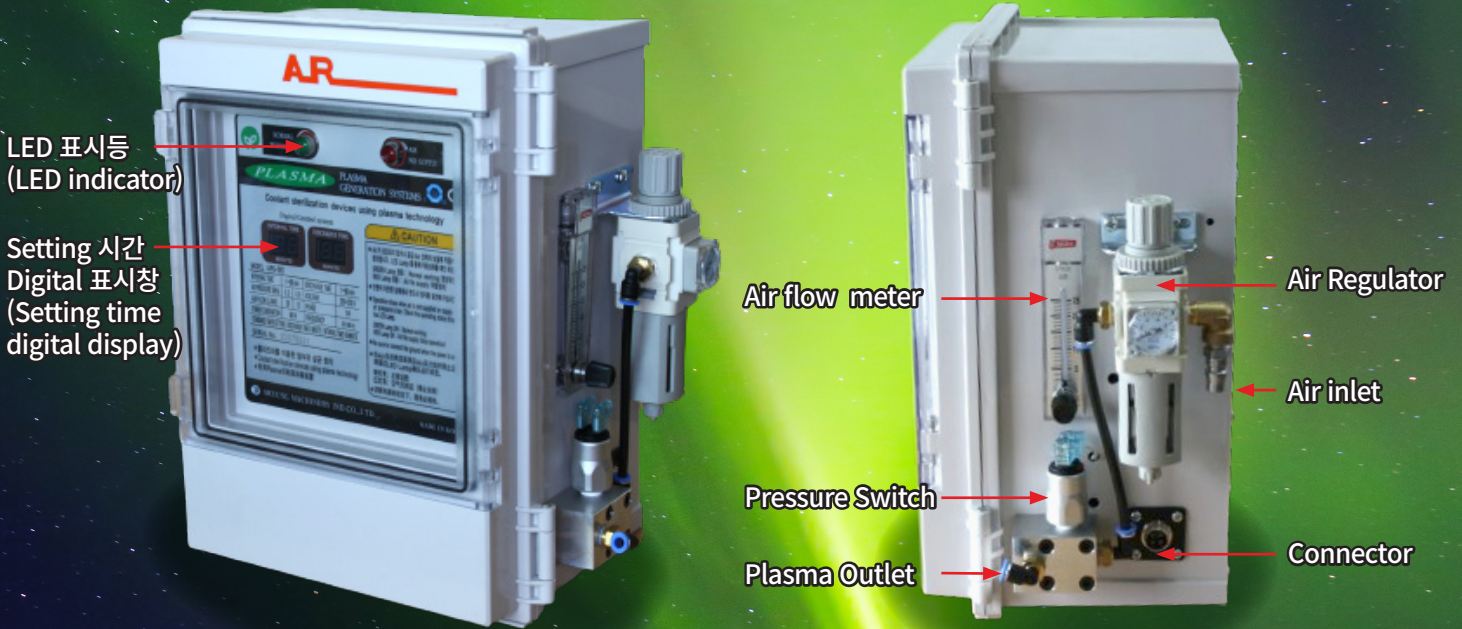


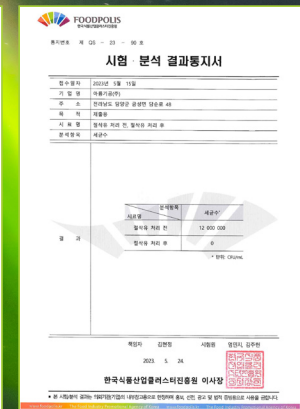
Since '1976

NEW

Plasma coolant sterilization devices!
저온 플라즈마를 이용한 절삭유 살균장치



특허, 인증 및 공인성적서
 (Patents, certifications and official reports)



Plasma coolant sterilization device

◆ Plasma를 이용한 절삭유 부패방지 기술

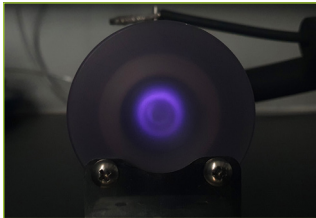
공작기계에서 사용하는 절삭유에 플라즈마 방전을 통해 생성되는 다양한 활성 라디칼(오존, 과산화 수소, OH등)과 미세버블을 활용해 스킨기만 해도 살균함으로써 절삭유 부패를 방지 또는 지연시키는 기술

◆ Plasma의 주요성능 및 특징

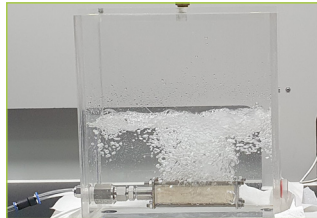
- 안전적으로 장시간 플라즈마 발생이 가능하여 미생물 살균 능력 확보
- 부패 원인균의 살균능력 99.9%, 유기물 제거능력 90%이상
- 청정 절삭유에서 사용하여 장기간(약2년) 청정원형 유지
- 가공공장 내 악취제거 효과
- 절삭유 살균 처리시 버블러를 이용하여 처리 효율을 높임
- 저전력으로 고농도 활성 라디칼을 생성하여 살균효과 극대화
- 플라즈마 발생기의 전극 구조 단순화로 제품 소형화 실현
- Compact한 디자인으로 스탠드, 벽걸이용으로 설치 가능

◆ 절삭유 부패방지 장치의 주요 구성품

plasma를 이용한 절삭유 부패방지 장치의 주요 구성품은 plasma generator, power supply, micro-bubbler, air flow meter, sedimenter, controller 및 safety device로 구성됨



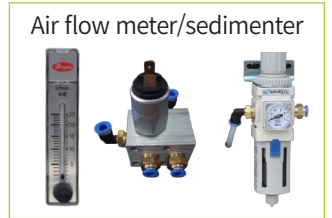
Plasma Generator



Micro Bubbler



Power Supply



Accessories

◆ Water-soluble coolant sterilization device using plasma technology

A device prevents or delays the spoil of water-soluble coolant by sterilizing spoilage bacteria by simply rubbing it by using active radicals(ozone, hydrogen peroxide, OH, etc.) generated through plasma dielectric barrier discharge and fine bubbles

◆ Plasma's main performance and characteristics

- Securing the ability to sterilize spoilage bacteria by safely generating plasma for a long time
- 99.9% sterilization ability of decay-causing bacteria, 90% or more organic matter removal ability
- Clean coolant water maintains its shape for a long time (About 2years)
- Odor removal effect in the machine tool plant.
- When coolant water is sterilized, a bubbler is used to increase treatment efficiency
- Maximizes sterilization effect by generating high-concentration active radicals with low power
- Realization of product miniaturization by simplifying the electrode structure of the plasma generator
- Compact design allows installation as a stand or wall mount

◆ The main components of the coolant sterilization device

The main components of the coolant sterilization device consist of plasma generator, power supply, microbubbler, air flow meter, sedimenter, controller and safety device.

◆ 실사용의 예 및 경제적 효과 / Examples and economic effects of practical use

▶ Examples of practical use

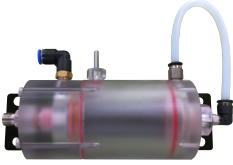


▶ Economic effects


- 절삭유 구입비용 (아롱 MCT8대, CNC6대)
/ Coolant purchase cost (Aryung 8MCTs,6CNCs)
: ₩ 4,850 / liter, 240liter/moth, ₩ 14,000,000/year cost of use
- 폐절삭유 폐기 비용 / Waste coolant disposal costs
: ₩ 70,000/drum(200kg), ₩ 350,000/ton
- Example of ARYUNG) Dispose 10ton/year, ₩ 3,500,000/year
- 경험적 자료(아롱) / Experiential data (ARYUNG)
: 절삭유 금액 50% 정도 절감과 폐수 처리비용 60% 정도 절감효과 (₩ 9,100,000/년)
- 50% reduction in coolant cost and 60% reduction in coolant disposal costs (total ₩ 9,100,000/year)
- 공구 구입비 절감 / Reduce tool purchasing costs
: 공구 사용시간 증가 / Increased tool usage time
- 부가효과 / Additional effect
: 절삭유 교체 횟수, 교체시 작업중단, 가공품질 영향, 청소시간 단축
- Reducing the no. of coolant changes and cleaning time
- Reduction in work stoppage due to replacement/cleaning
- Improved processing quality

◆ 설치요령(How to install Plasma sterilization device)


Plasma-generator
(APG-001)



Power-supply
(60W)




Air-regulator
gas in (air 3~5bar)
(공장에어 이용 /
Use of factory air)




Standard setting	압력 Pressure (bar)	유량 Flow rate (L/min)
No. 1	3	20
No. 2	5	15


Air-flow meter
(Maximum 25L/min)




안전장치(safety device)
: 가스공급이 안되면 전원차단 /
Power off when gas supply
is not available




Controller timer setting
(2분 가동 / 5분 휴지)
(2minutes on / 5minutes stop)



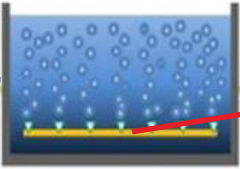
Connector cable




Teflon hose



Coolant tank



Bubbler(30~50µm)



오존주입 및 접촉시설
Ozone injection
and contact facilities

◆ 가동요령(How to operation)

<사용조건에 따른 가동방법과 버블러 수 기준 /

Operation method and number of bubblers according to usage conditions>

탱크용량(L) tank capacity(L)	침수깊이(mm) immersion depth	가동방법(가동/휴지) Operation method (operation/stop)	버블러 수 number of bubblers	배오존량 측정 amount of ozone measurement
200이하 (200 below)	200이하(200 below)	2minutes / 5minutes	1	0.05ppm이하 (0.05ppm below)
	250	5minutes / 10minutes	1	
201~350	200이하(200 below)	7minutes / 15minutes	1	
	250	10minutes / 20minutes	1	
351~500	250이하(250 below)	15minutes / 30minutes	2	
	300	20minutes / 40minutes	2	
501이상(501 more)	300이상(300 more)	25minutes / 50minutes	3	

공장출하시 셋팅 상태 : 2minutes (Operation) / 5minutes (Stop)
(Factory setting state)



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