

Advanced Nuclear Fuel Technology

October 6, 2015



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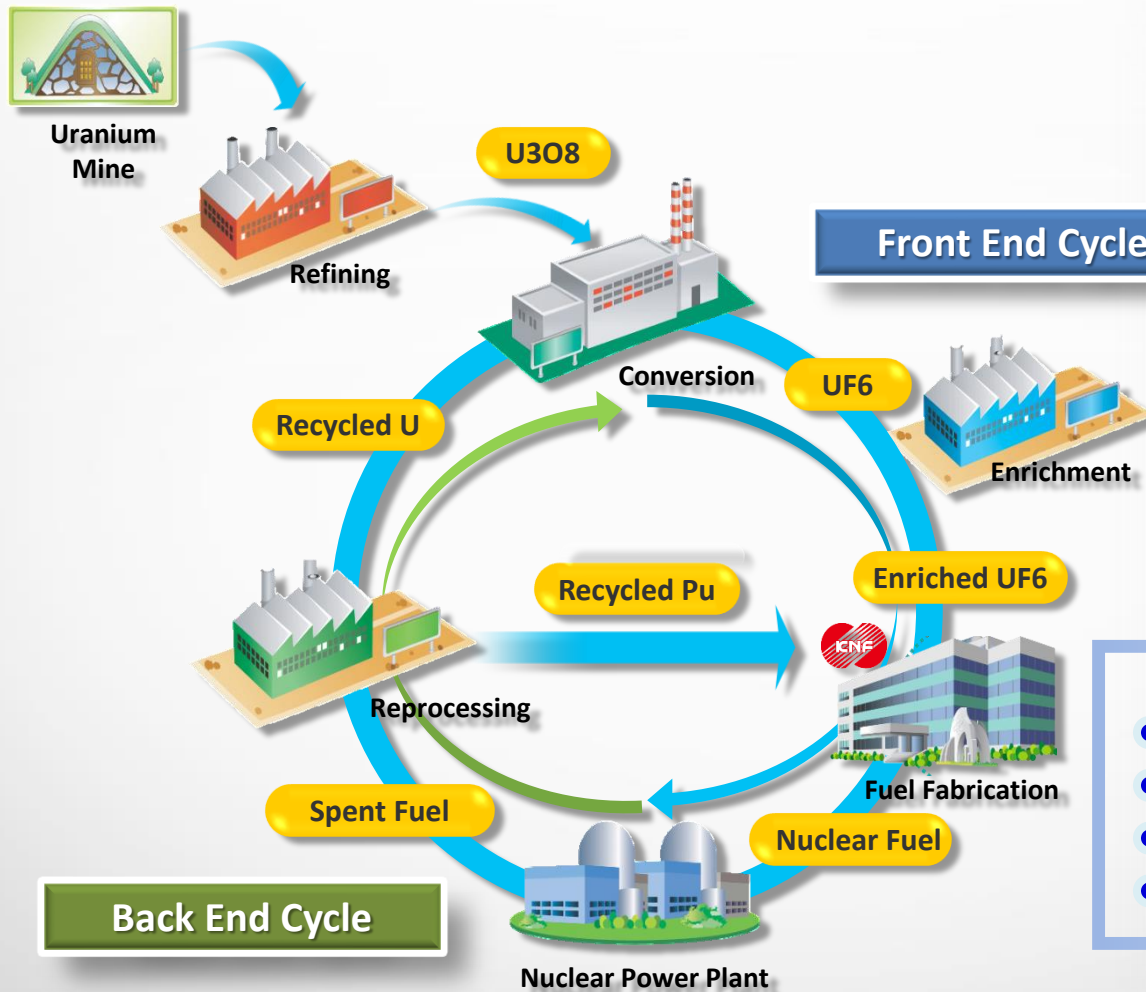
Introduction of KEPCO NF

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Nuclear Fuel Technology

Introduction of KEPCO NF

Main Activity in Nuclear Fuel Cycle



- Core Design & Safety Analysis
- Nuclear Fuel Fabrication
- Fuel Maintenance & Service
- Research & Development

Global Leading Nuclear Energy Partner



1980's

- 1982** KEPCO NF Established
- 1988** Construction of the PWR Plant (200 MTU/y)
- 1989** Commercial Operation of the PWR Plant

1990's

- 1992** R&D Center Established
- 1998** Capacity Expansion
(350 MTU/y for PWR, 400 MTU/y for CANDU)

2000's

- 2006** Commenced Supply of Advanced PLUS7™ Fuel
- 2008** Commercial Operation of Tube Mill (1,400km/y)
- 2009** Capacity Expansion (550 MTU/y for PWR)

2010's

- 2010** Fuel Supply Contract Awarded for UAE
- 2011** High Performance HIPER™ Fuel LTA Irradiation
- 2019** HIPER™ Fuel Commercial Supply

Nuclear Fuel Supply Status

Supply Status per Fuel

PLUS7™	12 Units
17ACE7™	6 Units
16ACE7™	1 Unit
14OFA	1 Unit
CANDU6	4 Units

Supply Status per NPP

* To be operated



Plant	Unit	Fuel
HUN	1,2	17ACE7™
	3,4,5,6	PLUS7™
SHN	1,2*	

Plant	Unit	Fuel
WSN	1,2,3,4	CANDU6
SWN	1,2	PLUS7™

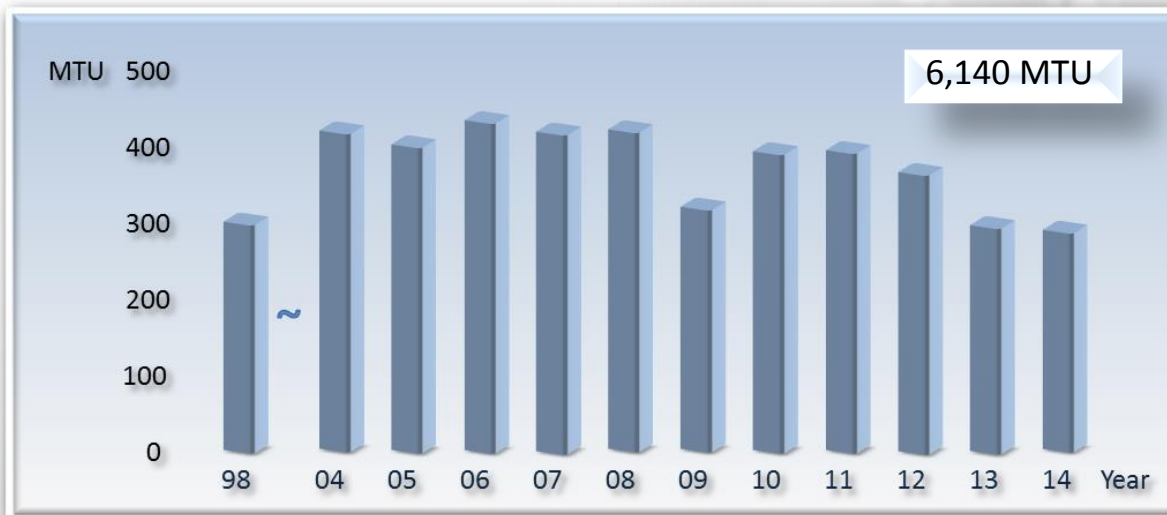
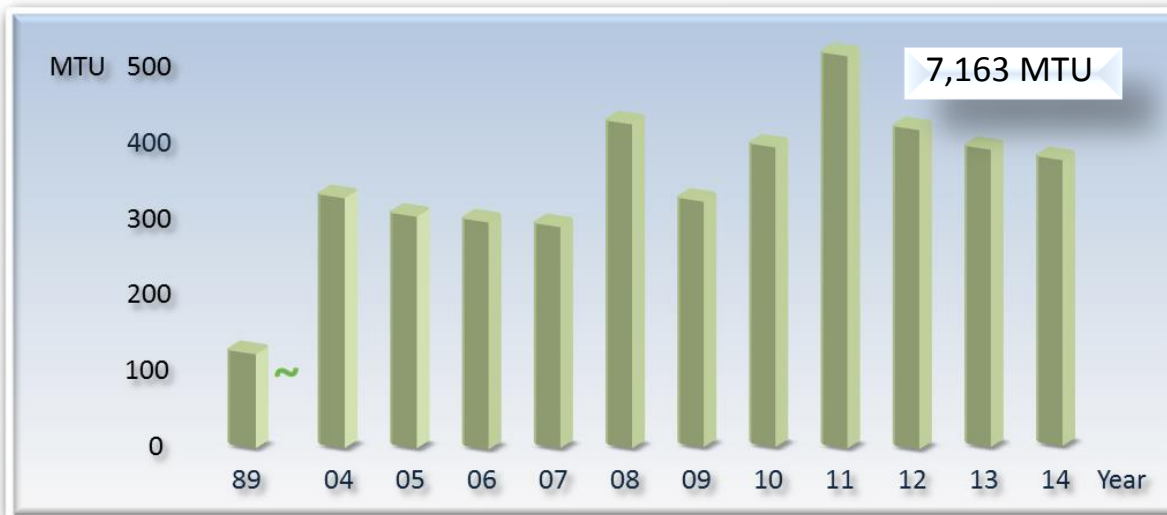
Plant	Unit	Fuel
KRN	1	14OFA
	2	16ACE7™
	3,4	17ACE7™
SKN	1,2	PLUS7™
	3,4*	

UAE	Unit	Fuel
	1,2,3,4*	PLUS7™

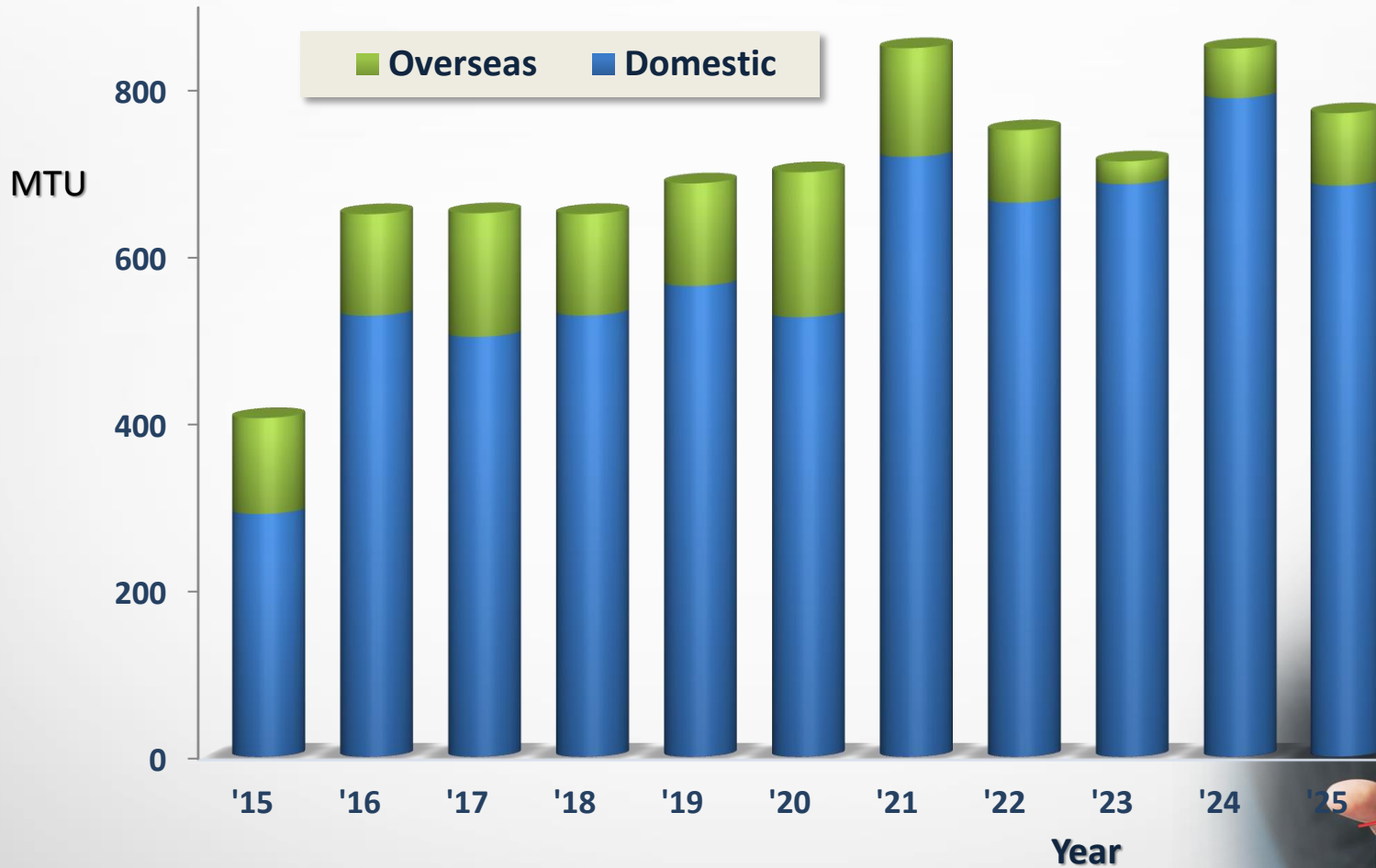
HBN	Unit	Fuel
	1,2	17ACE7™
	3,4,5,6	PLUS7™



Fuel Supply Record



Fuel Production Prospect (PWR)



Nuclear Fuel Technology



Core Design and Safety Analysis

- Initial & Reload Core Design and Safety Analysis
- Fuel Engineering

Fabrication of PWR and CANDU Fuels

- PWR & CANDU Fuels
- UO_2 Powder and Fuel Components
- Tube for PWR Fuels

Fuel Maintenance and Service

- Coolant Activity Analysis, Root Cause for Leak
- Poolside Examination, Reconstitution, etc.

Research and Development

- Material, Nuclear Fuel Component & Assembly
- Design Code & Methodology

PWR



APR1400
& OPR1000

- PLUS7™
- HIPER16™

Westinghouse
Type

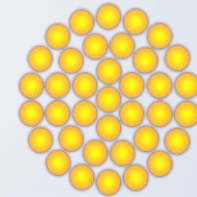
- 14OFA
- 16ACE7™
- 17ACE7™
- HIPER17™



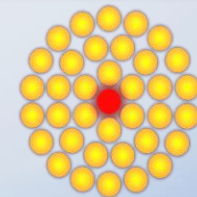
PHWR



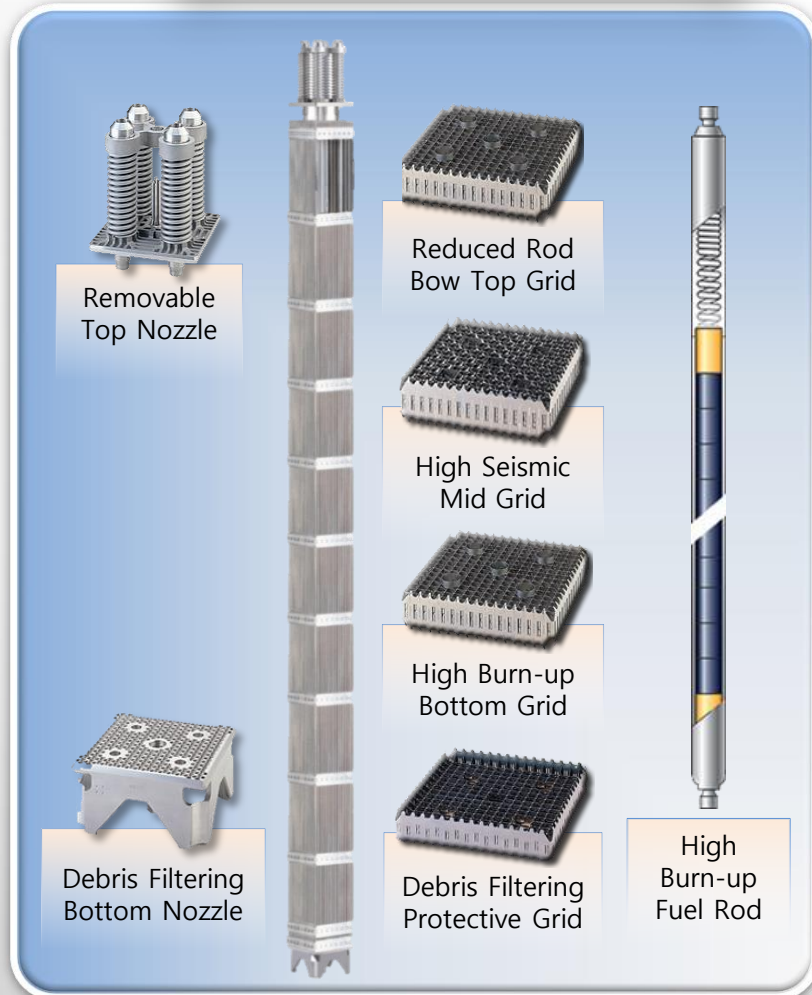
- 37-Element Fuel



- Modified 37M Fuel



Design Feature



Benefit

Enhanced Thermal Margin

High Burnup Capability

Improved Neutron Economy

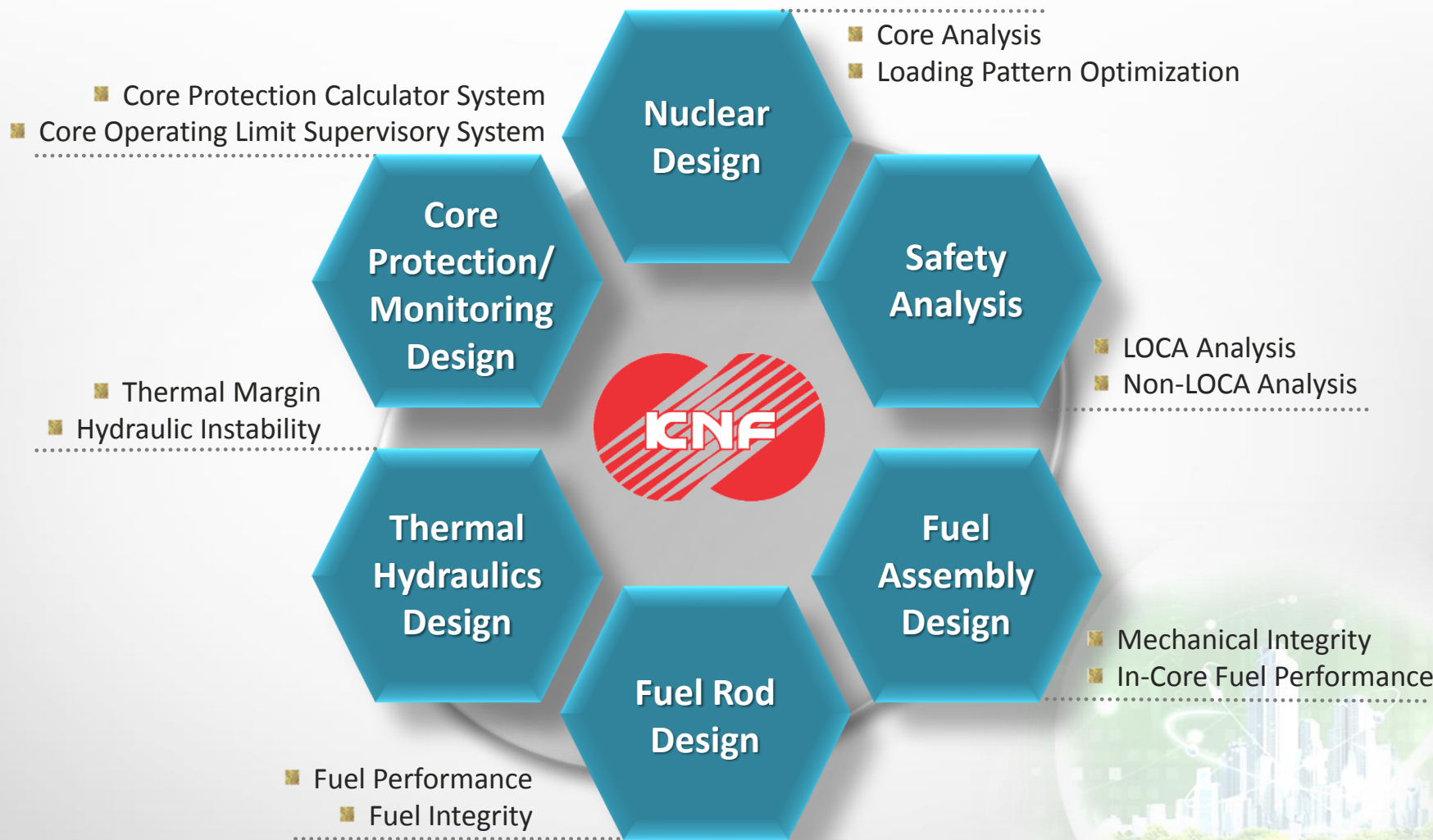
Improved Seismic Resistance

Reduced Fretting Wear Susceptibility

Improved Debris Filtering Efficiency

Improved Fuel Productivity

Core Design & Safety Analysis



In Operation

Rod & Assembling



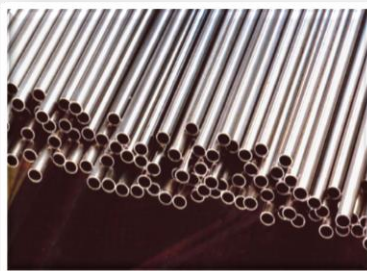
Plant 1

Ceramic



Plant 2

Tube Manufacturing



Plant TSA

Capacity

- PWR: 550 MTU/y
- PHWR: 400 MTU/y
- Tube: 1,400 km/y

Under Construction

Ceramic, Rod & Assembling



Plant 3

Construction
2012. 1 ~ 2020. 12

Capacity (PWR)
250 MTU/y

Tube Manufacturing

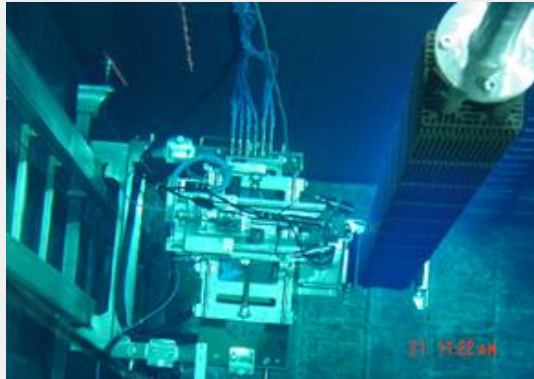


Plant NSA

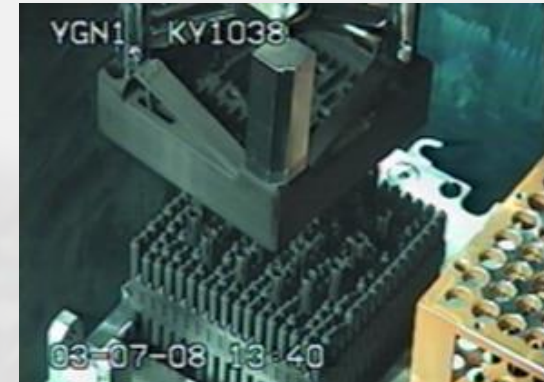
Construction
2011. 1 ~ 2016. 12

Capacity (Tube)
600 km/y

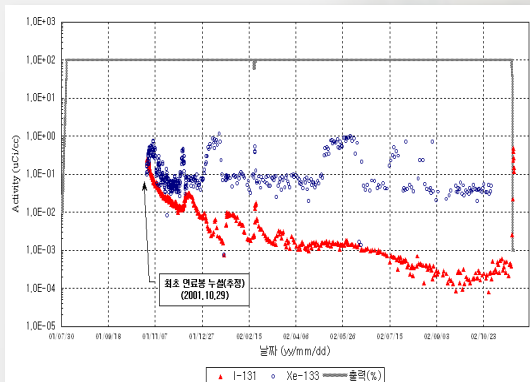
Fuel Performance Examination



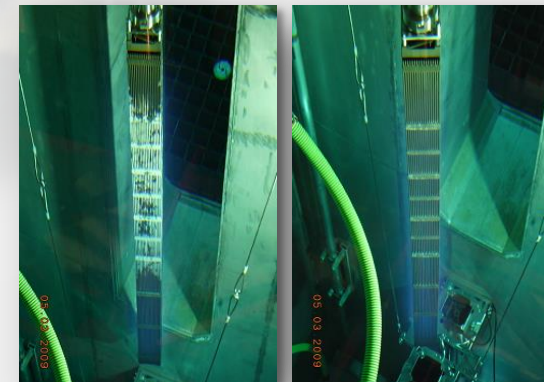
Fuel Inspection and Repair

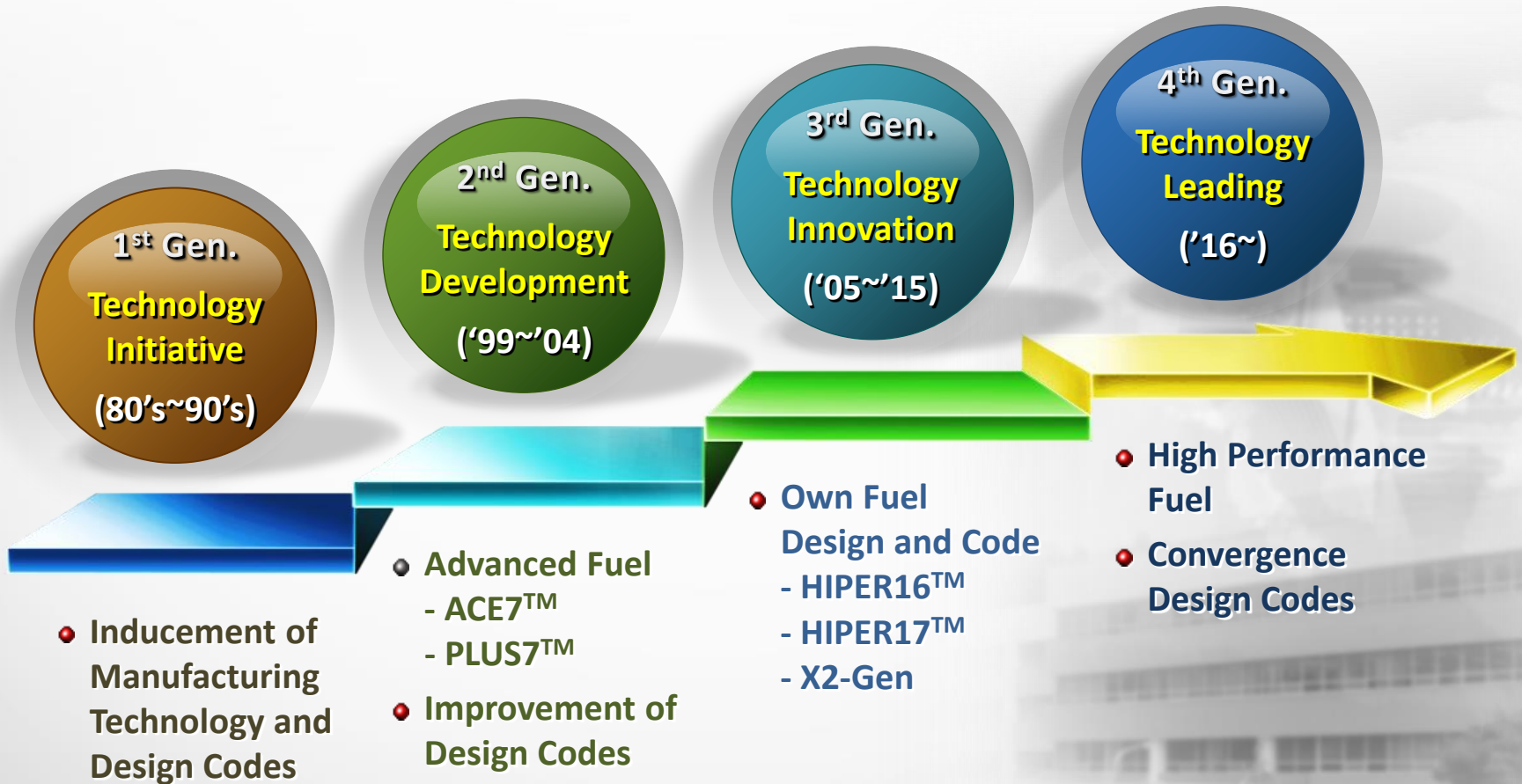


Coolant Activity Analysis



Crud Removal





Thank you !

