more difficult processing therefore reducing work hour. The tool's life time is significantly increased compare with the use of low pressure cutting fluid.

## III Turning

### High Pressure Coolant

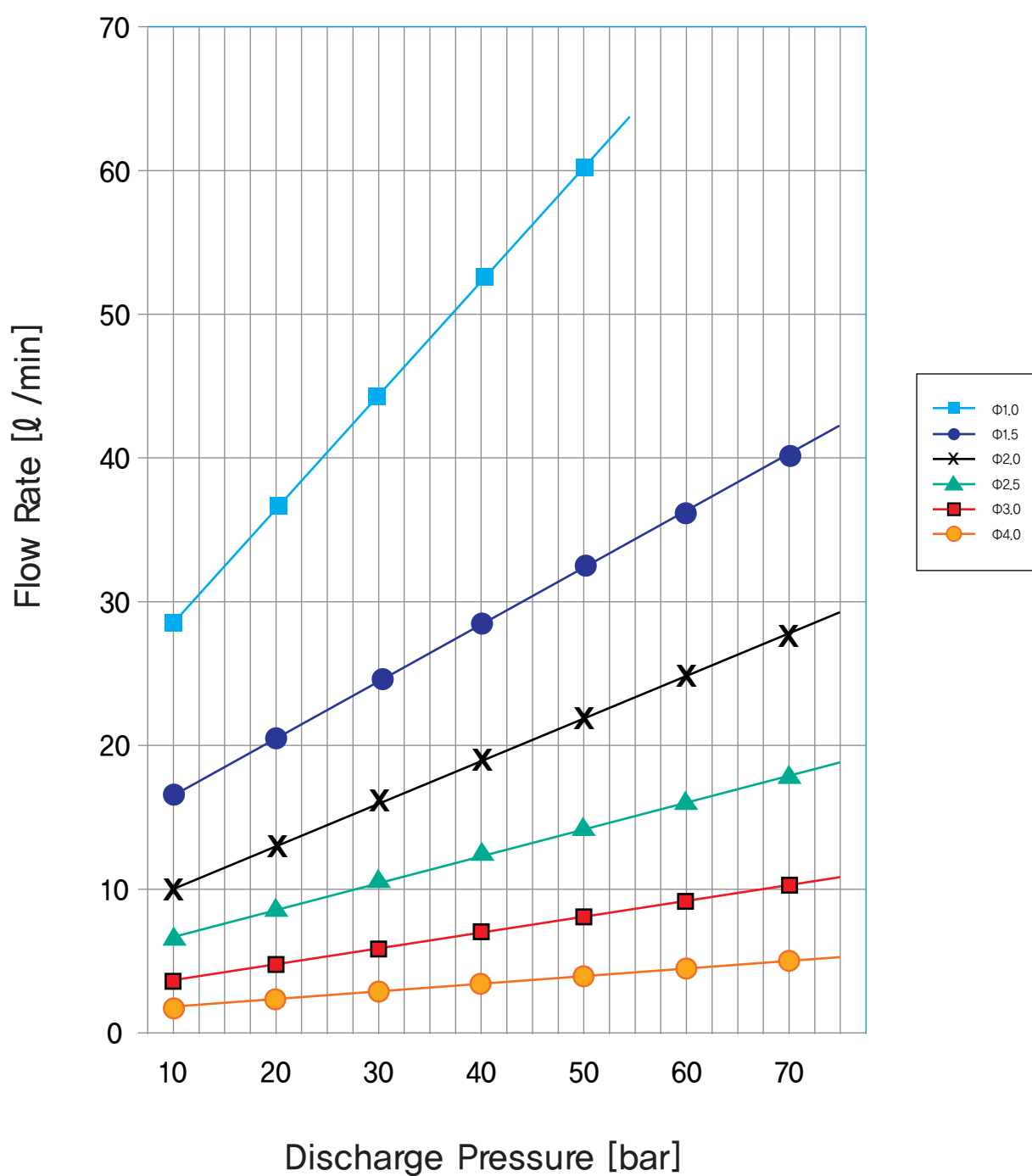


Highly reduced heat zone is created through the direct spray of cutting fluid to a Processing point.  
Cutting hydraulic wedge effect can be produced depending on the usage. Wearing of the tool is reduced by cooling the contact zone between chip and tool.  
Cutting chip into small pieces increases chip discharging capability. This prevent re-cutting by chip and increases tool lifetime.

## IV Technical Data(Flow vs. Pressure by Orifice Size)

There are differences depending on the machining conditions and mechanical structure.

### Pressure/Flow by Orifice



# HIGH PRESSURE COOLANT SYSTEM

## V Application

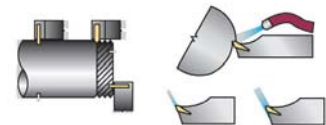
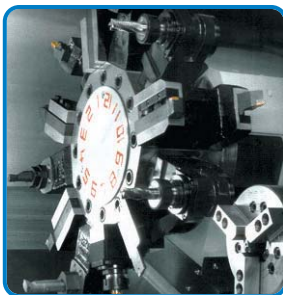
Machining Center



### Application - Tool

Main spindle -Tool penetration

- Vertical machining center
- Horizontal machining center
- Tapping center
- Gun drilling M/C
- Boring M/C, special purpose machines



### Application - Tool

- Difficult-to-cut material processing
- Low carbon steel processing
- Steel material processing on a vertical lathe



# High Pressure Coolant System With Variable Flow Using Inverter Control & Coolant Chiller

## VF70-30DF / VF70-60DF / VF100-40DF

- ❖ High Pressure Unit and Chiller in one complete unit
  - Minimize, Simplify of Installation Area
- ❖ Using Inverter + PID could provide customer
  - Proper pressure and flow rate for tooling
  - Energy Saving(17% more reduction than Fixed Flow)
- ❖ HMI Application : User Friendly Monitoring System
- ❖ Pressure Feedback Control: Precision Discharge Pressure Control
- ❖ Low Noise High Pressure Pump Application : CQT Pump
- ❖ Kemtech can be customized response to customers' needs

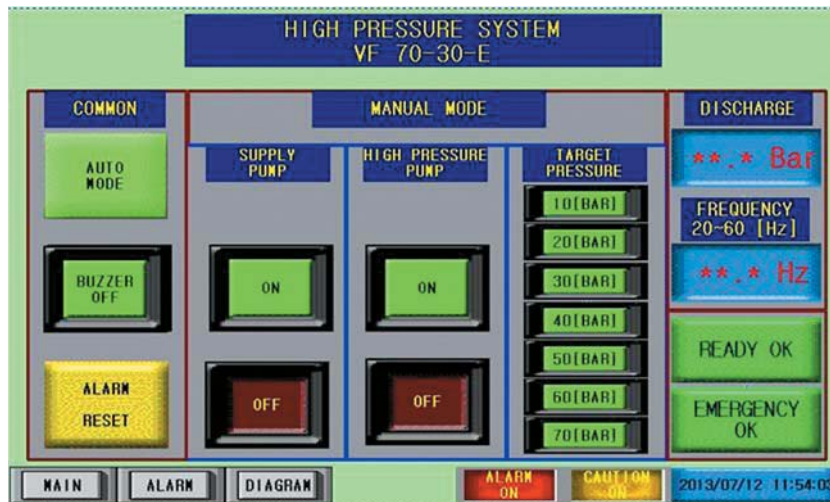


VF70-30DF/FB/HMI/TC Model

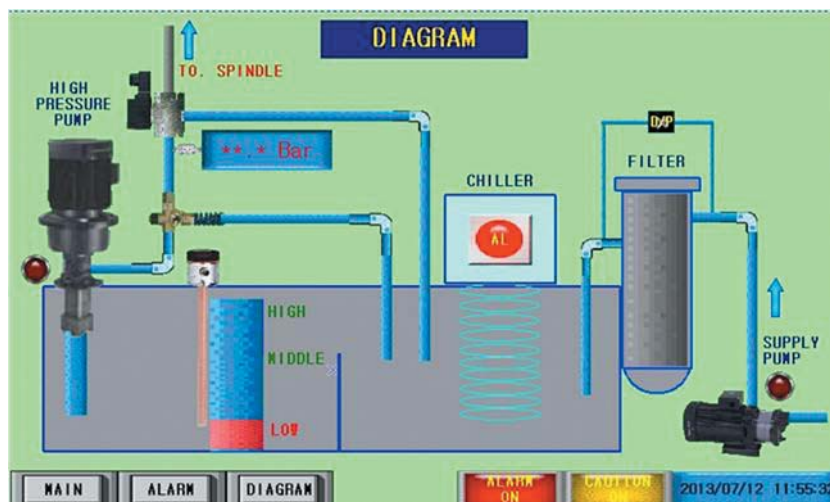
# HIGH PRESSURE COOLANT SYSTEM

## User Friendly Display(Operating & Monitoring)

Operation switches are built on the HMI



Operation situation are also built on the Schematic Diagram Display of HMI

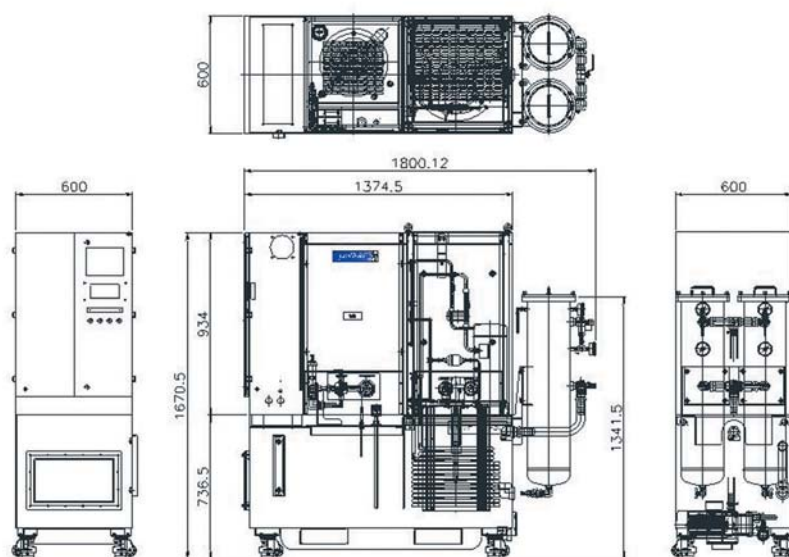


Chillers are independent operation by a separate control device.



## ■ Lay-Out

kemtech



## ■ TECHNICAL DATA

Description / Model Name			VF70-30DF	VF100-60DF	VF100-40DF
GENERAL	Clean Tank Capacity		350	350	350
	Max. Flowrate	50/60[Hz]	32[ℓ/min]	68[ℓ/min]	39[ℓ/min]
	Noise[dB]		80 under	80 under	80 under
	Voltage		AC 3 φ 220/380 [V], 50/60[Hz]		
High Coolant Unit	Max Pressure[bar]		70[At Orifice 2.5[mm]]	70[At Orifice 3.5[mm]]	100[At Orifice 3.0[mm]]
	Motor[kW]		7.5	15	11
	Pump		CQT43-25	CQT53-50	CQT44-31.5
Control Method			Self Control +Ext. On	Self Control +Ext. On	Self Control +Ext. On
FILTER	Bag Filter(2-Vessel)		25μm	25μm	25μm
Chiller[Temperature Control]			7,500/7,200kcal/Hr	7,500/7,200kcal/Hr	7,500/7,200kcal/Hr
Inlet Side Piping Specification			Rc 1"	Rc 1"	Rc 1"
Outlet Side Piping Specification[HPC]			R ½"	R ½"	R ½"
Drain Side Piping Specification[Overflow]			Rc 1-1/2"	Rc 1-1/2"	Rc 1-1/2"
External Dimension[DxWxH]			600x1730x1670		
OPTION	Display		HMI	HMI	HMI
	Supply Pump		Immersion Type	Immersion Type	Immersion Type

# HIGH PRESSURE COOLANT SYSTEM

## High Pressure Coolant System with Cyclone Filter

PF 30-25 CF/ PF 70-40 CF

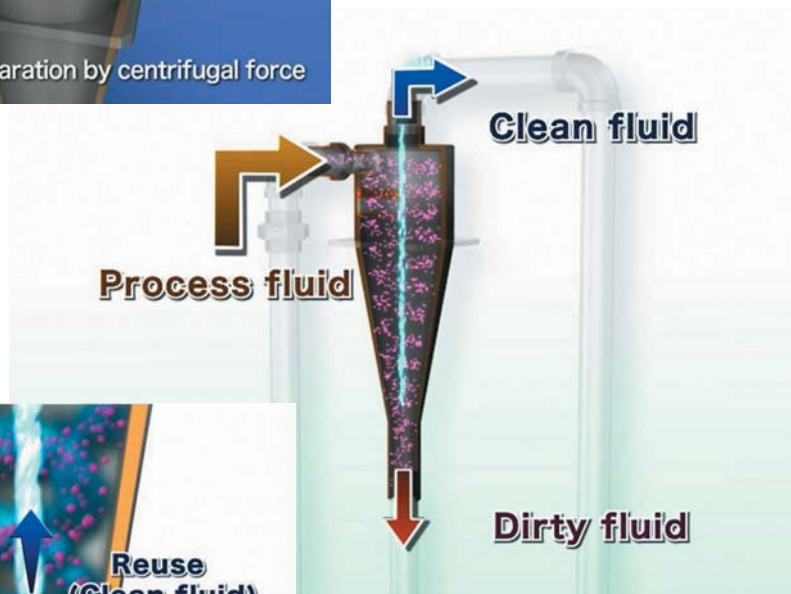
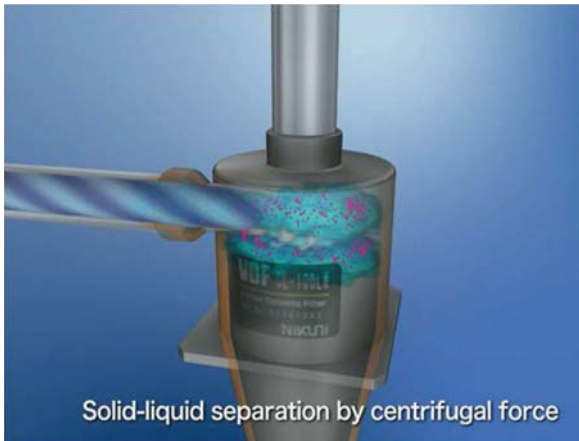
- ❖ Max Discharge Pressure : 30 bar / 70 bar at 60[Hz]
  - Low Noise CQT/CX Pump
- ❖ Cyclone Filter Application
  - Filter less, Maintenance free
- ❖ Chip & Sludge Collection
  - Chip Bucket Drawer(Standard\_100 $\mu$ m Mesh)
  - Sludge Conveyor(option)
- ❖ Pressure Feedback Control [option]
- ❖ Kemtech can be customized response to customers' needs



PF70-40CF/SC Model  
Cyclone Filter



## Vortex Dynamic Filter (VDF) Hydro-cyclones



# HIGH PRESSURE COOLANT SYSTEM

## PF30-25CF, PF70-40CF Applications

- Machining & grinding coolant
- Automatic lathe
- Filtration of both Ferrous and Non-Ferrous

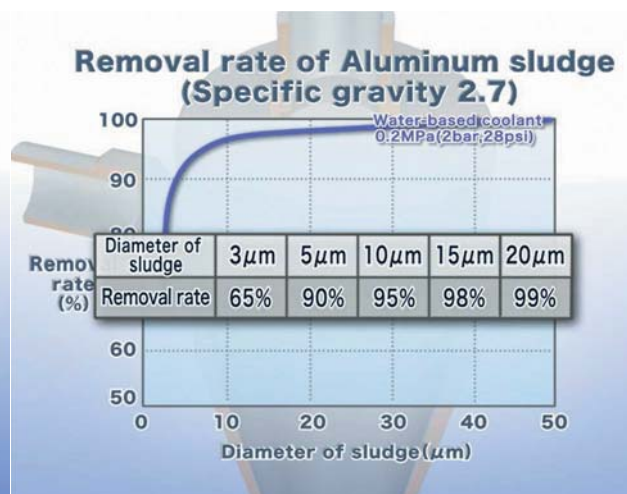
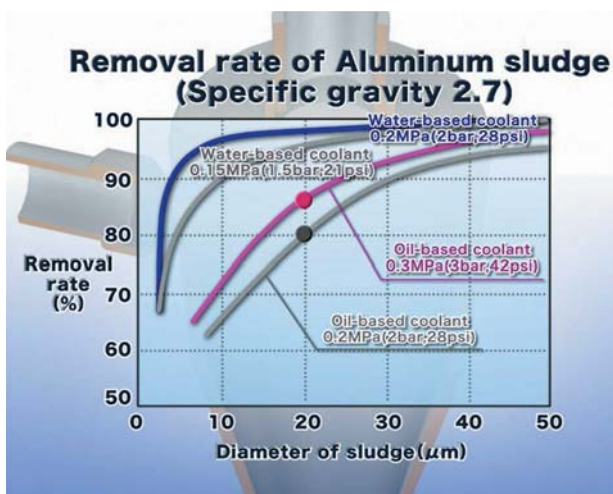
### Run Non-stop by Media free

- Reduce production downtime
- Eliminate high maintenance labor costs
- Eliminate filter waste disposal fees



Durable Stainless Steel Housing

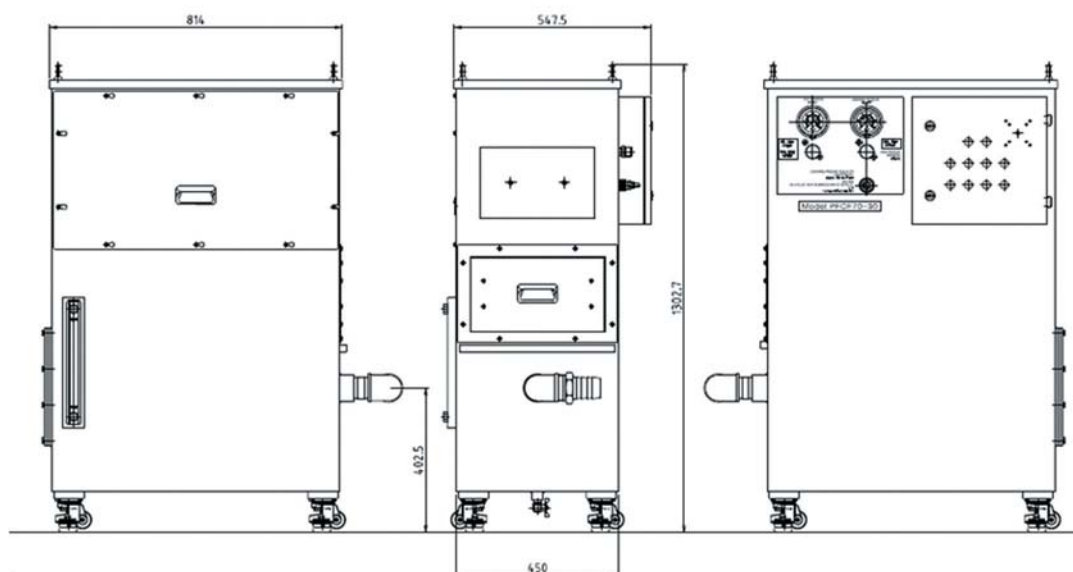
## PF30-25CF, PF70-40CF Applications



- Solids specific gravity > 2.7  
(Ex. Aluminum)
- Liquids kinematic viscosity < 5.0 cSt  
(Ex. Kerosene)

## ■ Lay-Out

kemtech



## ■ TECHNICAL DATA

Description / Model Name			PF30-25CF	PF70-40CF	REMARKS
GENERAL	Clean Tank Capacity		120	120	
	Max. Flowrate [ l /min]	60[Hz]	26	40	
		50[Hz]	19	30	
	Noise[dB]		75 under	75 under	
	Voltage		AC 3 ϕ 220/380 [V], 50/60[Hz]		
High Coolant Unit	Max Pressur[bar]		30	70	At Orifice 2.5[mm]
	Motor[kW]		2.2	7.5	
	Pump		CQT42-20	CQT43-31.5	
Control Method			External On/Off	External On/Off	
FILTER	Cyclone Filter(Nikuni)		CL-30LW	CL-50LW	
Chip Disposal[Collect Drawer]			100μm Mesh	100μm Mesh	
Inlet Side Piping Specification			PF ½”	PF ½”	
Outlet Side Piping Specification(HPC)			PF ½”	PF ½”	
Drain Side Piping Specification(Overflow)			Rc 2”	Rc 2”	
External Dimension(DxWxH)			600x1730x1670	500x1050x1350	
OPTION	Control Method		Self Control +Ext. On	Self Control +Ext. On	
	Supply Pump		Immersion Type	Immersion Type	over 2.5bar
	Pressure Feedback Control		Inverter Controller	Inverter Controller	

# FROFLUID OIL SEPARATOR

**The oil separator provided by Profluid can solve all problems caused by tramp oil/tramp solid.**

**PFOS 40 / PFOS-40C / PFOS-40F / PFOS-40CF**



## I The Effect of Tramp Oil

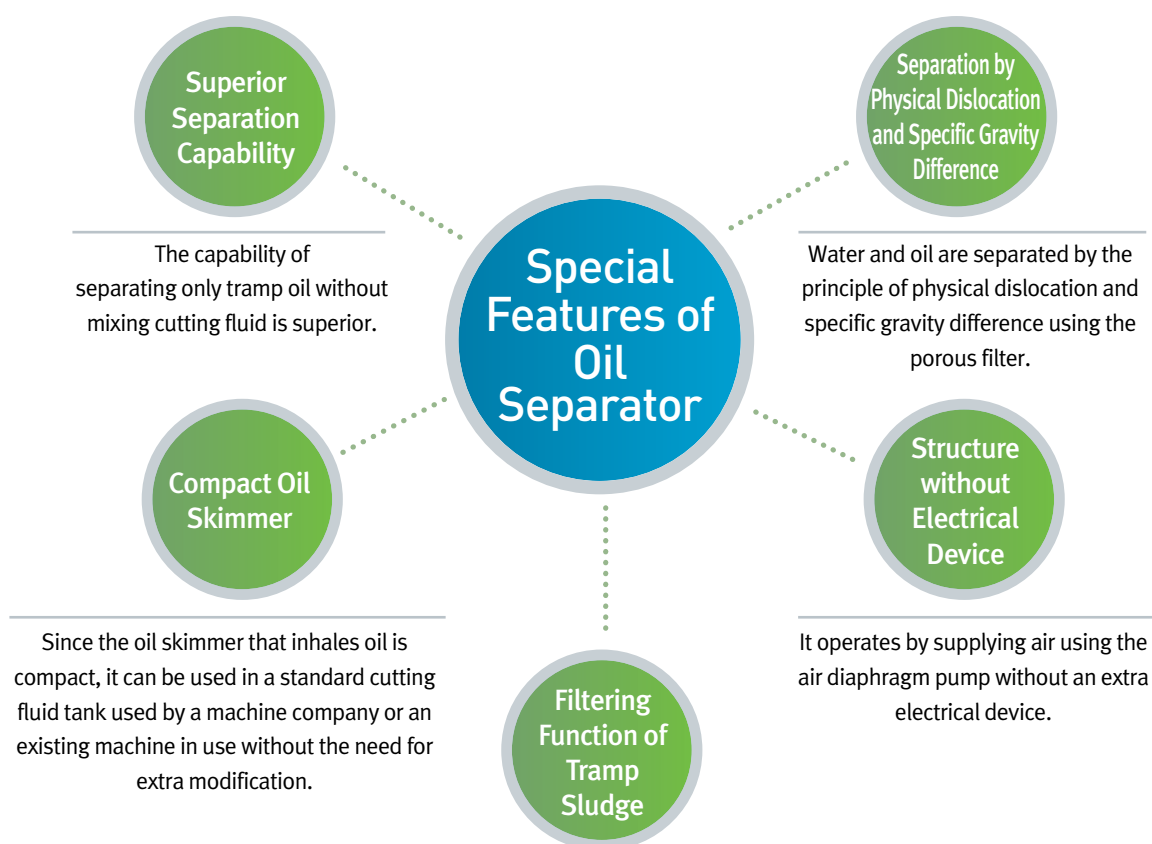
1. Degradation of machine and tool functions and shortening of tool life (clogging of various filters & nozzles)
2. Foul odor and skin disease to workers caused by the formation of various kinds of bacteria
3. Product failure caused by decomposition and rust occurrence
4. The acceleration of industrial waste production increases environmental costs.

## II Principle of Removing Tramp Oil

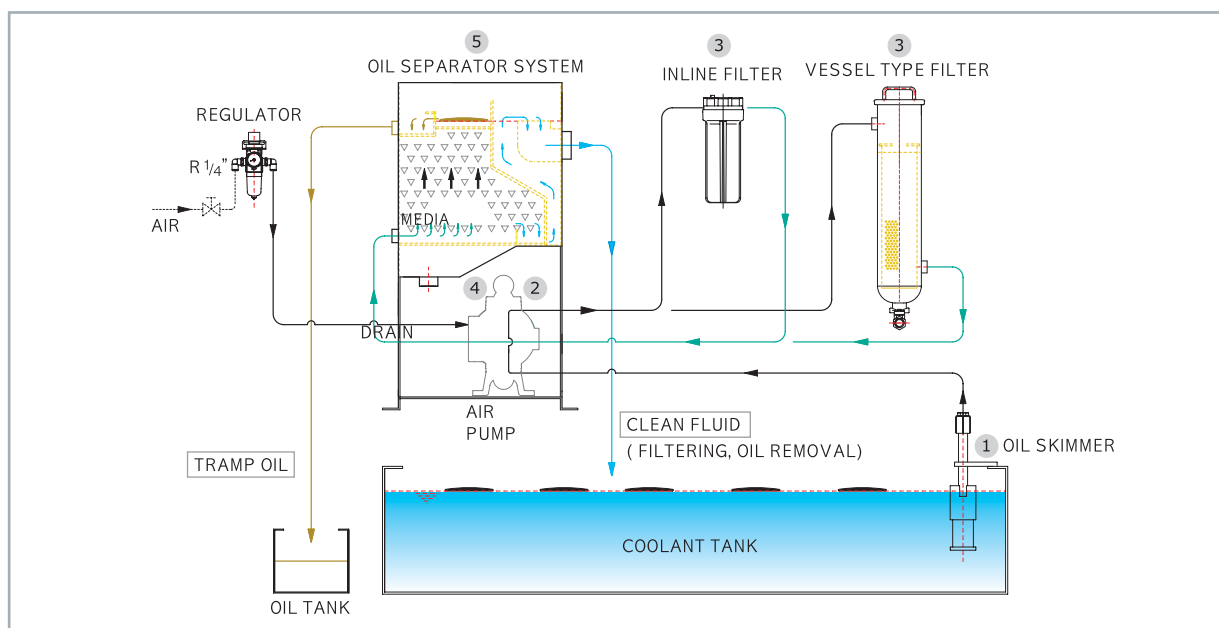
The existing method to separate tramp oil by smearing it on the belt or hose has a problem with efficiency and waste oil handling because a large amount of cutting fluid is mixed and separated. Using the fact that specific gravity varies for different liquids to be separated such as water and oil, Profluid's oil separator uses a principle of the fast speed separation between water and oil through physical dislocation when mixed liquid passes through the filter (media with a large number of pores).

1. The tramp oil along with the cutting fluid is inhaled into the tank using the built-in pump.
2. The cutting fluid inhaled along with the tramp oil passes through the porous filter layer. While the tramp oil passes through the filter that has a large effective specific surface area as line structure without forming inclined surface, particles of the tramp oil are enlarged by speed difference caused by viscous flow and the oil rises to the surface.
3. The floated tramp oil is separated and discharged using specific gravity difference between water and oil.



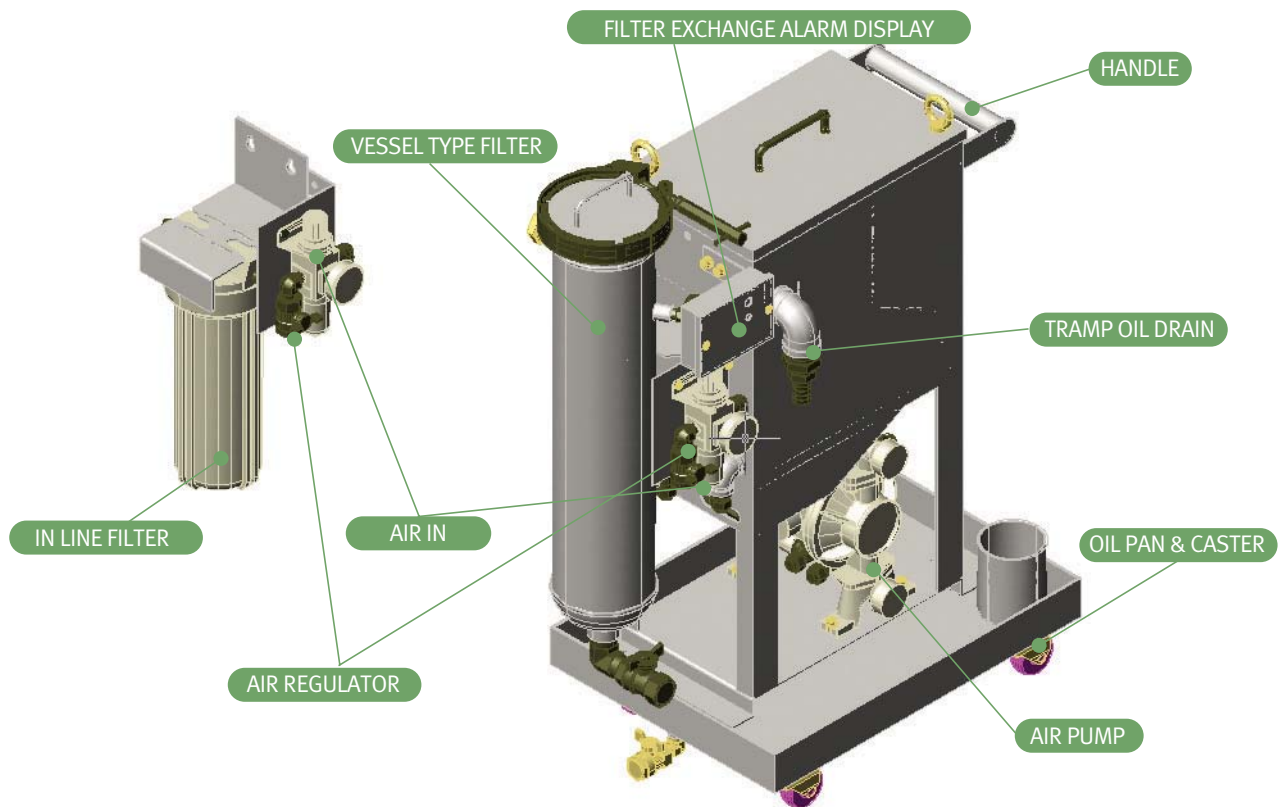


### III Flow Diagram



# FROFLUID OIL SEPARATOR

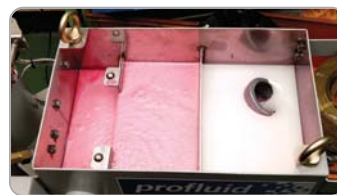
## IV Oil Separator Component Lay-out



Media



Oil Skimmer



Picture of Separating at the Oil Separator



In Line Filter



Vessel Filter

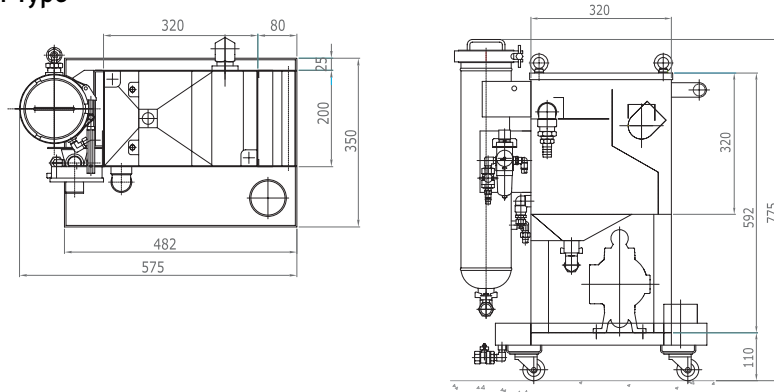


Tank

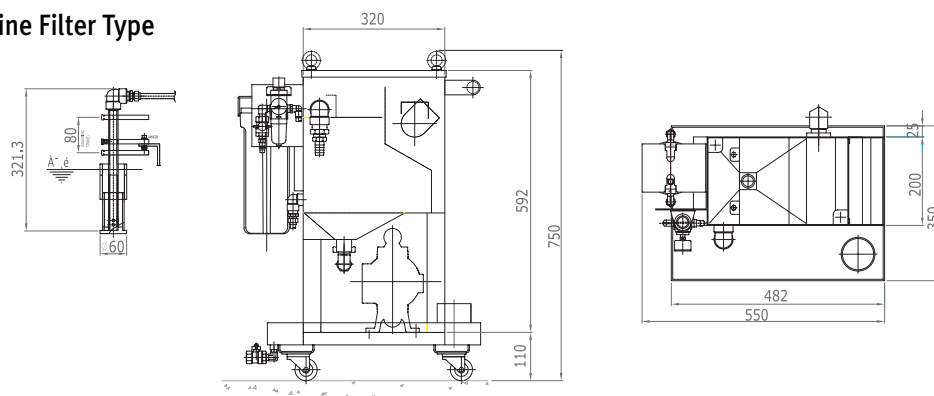
# ■ Lay-Out

kemtech

## ■ Vessel Filter Type



## ■ Inline Filter Type



# ■ TECHNICAL DATA

Item		PFOS-40	PFOS-40C	PFOS-40F	PFOS-40CF	Remarks
Use Classification	Fluid State	Tramp Oil		Tramp Oil +Tramp Sludge		
	Portability	Fixed	Portable Type	Fixed	Portable Type	
Recommended Processing Capacity		400Q /Hour				
Allowed Temperature for Use		5 °C ~ 65 °C				
Oil Pan & Caster			○		○	
Pressure	Design / Rec. Operating	5 kg.f/cm <sup>2</sup> / 2 kg.f/cm <sup>2</sup>				
Inlet Filter Spec.	Inline Filter	100 Mesh, Stainless		-		Reusable
	Vessel Filter	-		100 mesh, Bag Filter, Stainless		
Floating Skimmer	Size	ϕ 60mm				Patent
	Allowed Fluid Height Difference	50mm (standard specification), handled separately if fluid height difference is big				
	Fixed area adj. height	100mm (standard specification), handled separately if height is big				
Filler		Porous Media				
Pump		Air Diaphragm (Single Pumping)		Air Diaphragm (Dual Pumping)		



**Head Office**  
**R&D Center**  
**Factory**

#1156, Dudong-ro, Dudong-myeon, Ulju-gun, Ulsan, Korea  
Postal(Zip) Code: 689-841  
Tel. 82-52-289-4035  
Fax. 82-288-4036(Sales), 289-4037(Purchase)

Home page: <http://www.kemtech.co.kr>  
Overseas sales: [aznspride@kemtech.co.kr](mailto:aznspride@kemtech.co.kr)

