

Global leader of high temperature
high pressure technology

**WE MAKE
YOUR IDEA
POSSIBLE**

ILSHINAUTOCLAVE

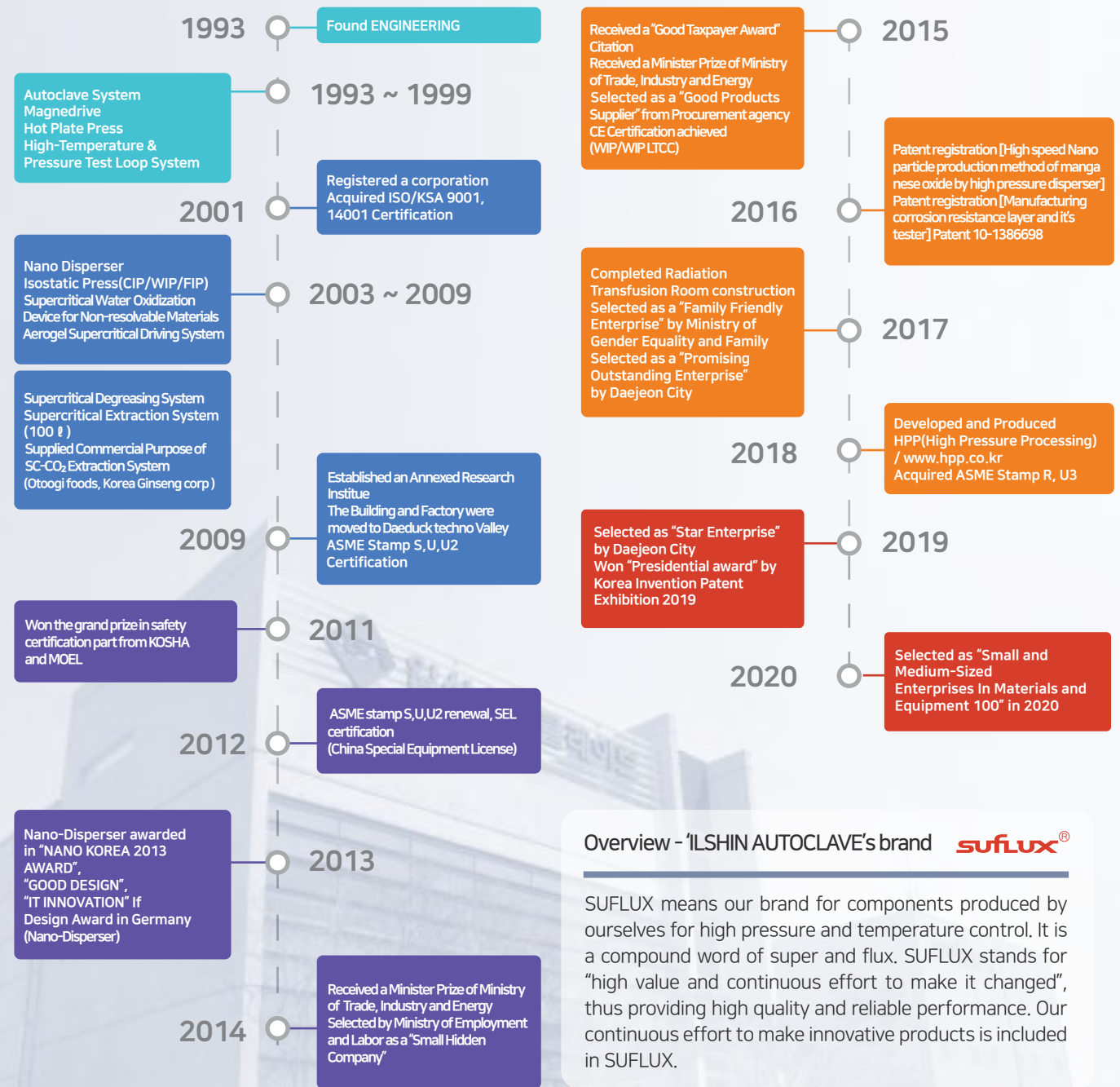


ILSHIN AUTOCLAVE

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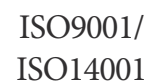
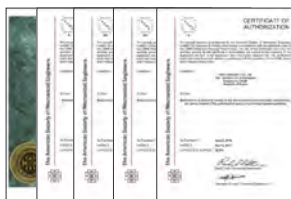
HISTORY



Overview - 'ILSHIN AUTOCLAVE's brand **suflux[®]**

SUFLUX means our brand for components produced by ourselves for high pressure and temperature control. It is a compound word of super and flux. SUFLUX stands for "high value and continuous effort to make it changed", thus providing high quality and reliable performance. Our continuous effort to make innovative products is included in SUFLUX.

CERTIFICATION



Pressure Vessel

ILSHIN AUTOCLAVE is providing many different size of pressure vessel. Depending on application and customer's requirement, it's available many different size with high pressure and temperature, optional devices.

FEATURE

- ① Pressure vessel based on ASME
- ② Optional gas line depending on required gas
- ③ Customized service

certification



Industrial scale & Customized pressure vessel



※ Consult with a staff in charge for applications

Reactor for reaction or special purpose

Wide range of material and optional close method for the use of environment in industries of chemical and pharmaceuticals, other.

Model	Method of Contract	Temperature	Pressure	Seal Type	Agitation
CV Series	Cap Closure Type	200 °C	100 bar	O-ring	X
BV Series	Bolt Closure Type	350 °C	300 bar	O-ring / Teflon / Metal	O / X
CVB Series	Cap Closure Bolt Type	200 °C	100 bar	Surface	X
VC Series	View Cell	100 °C	200 bar	Urethane / O-ring / Teflon	O / X

CV TYPE (Cap Closure Pressure Vessel)

- ① Easy to open and close cover
- ② Mainly small-sized, for chemical experiments

**CVB TYPE (Cap Closure Bolt Pressure Vessel)**

- ① Mainly for chemical experiments
- ② Easy assembly

**BV TYPE (Bolt Closure Pressure Vessel)**

- ① Basic type
- ② Sealed by bolts(screws)
- ③ Easy to make tubing and ports

**PCV TYPE (Plug Closure Pressure Vessel)**

- ① Metal plug and vessel sealed with cap or bolt
- ② Usable higher pressure and temperature due to non-sealing

**VC TYPE (View Cell Pressure Vessel)**

- ① View cell
- ② Usable at high pressure due to special glass

**PIV TYPE (Pin Closure Pressure Vessel)**

- ① Pin closure type
- ② Available max. up to 6,000 bar

**SV TYPE(Self Sealing Closure Pressure Vessel)**

- ① Self sealing type
- ② 350 ~ 600 bar capable

**TV TYPE (Cone Thread Tubing Type Pressure Vessel)**

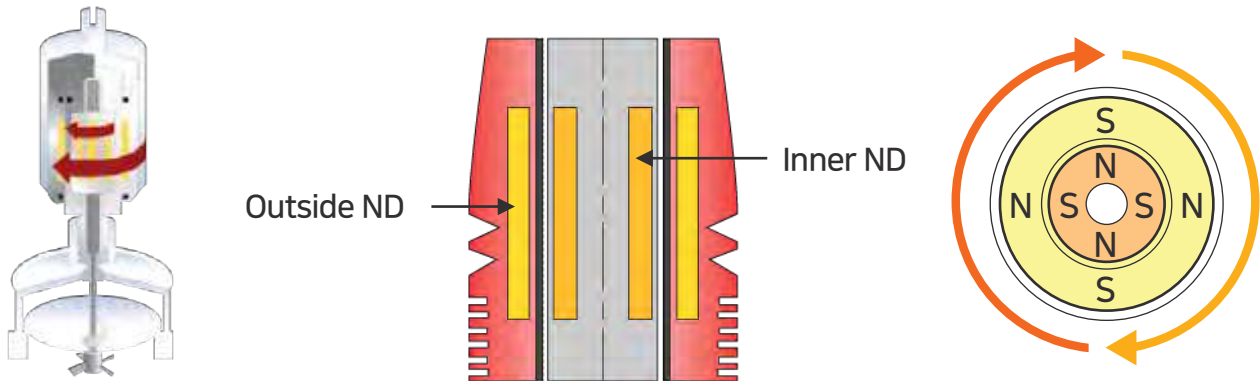
- ① Manufacturable volume 2~81ml
- ② For precise experiments



※ Consult with a staff in charge for applications

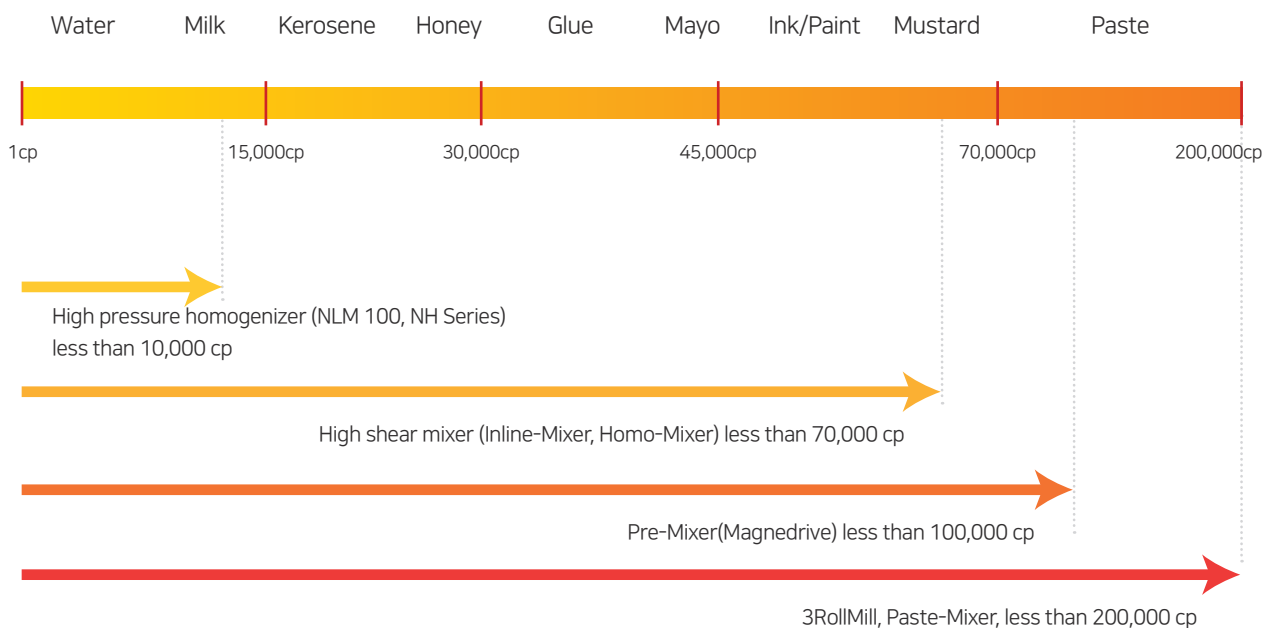
Agitator

ILSHIN AUTOCLAVE is providing many different size of pressure vessel. Depending on application and customer's requirement, it's available many different size with high pressure and temperature, optional devices.

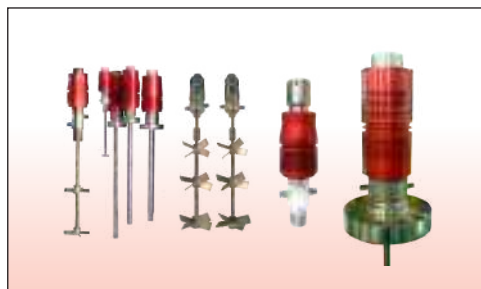


Series	Pressure	Shaft Dia	Type
MDB Series	1,000 ~ 8,000 psi	Φ 5~50	Thread / Flange Type
MDD Series	1,000 ~ 8,000 psi	Φ 5~50	Thread / Flange Type

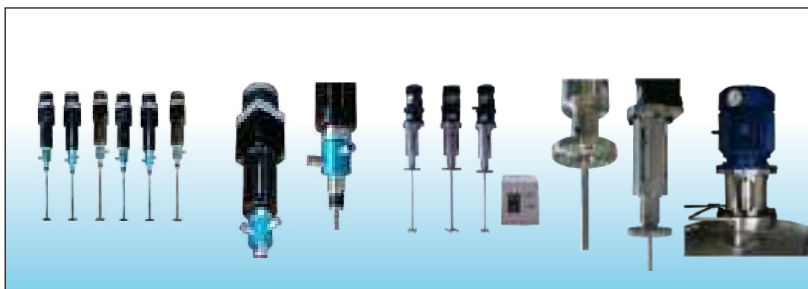
Range of Viscosity (Example)



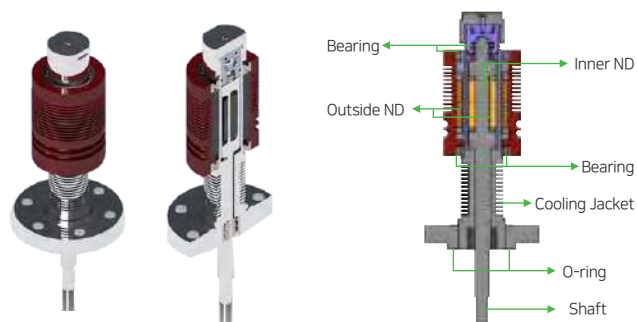
MDB Series



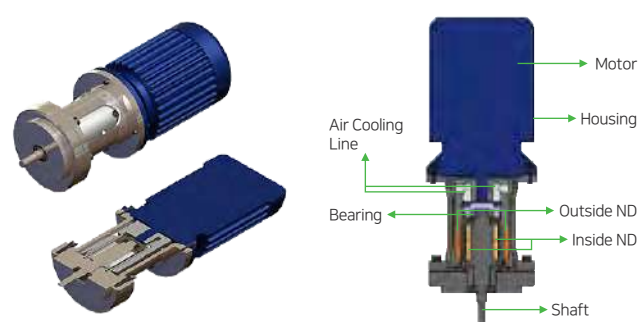
MDD Series



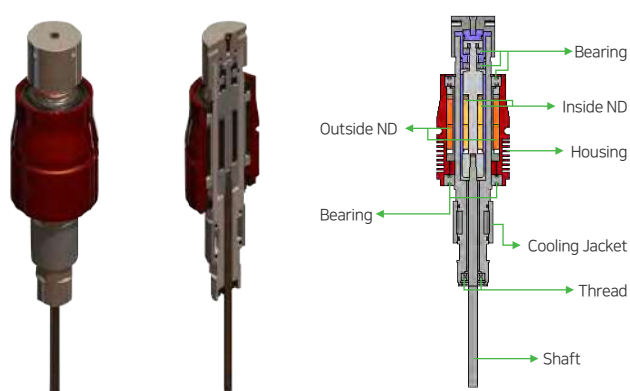
MDB - Flange Type



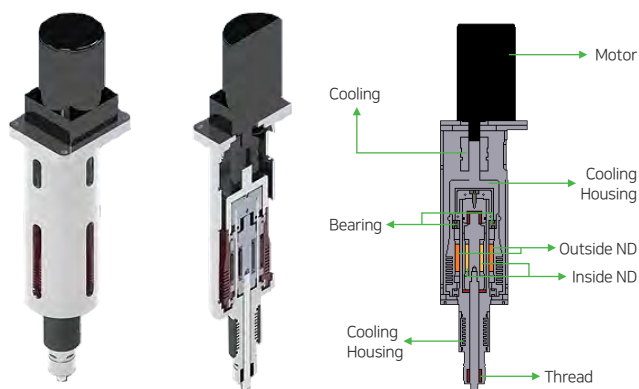
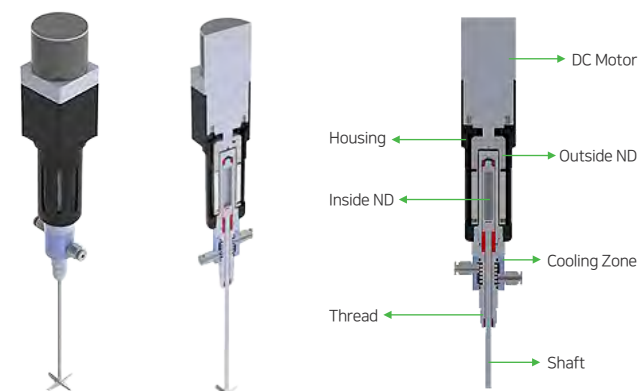
MDD - Flange Type



MDB - Thread Type

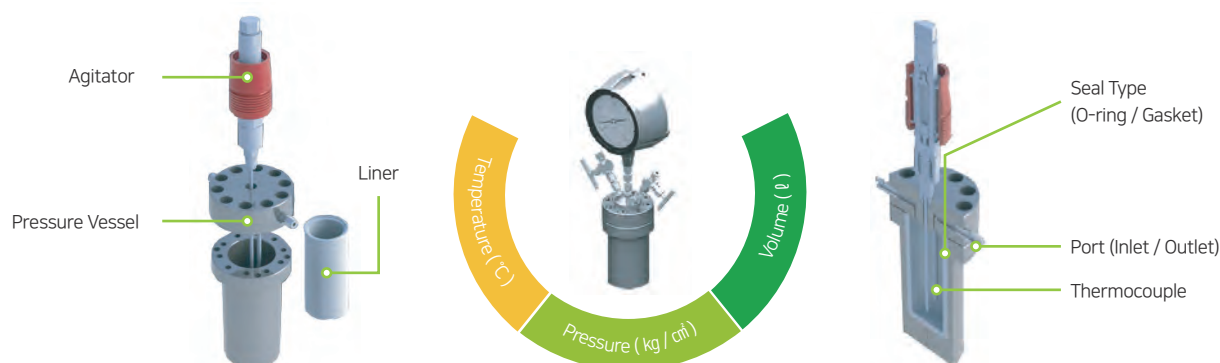


MDD - Thread Type



High Pressure Reactor

It has diverse applications which are hydrothermal and decomposition, sublimation, extraction in laboratory by high pressure and temperature with various optional device.



FEATURE

- ① Pressure vessel based on ASME
- ② Various size and pressure & temperature
- ③ Various optional device for easy maintenance
- Agitator, upload / lift system, etc...

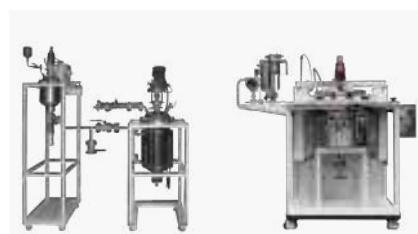
CERTIFICATION



Bench Type System



Multi-purpose System



Reaction System for Polymerization



Reaction System with Catalyst



Reaction System for Rheology Measurement



Reaction System for Hydride



Reaction System with Ultra
High Temperature & Pressure



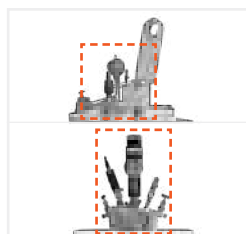
Reaction System with
Continuous Operation



Pilot plant and Mass-Production
Reactor

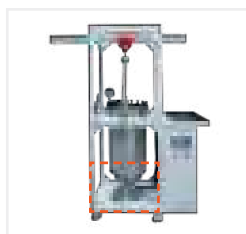
Guide of Option

Agitator



Belt type / Motor assemble
type

Heater option



Immersion heater



Ceramic band heater /
Mold heater



Jacket type



Insulated cover

Opening & closing



Clamp type



Electric hoist



Body cylinder



Ball screw



Pneumatic cylinder
for lifting cover

ETC



Touch screen with
USB port



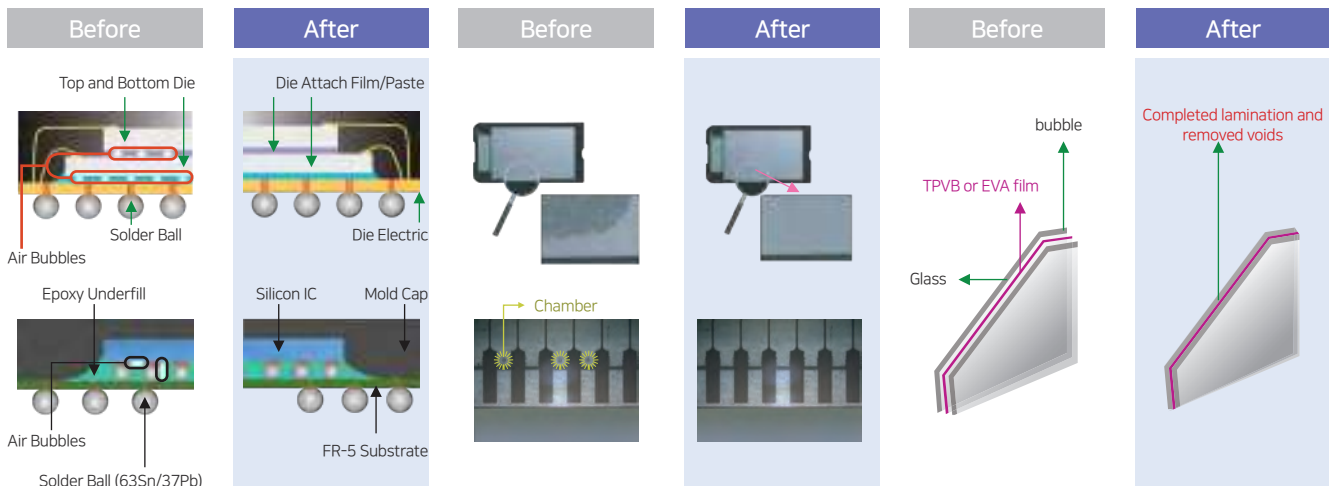
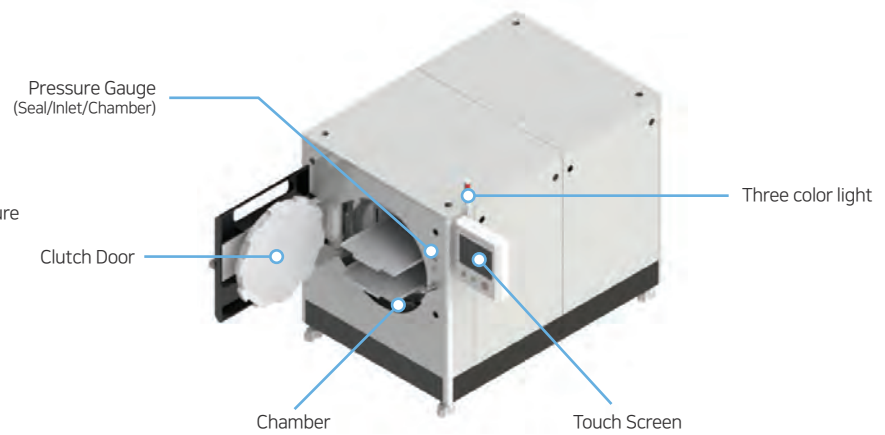
Cooling coil option

Pressure Oven

It has application for lamination and to remove voids both layers in industries of touch panel and LCD, PDP, Semi conductor

FEATURE

- ① Effect of removing voids by pressure and temperature
- ② Effect of hardness by temperature
- ③ Effect of adhesive strength by pressure



Touch panel screen, Film (FA)



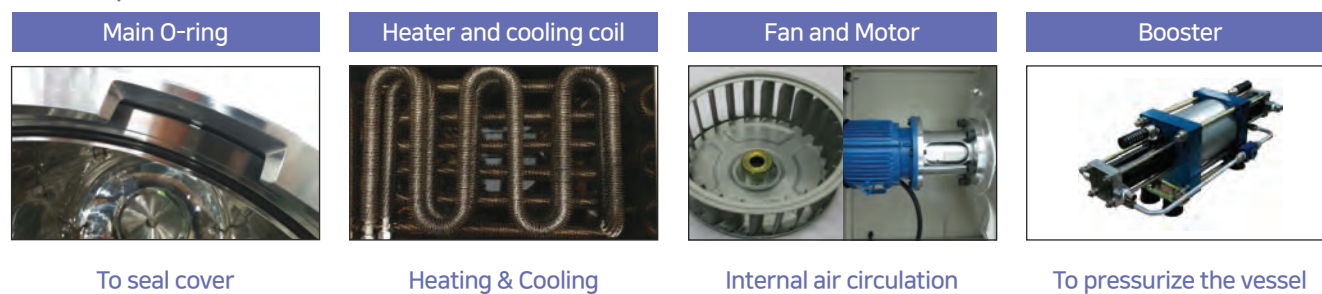
Glass (GA)



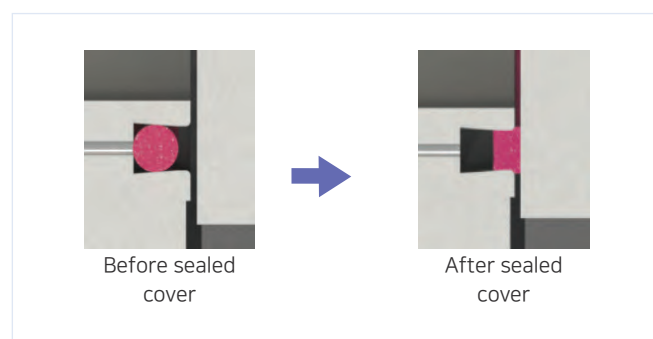
Semiconductor of package process (HA)



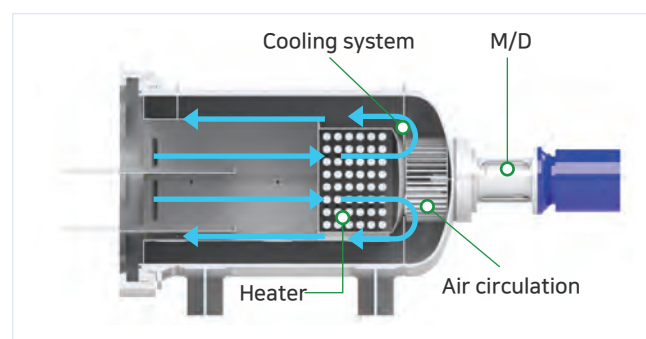
Part of System



Main O-ring



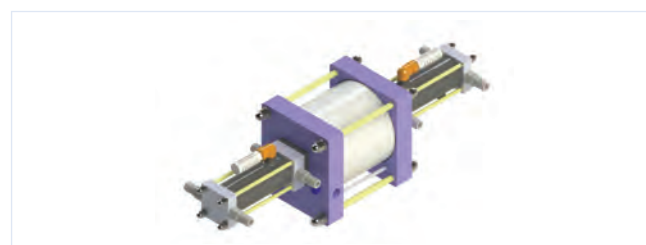
Internal air flow

Uniformity : $\pm 3^{\circ}\text{C}$

Award for safety

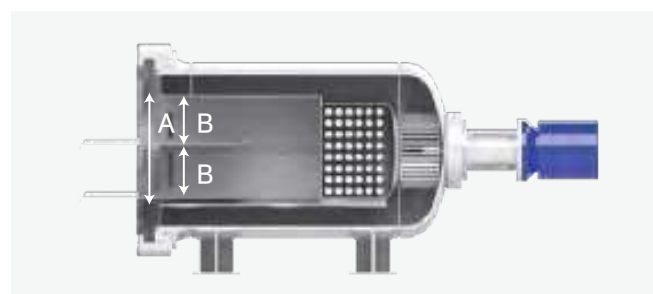


Booster



- 1 Compacted size
- 2 Reasonable price
- 3 Durability

CONSIDERATION TO ORDER



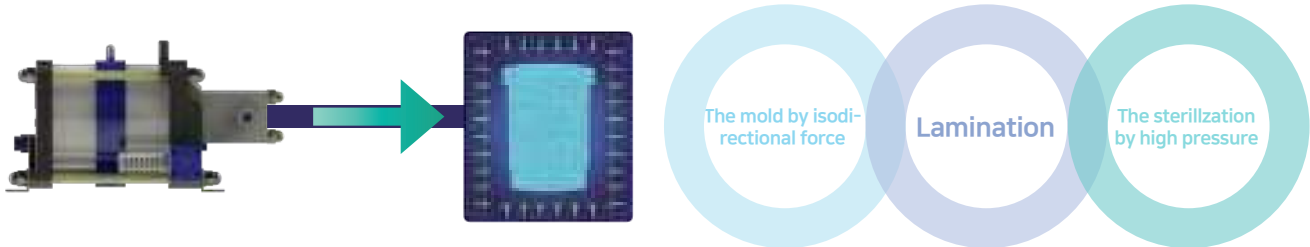
- 1 Size (A,B)
- 2 Pressure
- 3 Temperature
- 4 Cooling
- 5 Booster or Compressed air
- 6 Gas Media(Air or Gas)

Isostatic Press

It has the technology of isodirectional force with solvent liquid inside pressure vessel by high pressure.

There are applications of lamination in electronic industry and sterilization in food industry, etc...

It has many different high pressure depending on application of metal for mining process, electrical parts, food.



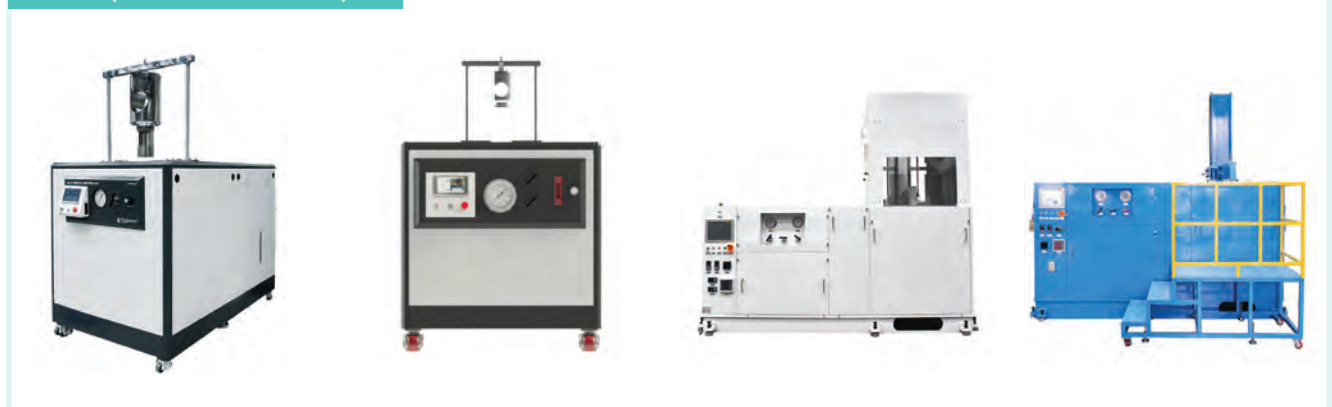
FEATURE

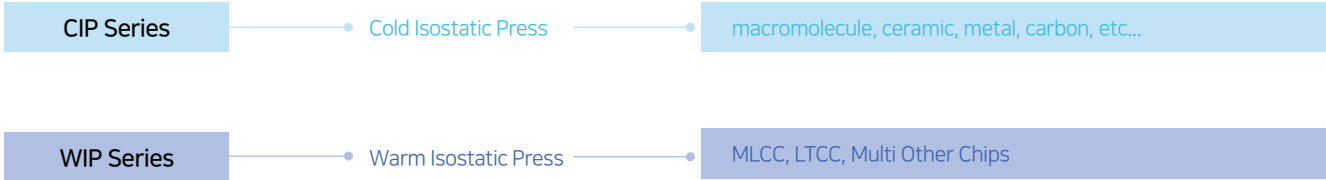
Engineering	Technology	Competitiveness	Convenience
<ol style="list-style-type: none"> 1 Customized system (Size, operating process) 	<ol style="list-style-type: none"> 1 Design according to ASME, SEL 2 Wire Winding 	<ol style="list-style-type: none"> 1 Reasonable price 2 Rapid response 	<ol style="list-style-type: none"> 1 Easy operation 2 Easy maintenance

CIP (Cold Isostatic Press)



WIP (Warm Isostatic Press)





C-Clamp Type

- 1 Pressure : ~1,000 bar
- 2 Temperature : RT ~ 80°C
- 3 Volume : ~ Custom
- 4 Air Driven Liquid Pump / Hydraulic Pump
- 5 O-ring / U-packing / Energizer Seal
- 6 CIP / WIP

Pin Closing Type

- 1 Pressure : ~ 4,000 bar & Custom
- 2 Temperature : RT ~ 120°C
- 3 Volume : ~ 100 l & Custom
- 4 Air Driven Pump / Hydraulic Pump
- 5 O-ring / U-packing
- 6 CIP / WIP / HPP

Yoker Frame Type

- 1 Pressure : ~ 6,000 bar
- 2 Temperature : ~ RT
- 3 Volume : ~ 550 l & Custom
- 4 Hydraulic Pump
- 5 O-ring Seal / U-packing / Energizer Seal
- 6 CIP / HPP (Wire Wounding)

Model	Pressure	Internal Diameter	Working Media	Temperature
CIP Series	~ 6,000 kg/cm ²	Custom	Oil/Water	RT
WIP Series	~ 2,000 kg/cm ²	Custom	Oil/Water	50 ~ 120°C

Hippo HPP High Pressure Processing

A technology used to compress products packaged at high pressure of 3,000 to 6,000 bar using water. In the safest and most efficient way to increase the shelf life of food, many food companies strive to introduce HPP technology to provide consumers with higher quality products.



FEATURE

Technology	Competitiveness	Advantage
<ol style="list-style-type: none"> 1 Design according to ASME, SEL 2 Wire winding technology and facilities combined 	<ol style="list-style-type: none"> 1 Reasonable price 2 Rapid response 	<ol style="list-style-type: none"> 1 Inactivate microbes / enzymes increase shelf life 2 Through a non-heat process maintenance of fresh quality 3 In finished product condition with sterilization treatment secondary pollution prevention 4 Flavor and aroma unique to raw materials nutrient retention 5 Through pressure control microbial activity inhibition 6 Short process time and simple enough to handle

Hippo HPP (High Pressure Processing)



Mini HIPPO
<0.5 l >



Small HIPPO
<20 l , 50 l >



Medium HIPPO
<100 l , 150 l >



Large HIPPO
<350 l , 450 l , 550 l >

Intensifier

1. The hydraulic piston consists of the driving part and the high pressure part. The hydraulic piston of the driving part is formed through straight back and forth motion, and the cross sectional ratio with the high pressure unit causes ultra high pressure.
2. Development of a self-sealing system with durability and reliability with an electric motor-driven hydraulic system.
3. Maximum service pressure 6,000 bar (600 Mpa), maximum pump discharge flow is implemented
4. Minimized application of noise and vibration phenomena due to pulsation phenomena
5. Affiliate business create your own company



Mini HiPPo

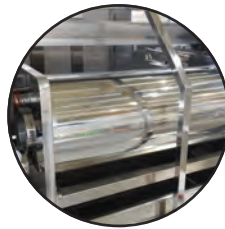
Volume	Inner Diameter	Length	Pressure	Temperature	Total Electric Power	Lay-Out	Weight
0.3 ℓ	54	150	6,000 bar (600MPa)	10~35℃	2kw	590*780*1,645	0.6 ton

Small HiPPo

Volume	Inner Diameter	Length	Pressure	Temperature	Pump	Cycle Time	Production Capacity	Required Air	Lay-Out	Weight
20 ℓ	160	1,000	6,000 bar (600MPa)	10~35℃	1intensifiers 1unit(30kw)	3minutes Holding 7~8/Hour	12L/Cycle	7 bar	5,000*1,950*1,700	8 ton
50 ℓ	200	1,600	6,000 bar (600MPa)	10~35℃	1intensifiers 1unit(50kw)	3minutes Holding 7~8/Hour	30L/Cycle	7 bar	5,800*2,450*2,000	15 ton



Touch Panel



Pressure Vessel



Basket

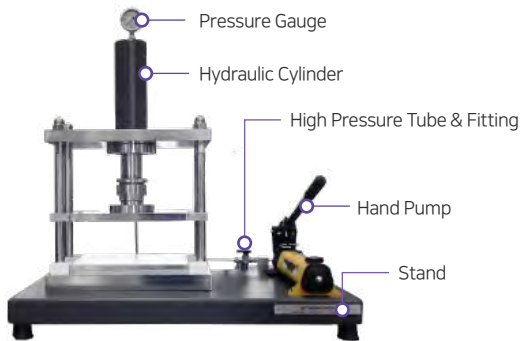
Large HiPPo

Volume	Inner Diameter	Length	Pressure	Temperature	Pump	Cycle Time	Production Capacity	Required Air	Lay-Out	Weight
100 ℓ	300	1,420	6,000 bar (600MPa)	10~35℃	2intensifiers 1unit(100kw)	3minutes Holding 7~8/Hour	65L/Cycle	7 bar	6,400*3,350*2,300	25 ton
150 ℓ	300	2,130	6,000 bar (600MPa)	10~35℃	2intensifiers 4intensifiers 1unit(150kw)	3minutes Holding 7~8/Hour	100L/Cycle	7 bar	6,600*3,350*2,400	30 ton
350 ℓ	380	3,090	6,000 bar (600MPa)	10~35℃	4intensifiers 6intensifiers 2unit(350kw)	3minutes Holding 7~8/Hour	230L/Cycle	7 bar	12,000*8,000*2,800	65 ton
450 ℓ	380	3,970	6,000 bar (600MPa)	10~35℃	8intensifiers 4unit(500kw)	3minutes Holding 7~8/Hour	315L/Cycle	7 bar	13,800*8,000*4,000	80 ton
550 ℓ	420	3,980	6,000 bar (600MPa)	10~35℃	8intensifiers 10intensifiers 4unit(600kw)	3minutes Holding 7~8/Hour	380L/Cycle	7 bar	15,000*8,000*5,000	100 ton

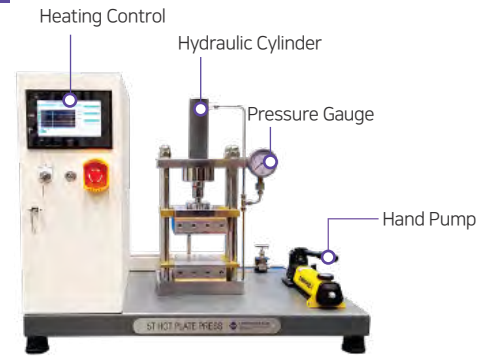
Hydraulic Press

Hydraulic Press can be processed materials into the desired shape by customer.
It is order-made machine.

WP



HP



FEATURE

Engineering

- ① Consulting for end-user's needs
- ② Customizing for end-user's requirement

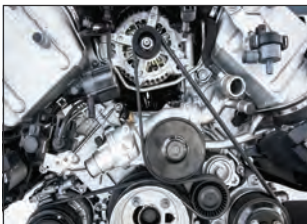
Competitiveness

- ① Meet customer's needs
- ② Rapid response
- ③ Established manufacturing system

Convenience

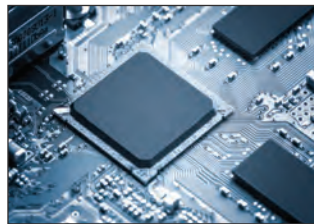
- ① Maintaining constant pressure
- ② Customized control system
- ③ Easy maintenance

APPLICATION



Metal Processing /
Industrial Parts Manufacturing

- Car component
- Metal
- SUS components
- Forced squeeze
- Bearings
- Forming powder metallurgy
- Punching



Electrical /
Electronic Components

- Circuit board pressing
- Electronic components assemble
- Functional films pressing/ forming



Inorganic Materials

- Dental artificial teeth assemble
- Pressing refractory
- Zirconia ball
- Silicon nitride components processing
- Ceramic powder forming / pressing
- Artificial biomaterial processing



Polymer Plastic Resin

- Polymer resin extrude
- Forming/manufacturing
- Sheet material manufacturing
- Pressed property experiment
- Functional multi layer film pressing
- Punching

WP (Work Plate Press)

Maximum 30 tons load



HP (Hot Plate Press)

Temperature processing added



Feature

- ① 1 ~ 30 ton
- ② Max 300°C
- ③ Hand pump (manual)
- ④ Hydraulic speed automatic valve (auto)

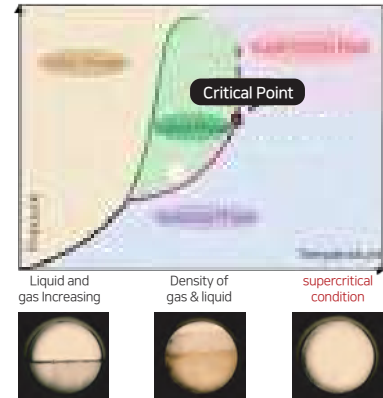
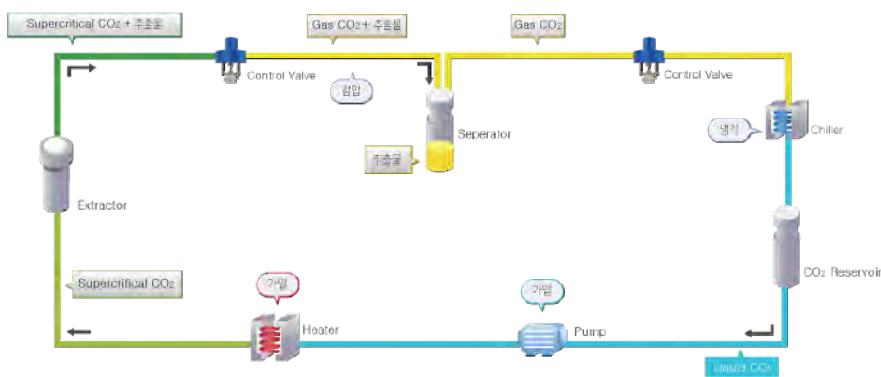
Accurate control

- ① Hand pump (manual)
- ② High precision (0.5%) pressure gauge

	Customized		Standard	
Model	Work Plate Press	Hot Plate Press	Work Plate Press	Hot Plate Press
Plate Size	Customized	Customized	200 X 200	200 X 200
Max.Load	~ 30 ton	~ 30 ton	5T / 15T	5T / 15T
Cylinder Type	Single Spring Return Type Multi Type	Single Spring Return Type Multi Type	Single Spring Return Type Multi Type	Single Spring Return Type Multi Type
Cylinder Stroke	Single 200mm Multi 200mm or more	Single 200mm Multi 200mm or more	Single 200mm Multi 200mm or more	Single 200mm Multi 200mm or more
Max. Pressure	~ 500kg/cm ²	~ 500kg/cm ²	~ 500kg/cm ²	~ 500kg/cm ²
Max. Temperature	-	~ 300°C	-	~ 300°C

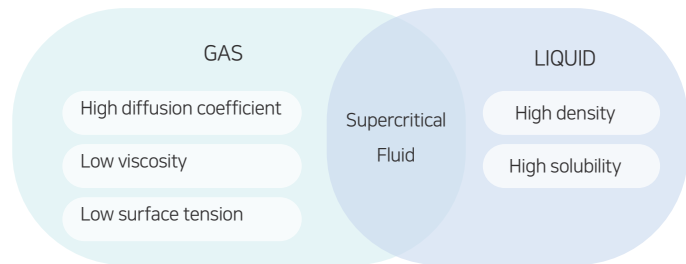
Supercritical Carbon Dioxide Fluid System

It has application of extraction and drying system by technology of supercritical point with carbon dioxide.



FEATURE

- ① Pressure vessel based on ASME
- ② Eco-friendly
- ③ For high quality production



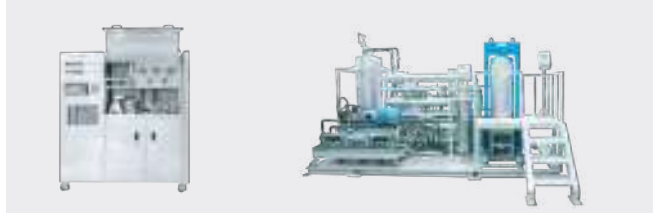
Supercritical extraction system



Supercritical degreasing system



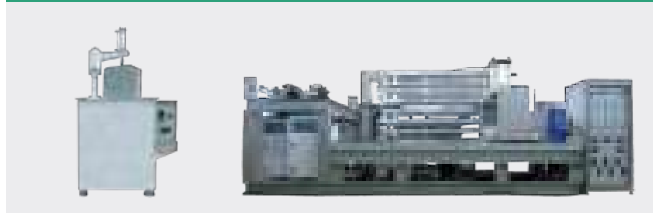
Supercritical drying system



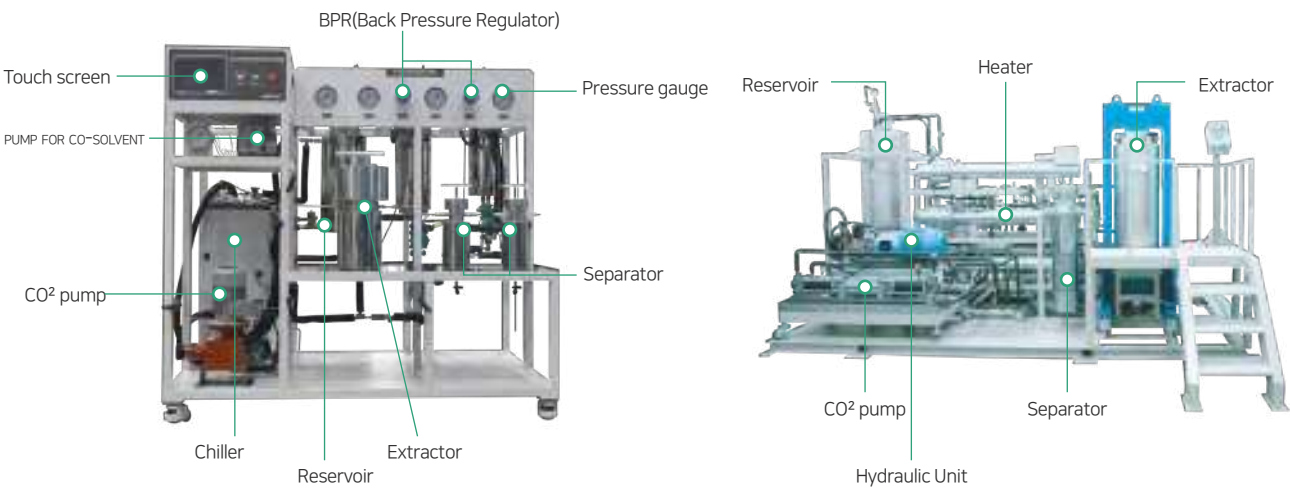
Supercritical making nano-particle system



Supercritical expansion system



Supercritical Fluid Extraction



[Scale]



[C-Clamp Type]



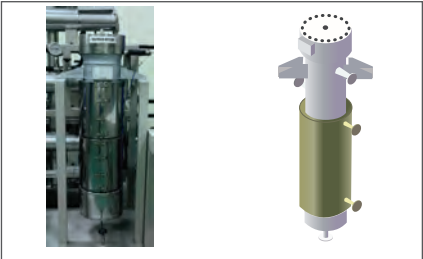
[Yoke Frame Type]

Extractor : Yoke frame / C-clamp type



- Main pressure vessel for extraction with supercritical condition
- Yoke, clamp close/open type
- Operated by hydraulic unit

Separator



- Process to break supercritical condition.
- To get extract yield

Reservoir



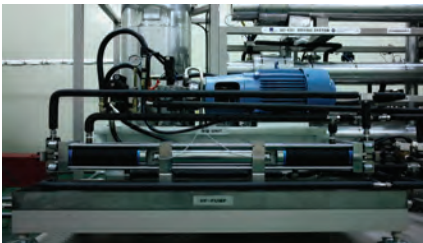
- For storage/recycle of CO₂ in liquid

Condenser



Cooling device to make CO₂ to liquid

High pressure pump



High pressure pump system of intensifier type by hydraulic unit

Pre heater



Heating device to make temperature for supercritical condition

Supercritical Carbon Dioxide Fluid System

Supercritical Fluid Extraction



To extract the sesame oil

Extractor : 2,300 ℓ X 3Units
Working Pressure : 450bar



To de-grease the pernicious ingredients and oil extraction

Extractor : 600 ℓ X 2Units
Working Pressure : 460 bar



Residual solvent removal

Extractor : 100 ℓ X 2 Units [horizontality]
Working Pressure : 250bar



Multipurpose extraction test production

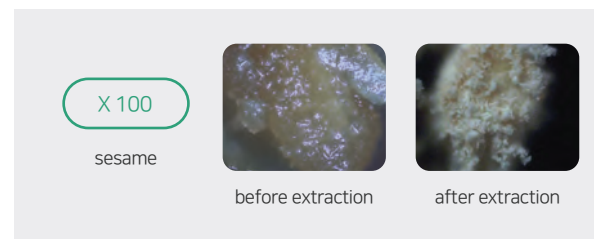
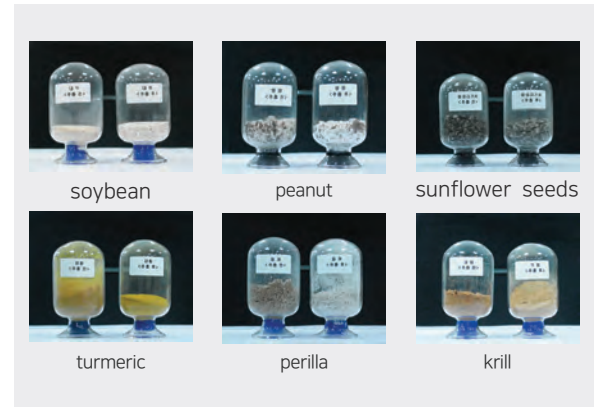
Extractor : 400 ℓ X 2 Units
Working Pressure : 700 bar

Volume	Max. Pressure	Max. Temperature	Raw Material Phase
0.3 ℓ	500bar	80°C	Solid & Liquid
0.5 ℓ			
1 ℓ			
2 ℓ			
5 ℓ			
10 ℓ			
20 ℓ			
50 ℓ			
Plant			

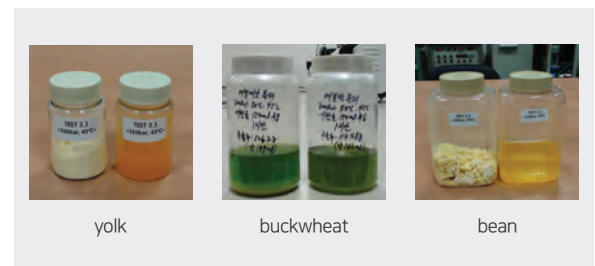
Test service

product	condition		extract yield
	pressure	temperature	
sesame	300 ~ 500bar	40 ~ 60℃	40%
corn germ seed			35%
soybean	300 ~ 450bar		15%
rape blossoms seeds			25%
sunflower seeds			34%
paprika	200 ~ 400bar	40 ~ 50℃	6%
castor	400 ~ 500bar	40 ~ 60℃	25%
grape seeds	300 ~ 500bar		8%
red pepper seed	400 ~ 500bar	50 ~ 60℃	20%
coffee	200 ~ 350bar	40 ~ 60℃	7%
green tea			cosolvents
iris	100 ~ 300bar	40 ~ 50℃	6%
medicinal herbs	200 ~ 350bar	40 ~ 60℃	cosolvents
rice bran	400 ~ 500bar	55 ~ 60℃	10%
Raspberry	300 ~ 400bar	50 ~ 60℃	15%
turmeric	350 ~ 400bar	55 ~ 60℃	10%
citron	200 ~ 350bar	45 ~ 50℃	incense component
yolk	300 ~ 400bar	40 ~ 60℃	30%
fish oil	150 ~ 200bar		deodorization
camellia oil	200 ~ 300bar		
bija	300 ~ 500bar	50 ~ 60℃	20%

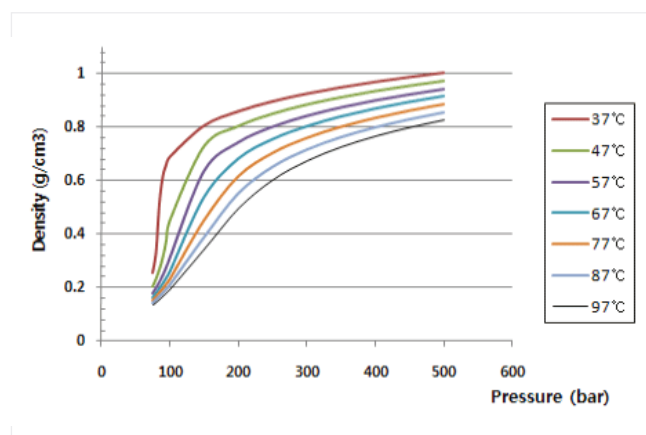
To extract oil



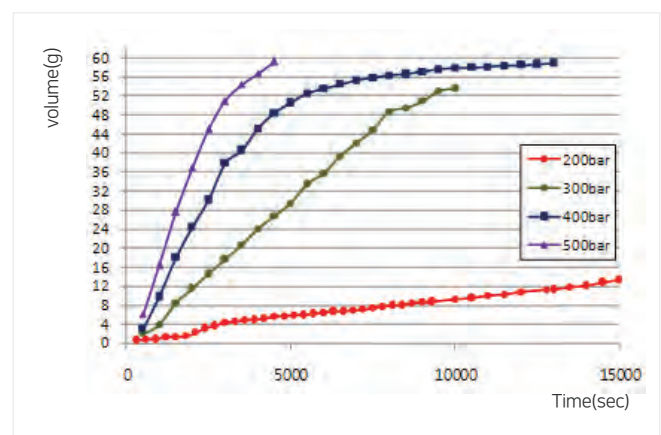
To extract element



The graph of density depending on pressure and temperature



The graph of extract speed depending on pressure



Supercritical Water

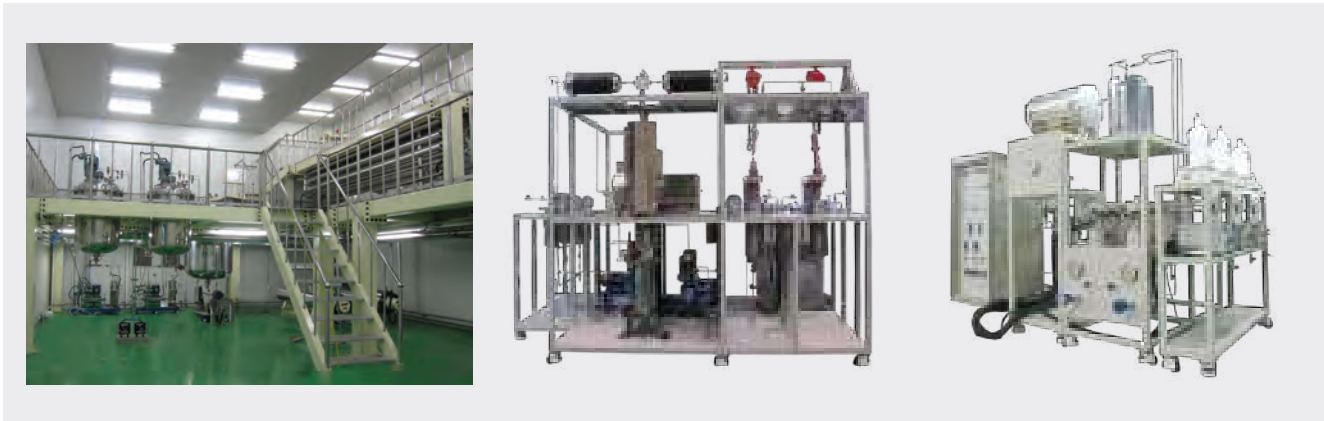
Supercritical fluid process with water for hydration / hydrothermal synthesis.

FEATURE

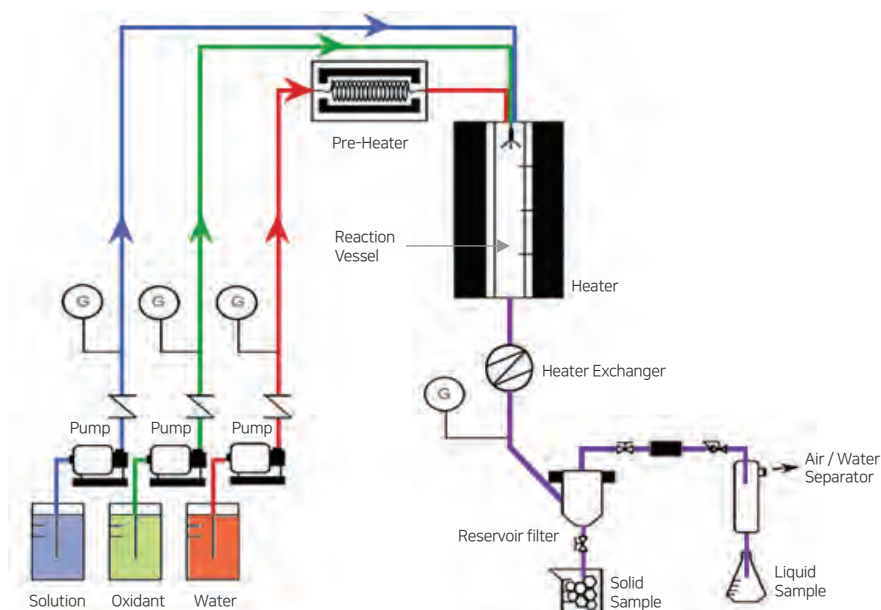
- ① Rapid reaction rate
- ② No pollutant
- ③ Complete oxidation
- ④ Readily precipitate / separate
- ⑤ Property change from critical point at above 374 degC , 221 bar
- ⑥ Excellent solvency

Supercritical water hydrothermal synthesis system

Production scale for chemical / materials



Supercritical water hydrothermal synthesis mimetic diagram



Supercritical water hydrothermal synthesis application

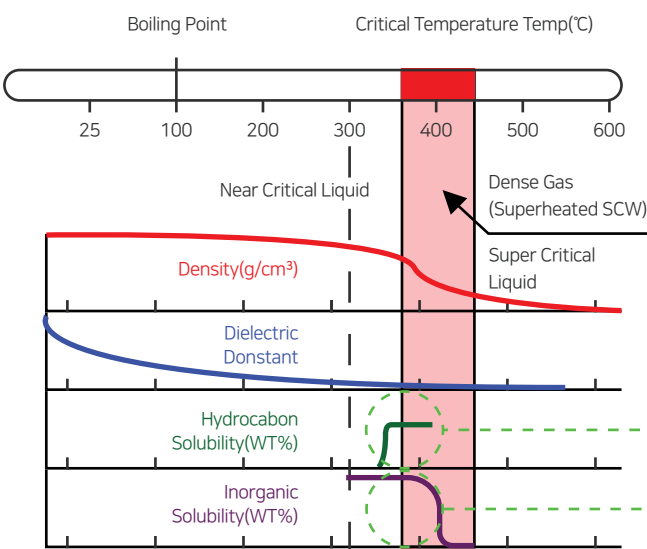
- ① an abradant(SiO_2 , TiO_2)
- ② cosmetics(ZnO , TiO_2)
- ③ catalyst(CeO_2)
- ④ jewelry(PE , Pd)
- ⑤ optical device
- ⑥ magnetism

Supercritical water oxidation

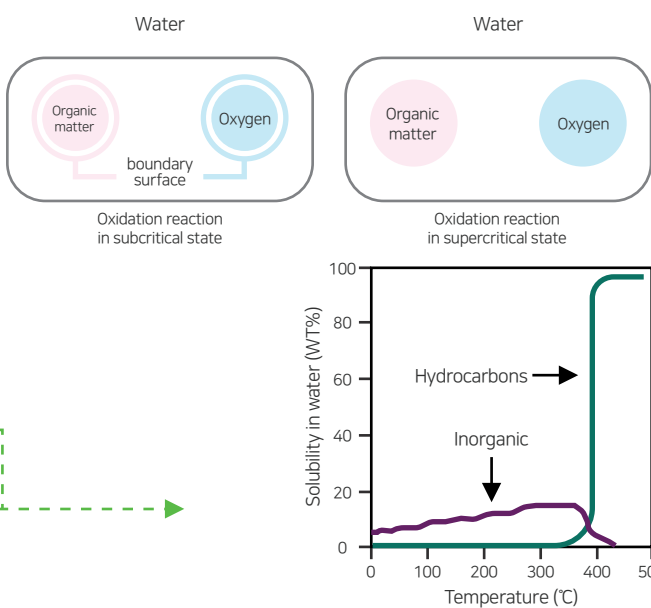
Decomposition application



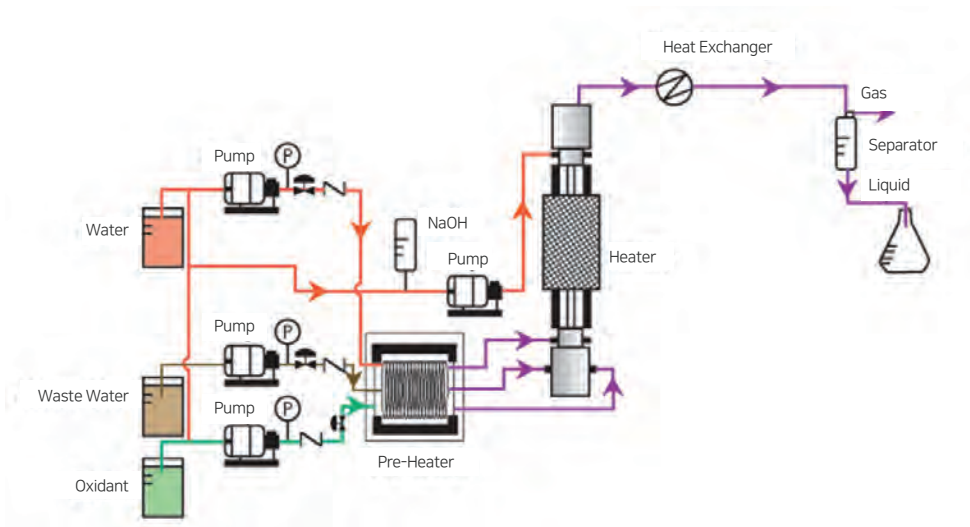
Physical Properties of Water by Temperature



Solubility Graph in Supercritical Water State



Supercritical water oxidation mimetic diagram



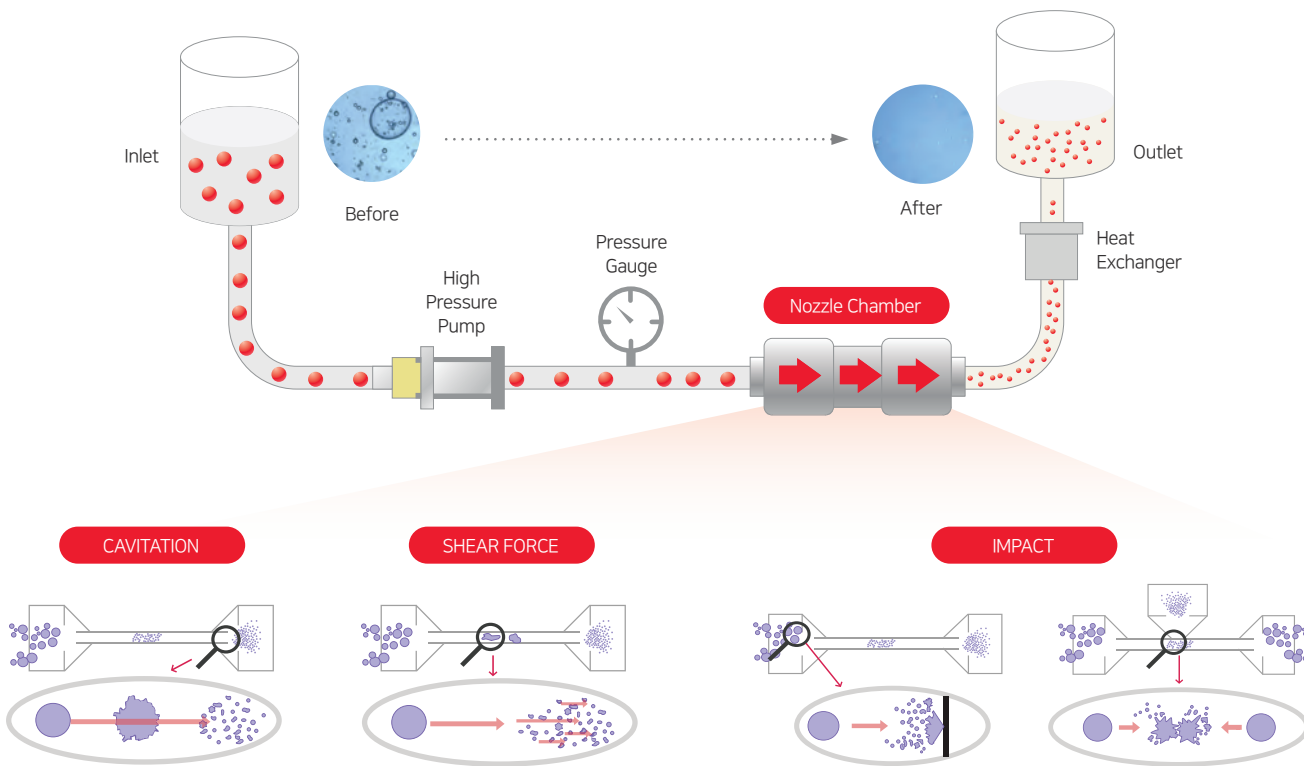
Supercritical water oxidation application

- 1 Non-degradable wastewater
- 2 Radiation waste
- 3 Chemical weapons waste
- 4 Pulp factory wastewater

High Pressure Homogenizer

Nano Dispenser make dispersion of particle passing through the nozzle chamber with ultra high pressure and there are force of impact, cavitation and share stress in the nozzle chamber.

It used in applications of chemical, food, cosmetics, petroleum and paints.



Particle Size Reduction

Emulsions
Suspensions
Liposomes

Nano-Encapsulation

Polymers
Liposomes
Emulsions

Cell Disruption

E-coil
Yeast

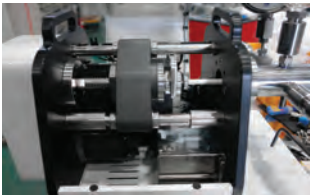
※ Consult with a staff in charge regarding various applications

Nano Disperser(NLM 100)

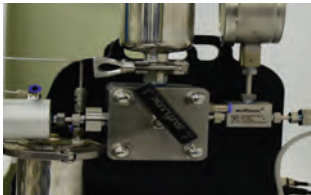


Operating	Max. 1,500bar
Flow Rate	Max. 100ml/min
Pump System	Motor Driven Type [220VAC, 1PH, 60 Hz, 1HP]
Inlet Reservoir	500ml
Dimension	583(D) x 576(W) x 435(H)mm
Weight	Approx. 45kg

Flow Rate	Max Pressure	Interaction Chamber	
		Size	Type
100ml/min	Max. 1,500bar	75um	Z Type



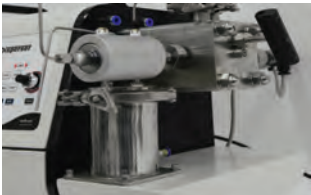
Motor driven and single piston



Air vent valve



Adjustable pressure by motor speed



Cooling tank after process

Nano Disperser(NH 500)



Operating	Max. 1,500bar
Flow Rate	Max. 500ml/min
Pump System	Hydraulic Unit System
Inlet Reservoir	2,000ml
Dimension	800(D) x 850(W) x 1,500(H)mm
Weight	Approx. 800kg

Flow Rate	Max Pressure	Interaction Chamber	
		Size	Type
500ml/min	Max. 1,500bar	100um	Z Type

*flow rate : water



Easy to remove clogging by back-flushing



Cooling system



Cases for safety



Pressure adjustable

High Pressure Homogenizer

Nano Disperser NH 2000, NH 4000, NH 8000



NH 2000



NH 8000



NH 4000



Nano-disperser special type

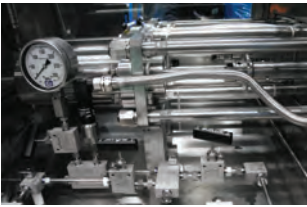
Series	Flow Rate	Max Pressure	Interaction Chamber	
			Size	Type
NH 2000	2,000 ml/min	1,500bar	100,400um	Z/Y Type
NH 4000	4,000 ml/min	1,500bar	100,400um	Z/Y Type
NH 8000	8,000 ml/min	1,500bar	100,400um	Z/Y Type



Cooling tank



Monitor and alarm System



Cooling line on high pressure part



Easy to remove clogging by back-flushing

Product	Effect
milk	dispersion
soybean milk	homogeneization
CNT	dispersion
water+oil	suavity
CERAMIC(Si)	dispersion
TiO ₃	crushed
graphite (carbon)	crushed
CeO ₃	dispersion
cosmetics raw materials	suavity
Pigment	dispersion
a high molecule substance	crushed
Al ₂ O ₃	dispersion

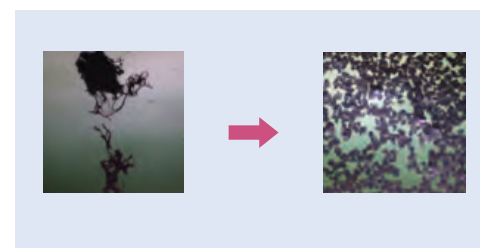
Emulsion



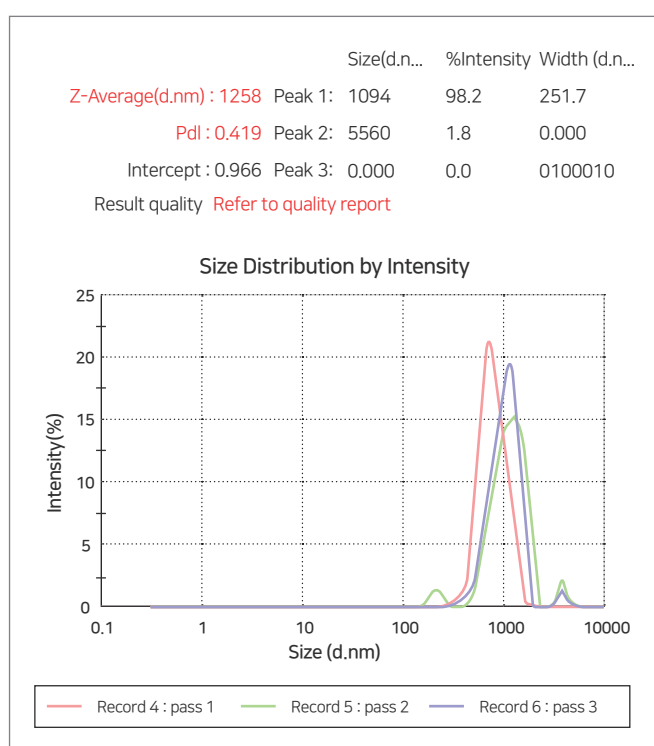
Rupture



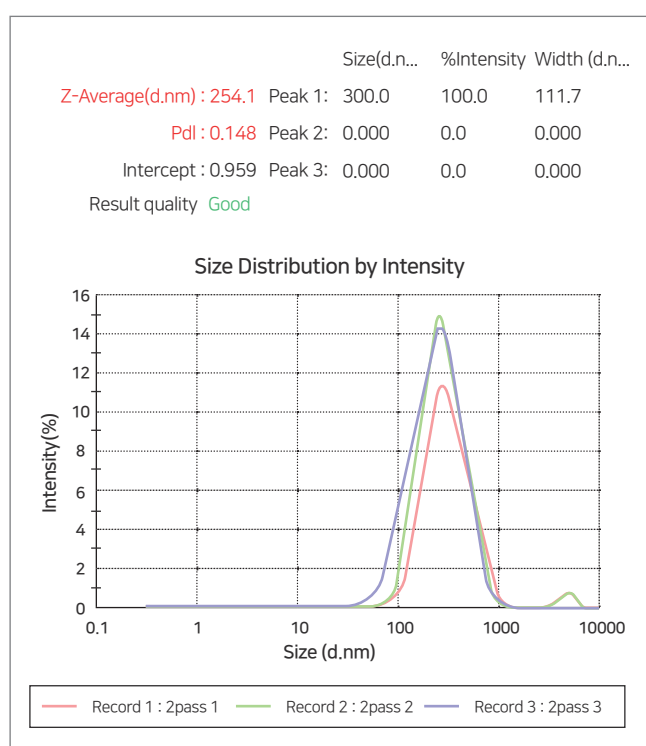
Dispersion



BEFORE

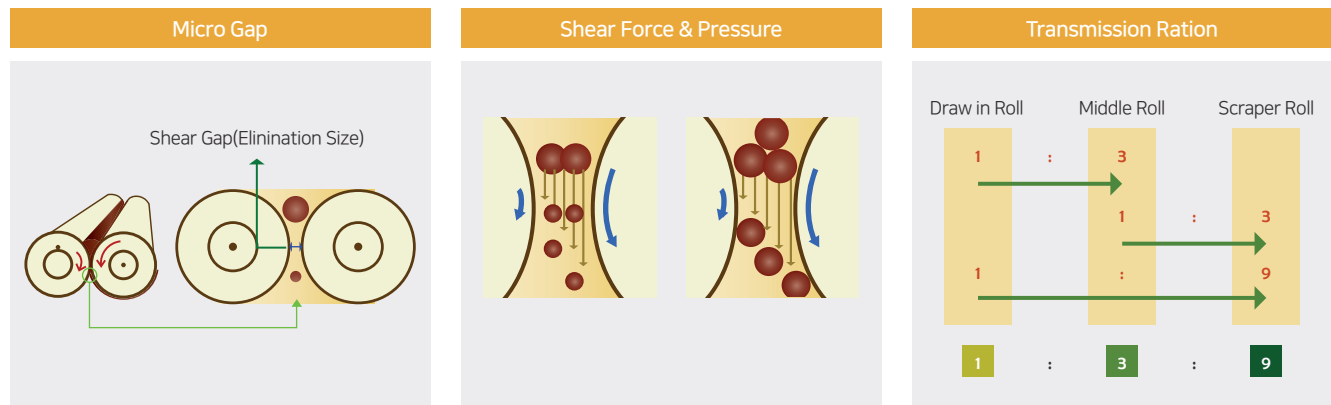
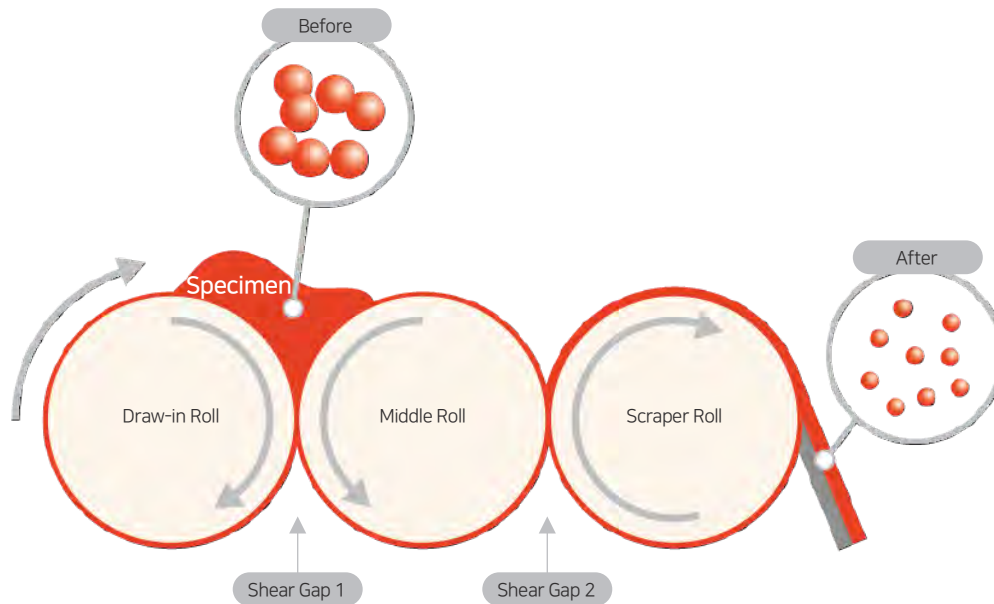


AFTER



Three Roll Mill

Three roll mill is a machine that uses shear force created by three horizontally positioned rolls rotating in opposite directions and different speeds relative to each other, in order to mix, refine, disperse or homogenize viscous materials fed into it.



FEATURE

- | | | |
|--------------------------|---------|---|
| ① Precise roll | ▶ ▶ ▶ ▶ | Minimized noise and vibration |
| ② Materials of roll | ▶ ▶ ▶ ▶ | Stainless steel / Ceramic / Alloy steel |
| ③ Heating/Cooling system | ▶ ▶ ▶ ▶ | Quick response |
| ④ Adjustable micro gap | ▶ ▶ ▶ ▶ | Easy to use |
| ⑤ Adjustable speed | ▶ ▶ ▶ ▶ | Cheap |

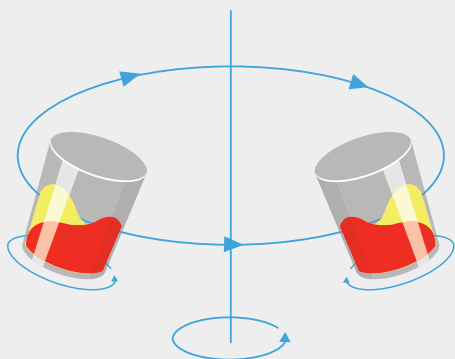


Specification

Model	TRM 50	TRM 80
Roll Size(mm)	Φ50 x 150	Φ80 x 250
Roll Speed(rpm)	Max 530 : 210 : 85	Max 600 : 200 : 67
Roll Ratio	1 : 2.5 : 6.25	1 : 3 : 9
Throughput (LPH)	0.2 ~ 6	0.5 ~ 12
Gap (Micron)	10um ~ 1mm	10um ~ 1mm
Size (W x D x H)	340 x 290 x 300	550 x 450 x 600
Weight (Kg)	20	65
Electrical Power	220V, 180W	220V, 750W

Paste Mixer

Paste mixer is used for mixing wide range of viscosity without agitator and it has high speed of rotation and orbital as same time which it make good a result of homogenization and mixing.



High speed of rotation and orbital makes high acceleration of gravity and it make good result of mixing in a short time.



FEATURE

- ① Wide range of viscosity
- ② No agitator
- ③ Compacted size
- ④ Easy control system and operation
- ⑤ Mounted electronic scale(optional)


Lab Scale



Comparing with agitator and paste mixer


EPOXY RESIN + CaCO₃ Particle

Agitator




1,000rpm
30sec


Paste Mixer



Grease 49g : PAINT 1g

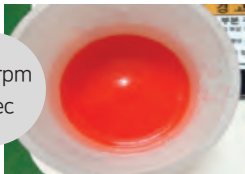


Agitator



1,000rpm
30sec

Paste Mixer



Agitator



1,000rpm
30sec

Paste Mixer



EPOXY RESIN + CALCIUM CARBONATE



Agitator

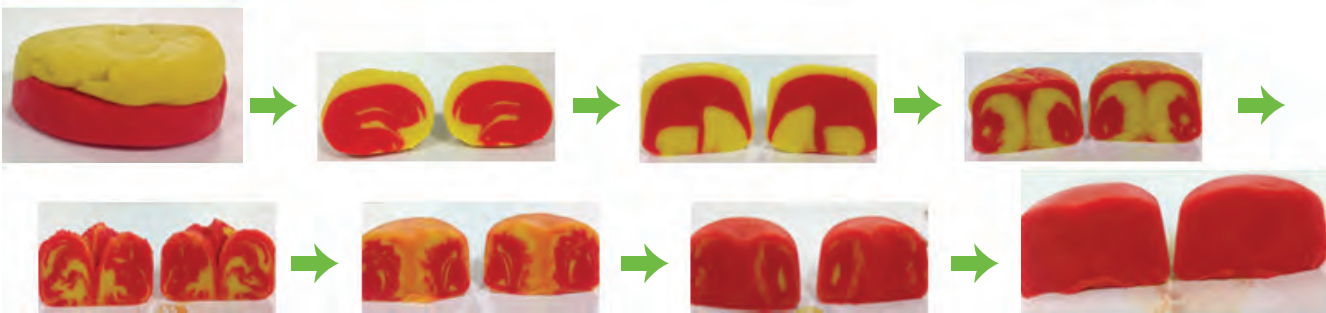


1,000rpm
30sec

Paste Mixer



SAMPLE TEST



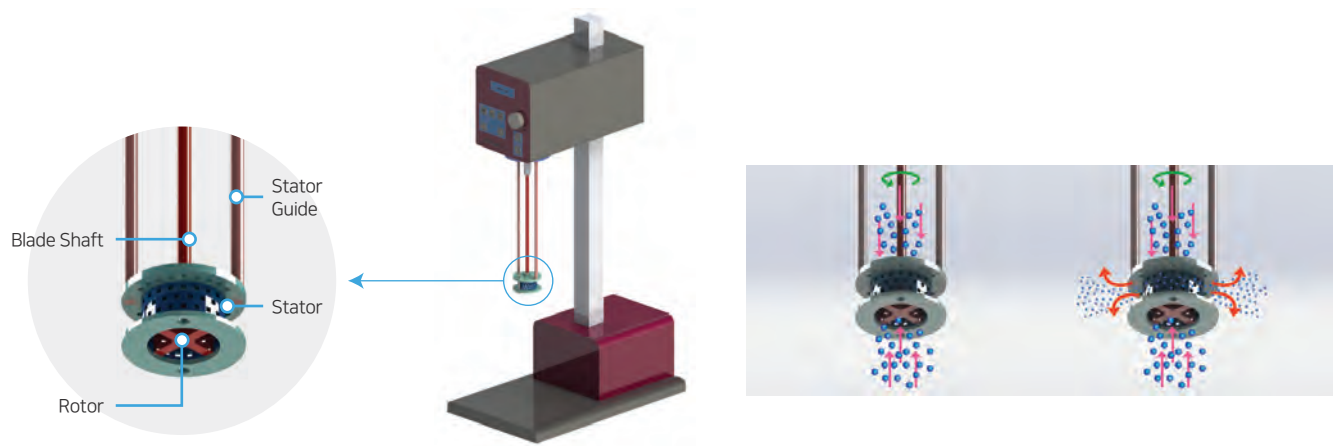
Specification

	PM-370D	PM-500D
Mixing Volume	370ml x 2Bottles	500ml x 2Bottles
Acceleration of gravity(G)	136	150
Orbital speed rpm	Max 500	
Rotation speed rpm	Max 1,000	
Time Setting	0sec ~ 99min	
Weight(kg)	25	30
Dimension(W x D x H)	320 x 412 x 135	460 x 525 x 520
Operating Conditions	5~35°C, 35~85% RH (Without Condensationals)	
Power Supply	220V AC, 1-Phase, 50/60 Hz	
Safety Interlocks	Door / Vibration / Rotation Sensor, Emergency Stop Switch	

High Shear Mixer

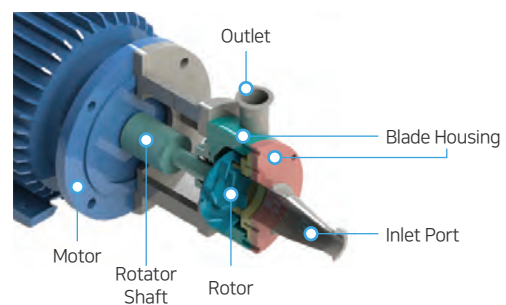
High Shear Homo-Mixer

High shear homo-mixer is driven by high speed motor(Max. 8,000rpm) and it's a specially designed nozzle and this precision machined nozzle offers great versatility by allowing and machine to perform a wide range of mixing operation.

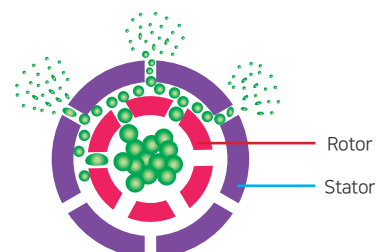
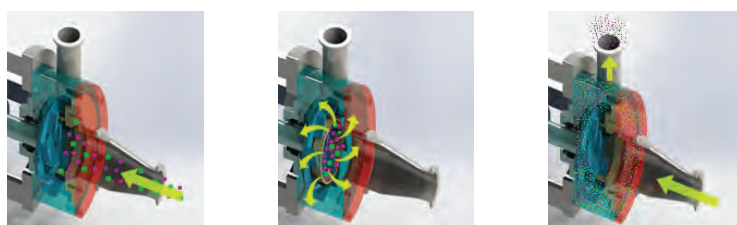


High Shear Inline Mixer

Depending on customer's application, it's providing diverse system.



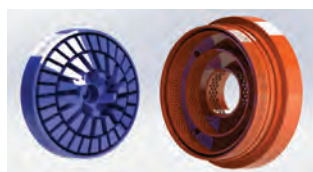
FLOW DIRECTION



Super High Shear Inline Mixer

Ultra high shear nozzle makes highest shear force and highest cavitation by consisting multi-stage nozzle.

Type



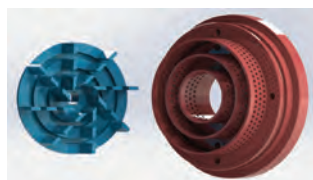
Combination Type

precise stator as fineness holes
suitable for emulsion application



Chamber Type

arched rotator and stator
suitable for emulsion/homogenization/dispersion



Nozzle Type

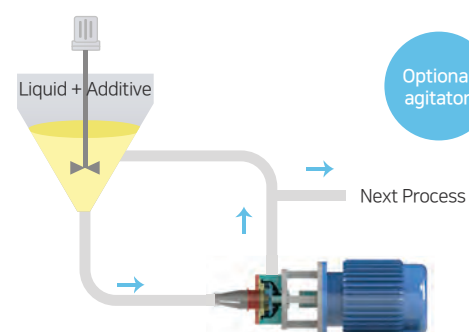
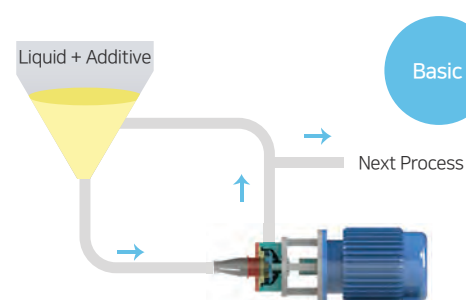
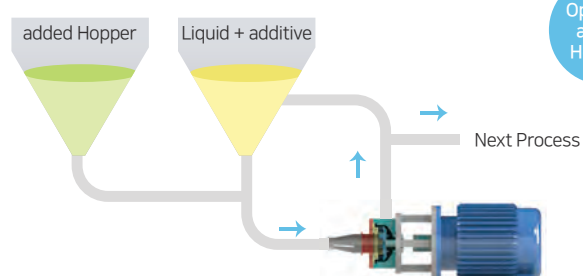
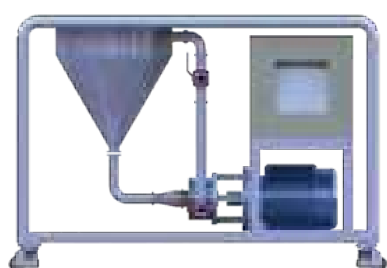
precise stator as fineness holes
suitable for emulsion application



Cone Type

cylindrical shape of rotator
suitable for emulsion/homogenization/dispersion

System type





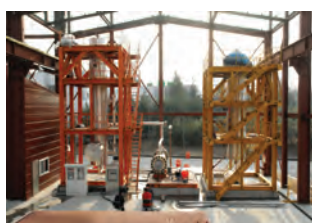
Supercritical CO₂ Extraction System

- Year/Month : 2006/06
- Client : OTTUGI
- Purpose : Sesame Oil Extraction
- Spec : 400bar, 80°C



Supercritical Hydrothermal Synthesis System

- Year/Month : 2009/10
- Client : LG CHEMICAL
- Purpose : Nano Powder Production
- Spec : 400bar, 450°C



Pressure Vessel

- Year/Month : 2012/10
- Client : KIMM
- Purpose : Performance Test Loop System
- Spec : 160bar, 345°C



Control Element Drive Mechanism (CEDM)

- Year/Month : 2008/10
- Client : DOOSAN
- Purpose : Performance Test Loop System
- Spec : 160bar, 345°C



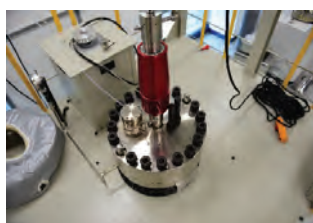
Hydrogenation Catalyst Process System

- Year/Month : 2013/01
- Client : NEUROPID
- Purpose : High Added-Value Powder Production
- Spec : 200bar, 80°C



Hydrothermal Carbonization Process System

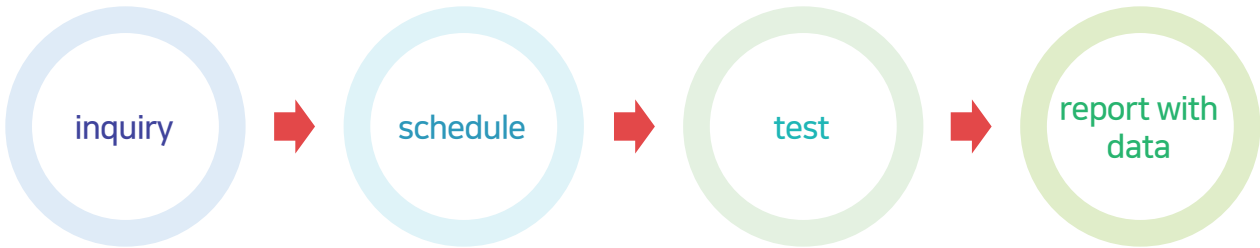
- Year/Month : 2014/05
- Client : S Chemical company
- Purpose : High Temperature Carbonization
- Spec : 100bar, 260°C



Hydrothermal Synthesis Synthetic Resins System

- Year/Month : 2015/01
- Client : SOGANG UNIVERSITY
- Purpose : Synthesis Synthetic Resin
- Spec : 100bar, 260°C

In order to make requirement and satisfaction to customers, engineers in R&D team are providing the test service always.



Supercritical Carbon Dioxide Extraction System



Extractor	500bar/80°C (300ml)
Seperator 1,2	100bar / 80°C
CO ₂ Flow Rate	70ml / min
Co-Solvent Flow Rate	Max. 24 ml /min

- 1 Oil and fat component extraction
- 2 Effective component separation
- 3 Supercritical Schaumbildung / drying / grease removing

Isostatic Press



Max. Operating Pressure	6000bar
Temperature	RT ~ 80°C
Max. Flow Rate	I,D 50mm X I.L.200mm
Volume	300ml

- 1 Resizing Process
- 2 Laminated molding
- 3 High pressure food processing process

High Pressure Reactor



Max. Operating Pressure	200bar
Temperature	230°C
Size(Volume)	I,D 60mm X I.L 170 mm
Type	Stirred Type

- 1 Hydrothermal synthesis
- 2 Reaction process
- 3 Chemical reaction



High Pressure Homogenizer (Nano Disperser)

Max. Operating Pressure	1,500bar
Max. Flow Rate	100ml / min
Pump System	Motor Driven Type

- 1 Wet Corrosion Dispersion
- 2 Emulsion



Three Roll Mill

Max. Operating Pressure	Φ50 X 150L
Power	220VAC
Roller Materials	Alumina, Stainless Steel
Ratio	3.6 : 1.8 :1

- 1 Particle dispersion
- 2 Dispersion and mixing



Paste Mixer

Capacity	700g X 2cup
Rotation	Rotation 2,000rpm / Revolution 1,000rpm
Cup Volume	500ml
Power	220VAC, 300W

- 1 High viscosity material Mixing
- 2 Agitation and Defoamation



Inline Mixer

Hopper Capacity	40 ℓ
Flow Rate	4,000 ℓ / hr(3,500rpm)
Motor	5HP(최대 3,500rpm)

- 1 Mixing and Emulsion
- 2 Dispersion and Homogenization
- 3 Agitation

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