

KNF-
FUEL-07

UF₆ Heel Trapping

●
PROCESS
ENGINEERING
DEPT.
Seungchul Yang
T. 042-868-1371
E. seungchul@knfc.co.kr

UF₆ Heel Trapping is a technology to trap the heel remaining in the UF₆ cylinder after vaporization in the reconversion process

* Process Constitution

- Remove the existing cold trap
- Prevent UF₆ liquefaction by installing a pre-heater on the nitrogen line that pressurizes the cylinder
- Install an ejector in the conversion furnace line for maximum trapping

Description

* Purpose

- To develop independent technology for UF₆ heel trapping and design its process

* Necessity

- To possess KNF's own UF₆ heel trapping technology
- To replace the existing cold traps due to their low working efficiency and frequent process problems

* Principle

- The mixture of heel and inert gas is discharged into the kiln with pressurized inert gas.

Distinctiveness

* Characteristics

- Performance comparison with the existing methods

* Benefits

- Securing KNF's own reconversion process technology
- Preventing process troubles and quality deterioration
- Reducing costs by localizing the trapping equipment

Division	Pressurized Trapping (Proposed Method)	Vacuum Pumping (Existing Method)	Cold Trapping (Existing Method)
1) Characteristic	Discharging the mixture of heel and inert gas into the kiln with pressurized inert gas	Trapping heel with a vacuum pump and supplying it directly to the kiln	Supplying UF ₆ to the kiln by heating a cold trap after trapping, cooling and collecting heel with a vacuum pump
2) Main equipment	Nitrogen heater	Vacuum pump	Vacuum pump, trap, Refrigerant system
3) Residual quantity (after trapping)	3.0 kg or less	3.0 kg or less	3.0 kg or less
4) Initial cost	Low	High	High
5) Explosion hazard	No	Yes	No
6) Maintenance	Less	Plenty	Plenty

< Performance comparison with the existing methods >

Experience

- Plan to apply the process to nuclear fuel building III

Deliverables

- Technical Services : UF₆ heel trapping

TECHNOLOGY READINESS LEVEL(TRL)

- Component validation in relevant environment
- Prototype validation in relevant environment

BUSINESS MODEL

Technology Transfer

Licensing

Joint search

Service Execution

Others