FNC TECHNOLOGY CO., LTD.

FUTURE & CHALLENGE

Smart Solutions for the Clean Future

FNC TECHNOLOGY CO., LTD.

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About FNC

Business Portfolio

New Challenge
For Better Future

With expectations of better tomorrow,
FNC begins new challenges with superior expertise

Research the better future with nuclear engineering

With its technical superiority, FNC has been actively participating in the national projects to lay the foundation and build a framework for the Korean nuclear infrastructure. And in doing so, FNC has promoted the excellence of the Korean nuclear industries to the world.
FNC firmly believes in the technical independence of the nuclear industry and the overall safety advancement and strives to build technical knowledge and experience to contribute to the leading edge of the technology for safety enhancement.
FNC is constantly on the move to raise the expectation of nuclear power to the next level and propel nuclear energy as the main clean energy of the future.

CEO Message

FNC is a key partner in the nuclear industry with its highest level of competence

In the middle of summer in 2000, FNC was established with spirited engineers and researchers specialized in nuclear engineering. Mastering the techniques and building up experiences, FNC becomes one of the best engineering companies in the world and provides technical services and engineering solutions as integrated engineering services in energy industry as well as nuclear power. Keeping in mind that nuclear engineering always requires the highest level of techniques, all members of FNC strive to lead the advancement and innovate ourselves to improve our engineering capability for enhancing the safety and the peaceful uses of nuclear energy.
FNC always appreciates your interest and caring for the company regarding its competence and experiences. With consistent challenges for the better future, FNC will continue to do its best to be a trusted and respected engineering company that helps create a clean and sustainable world.

Thank you very much.

President & CEO

Byung Chul Lee,

Vision & Mission

Vision	**The Best Global Energy Engineering Company Creating Leading Technical Innovation**
Mission	**Achieving Global Competitiveness for Sustainable Energy Future**

1	Leading nuclear safety improvement and sustainable growth with fundamental and solid expertise
2	Providing clear answers to customers with collective intelligence developed through communication and cooperation
3	Offering the highest quality service to satisfy customers based on its advanced technology and enthusiasm

History

2021 · Designated as ATC+ (Advanced Technology Center) By Ministry of Trade, Industry and Energy

2020 · Certification of ISO 45001
· Designated as ECRC (Excellent Corporation R&D Center) By Ministry of Science & ICT

2019 · Opening of UAE Branch in Abu Dhabi
· Registration for the Official Supplier of Nawah Energy

2017 · Expanded to 100 Employees
· Development of Containment Analysis Module of CINEMA
(Code for INtegrated severe accident Evaluation and MAnagement)
· Development of CAP (Containment Analysis Package)
· Development of CFVS (Containment Filtered Venting System)
· Certification of ASME N
· Registration for the Official Supplier of EPRI

2016 · Certification of KEPIC (Korea Electric Power Industry Code)
· Registration for the Business Partner of SNC-Lavalin

2015 · Business Partnership with Paul Scherrer Institut (PSI) and Oakridge SAS

2014 · Selected as K-Brain Power (Brain Competence Excellency) By Ministry of Trade, Industry and Energy
· Business Partnership with FCI and Janicke Consulting Environmental Physics

2012 · Awarded KETEP Prize of "Best Performance Test Facilities and Sump Strainer Technologies in the World"
Expanded to 50 Employees
10 Million USD in Revenue and 1 Million USD in Engineering Service Export

2009 · Certification of ISO 9001
· KHNP's Q-Class Supplier of PSA Service
· 5 Million USD in Revenue

2008 · Registration of Engineering Service for Radiation Management

2007 · Registration for Korea Software Industry Association

2004 · Registration for the Supplier of KEPCO E&C

2001 · Designation as R&D Investment Venture Company
Registration of Nuclear Engineering Service

2000 · Foundation of FNC Technology Co., Ltd.
and Future Energy Research Institute

Global Partnership

2010
· L3HM (USA)

2013
· Innovative Technology Development (CHE)

2014
· FCI (TWN)
· Janicke Consulting (DEU)

2015
· PSI (Paul Scherrer Institute, CHE)
· Oakridge Sciences & Services (FRA)
· NS&TS (USA)
· Kinectrics (CAN)

2016
· Business Partnership with SNC-Lavalin

2017
· Supplier of EPRI (USA)

2019
· Supplier of Nawah Energy (UAE)

2020
· Becker Technologies (DEU)
· Apollo+ (CHE)
· Lucideon (GBR)
· Supplier of IAEA

Human Resources & Growth

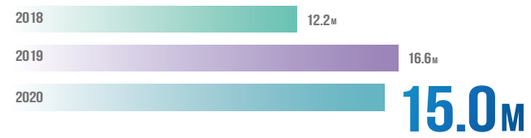
Degrees in Engineering

Ph. D	33
Master	44
Bachelor	43
Total	120

Engineer Level

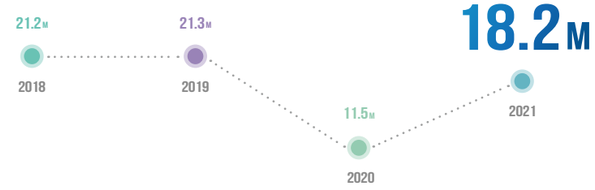
Professional & Principal	37
Advance & Intermediate	33
Elementary	11
Total	81

Revenue (unit: USD)

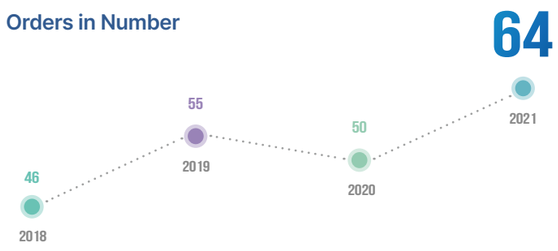


Operating Profit (unit: USD)

Order Amount (unit: USD)



Orders in Number

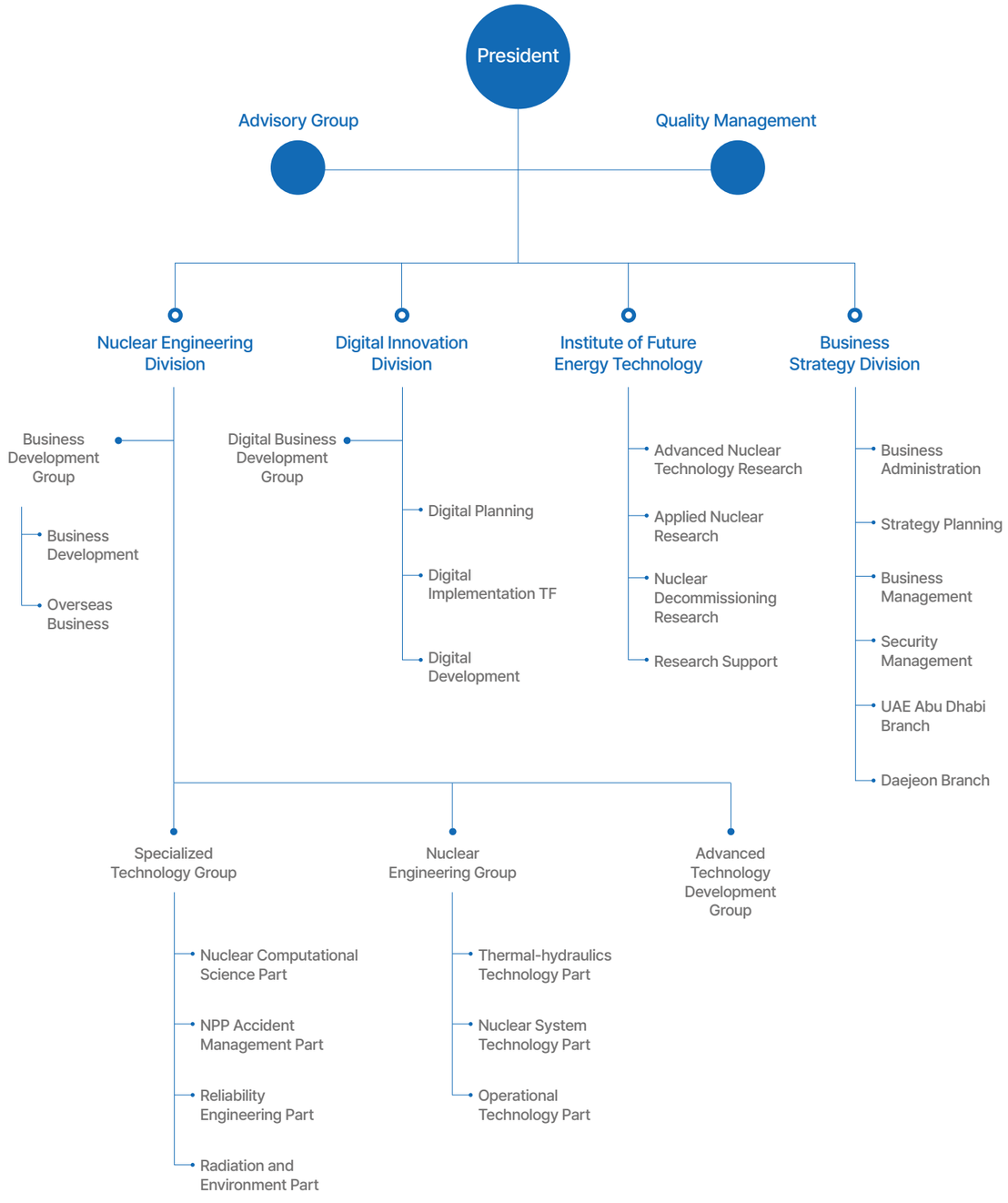


Intellectual Properties (by Dec 2021)

Domestic **36**

Foreign **4**

Organization



Business Area

For safe and efficient use of energy, FNC provides engineering solutions for all nuclear fields based on advanced and differentiated technologies by collaborating and converging expertise to increase competitiveness and flexibility.

Engineering and R&D Solutions for Nuclear Safety

Professional Consulting Based on Code Evaluation

- Safety Analysis, Severe Accident Analysis, and Thermal-hydraulic Analysis of Operating NPPs and Regulatory Support
- RELAP, RETRAN, MAAP, GOTHIC , LS-DYNA , CFD, and etc.

New Techniques and Products

- Development of Safety Analysis Code
- Environmental Radiation Monitoring System
- Green Hydrogen Technology for Energy Sustainability

Design and Operation Engineering for NPP

- T-H & Safety Analysis, Severe Accident Analysis
- PSA, RIR&RIA, Material and Hydro-chemical Analysis
- Development of Procedures and Strategy for NPP

IT System for Nuclear Facilities

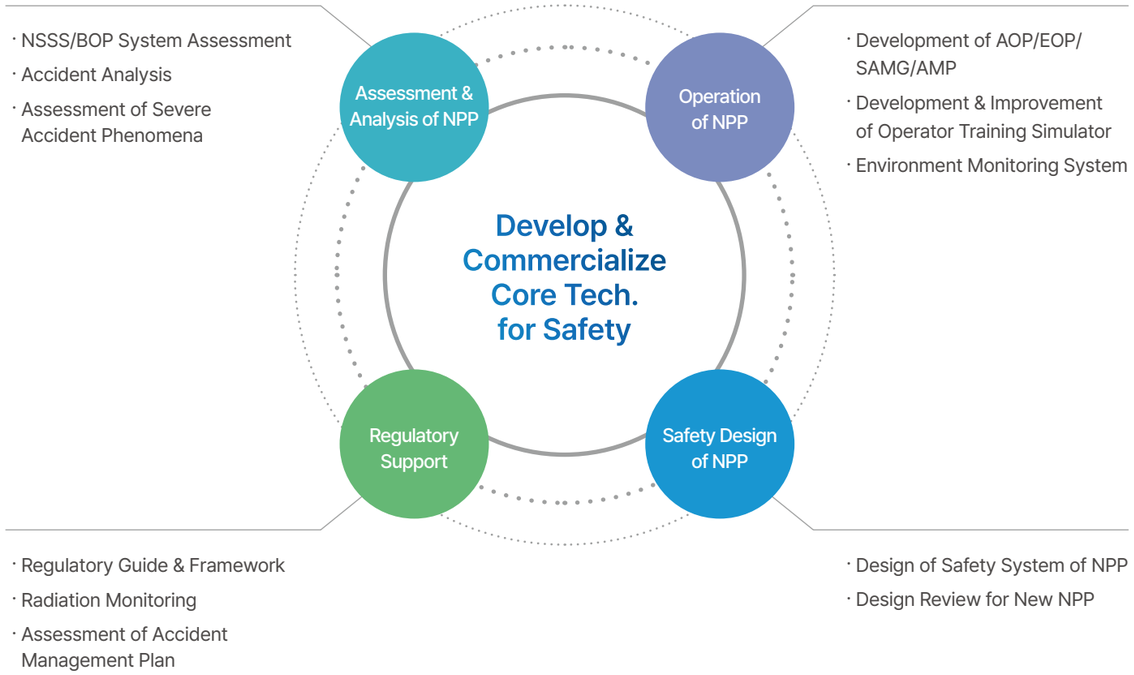
- Establishment of Various Service Systems such as Search Systems and DB, Operator Training Simulators, etc. in Nuclear Industry

AI Solutions and Big Data Platforms

- Development of Computer Vision AI Solution
- Development of Classification and Prediction AI Solutions
- Establishment of I&C Information Big Data Platform

Technologies

Leading the advancement of nuclear engineering, FNC has the world's best technologies in NPP diagnosis, safety assessment, and design of nuclear systems.



Development of Core Technology for NPP	700+ Experiences in Nuclear Field
· ECCS Sump Strainer Performance Test	· Safety Analysis and Diagnosis of NPP
· Safety Analysis Code for NPP Containment	· System Design and Verification for NPP
· Severe Accident Analysis Code	· Demonstration Test and Experiment
· CFVS (Containment Filtered Vent System)	· Regulatory Support, IT for NPP, etc.

Leading the Advancement of Nuclear Engineering and R&D

Certificates & Intellectual Properties

Certificates

Title	Registration Number	Date of Registration
· KHNP's Q-Class Supplier for PSR (Waste Management/Radiation Protection)	202001063	2020.12.10
· KHNP's Q-Class Supplier for PSR (Safety Performance/Plant Operation)	202001064	2020.11.03
· KHNP's Q-Class Supplier for PSR (Safety Analysis)	202001058	2020.11.03
· ISO 45001:2018	KQA-OH20126	2020.02.28
· KHNP's Q-Class Supplier for Follow-up Actions of PSR	201901099	2019.08.22
· KHNP's Q-Class Supplier for EQ Assessment Service	201801780	2019.01.16
· KHNP's Q-Class Supplier for PSA Service	201801091	2018.07.04
· ISO 9001:2015	KQA-Q092402	2009.03.02

Patents

Title	Registration Number
· Corrosion probe for monitoring corrosion of metal or alloy	1006985060000
· A sampling system for airborne radioactivity using aircraft	1009673640000
· An apparatus for identifying the defect of nuclear spent fuel assembly and the identification method	1009772900000
· Imbedded CFVS for nuclear power plant	1015556920000
· Aerosol generating system	1015678210000
· Aerosol sampling system	1016827070000
· Real-time simultaneous monitoring system for aerosol and radiation of radioactive aerosol	1023291350000
· Apparatus and method for constantly monitoring and controlling water level using ultrasonic wave high temperature	1019838160000
· Apparatus and method for removing high concentration of boric acid from liquid radioactive waste	1021727520000
· Drone-mounted multi-channel radiation detector with variable distance structure	1023272220000
· Automatic radioactivity measurement system for facility surface contamination	1019987410000
· Measurement system for detecting residual radioactivity in soil	1019987420000

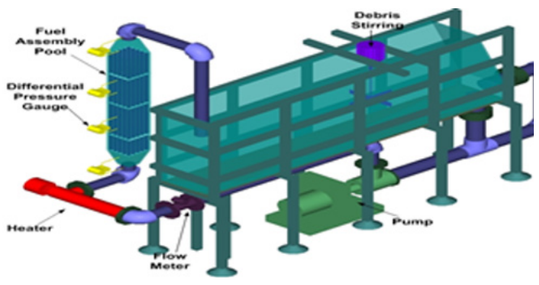
Competence -
Experimental Assessment for Components and Systems

1. ECCS Sump Strainer Performance Test Technology

- Development of sump strainer comprehensive performance test facility and technology reflecting containment conditions under LOCA (Loss of Coolant Accident)
- Applying actual debris formation for fibrous, particulate, and chemical precipitate generated by large break LOCA
- Unique and competitive test technology considering 3D structure of containment, chemical effect, and in-core downstream effect

Remarkable Results

- 100% localization of the test facility & technology
- Successful commercialization (3.5M USD in revenue) and technical export (1.7M USD)
- Selected as the best innovative R&D projects by Ministry of Trade, Industry and Energy
- Awarded a KETEP Prize, 'Best Performance Test Facilities and Technologies In The World'
- Awarded '20 Superstar SME' by KETEP (2012)

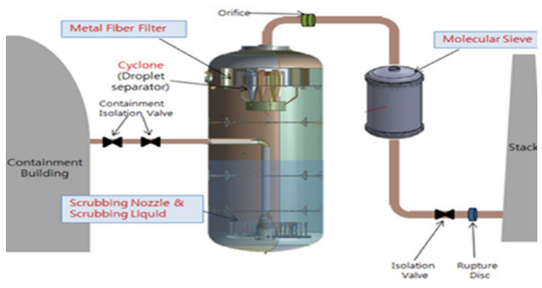


2. Containment Filtered Venting System (CFVS)

- Development of filtered venting system to prevent containment damage and to minimize the risk of radioactive material release by discharging to the atmosphere after filtration
- Securing the source technology and performance verification test of CFVS
- Design of CFVS and linked existing system in NPP

Remarkable Results

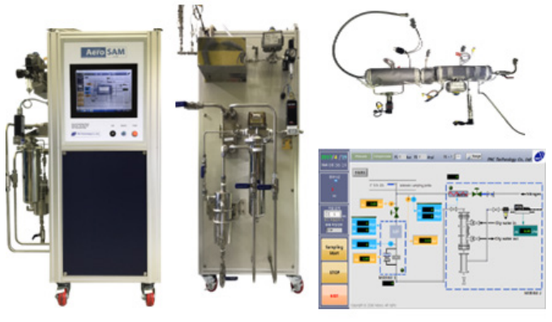
- New Excellent Technology Award from Ministry of Trade, Industry and Energy
- Successful commercialization (40M USD in revenue) and export substitution
- Selected as the best innovative R&D projects by Ministry of Trade, Industry and Energy



3. Multi-Purpose Aerosol Control System

- Development of aerosol generation/injection/mixing/measurement system to understand and analyze the behavior of radioactive aerosols under severe accident condition
- By expanding the operating conditions of the existing aerosol generation system, this system can be applied under various environmental conditions and the performance verification test is completed
- Applicable as a research system to understand the behavior and phenomenon of aerosol generated in very harsh condition (Steam and Non-condensable gas conditions)

▲ Aerosol Generation/Injection/Mixing Module (AeroGEN)

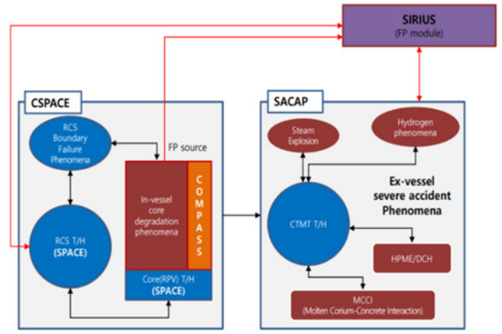


▲ Aerosol Sampling & Measurement Module (AeroSAM)

Competence -
Development & Utilization of Safety Analysis Codes

1. Development of Integrated Severe Accident Analysis Code and Severe Accident Analysis

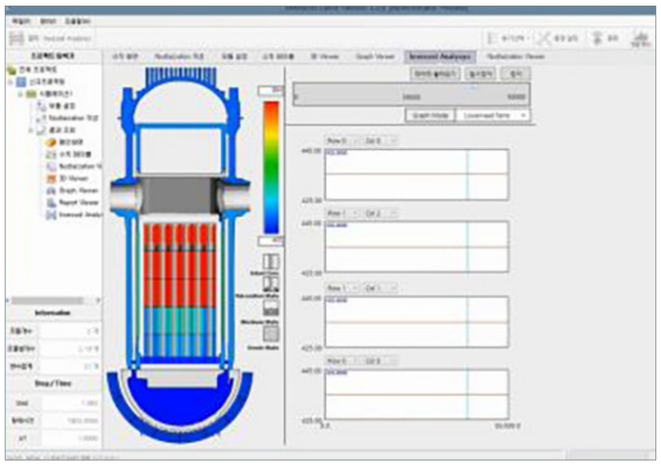
- CINEMA
  (Code for INtegrated severe accident Evaluation and MAnagement)
  - Comprehensive severe accident analysis code integrating SPACE, SACAP, and SIRIUS
  - FNC, as a major participant of the project, developed the containment analysis module, SACAP, which can handle the ex-vessel severe accident phenomena and integrated all the modules as CINEMA.

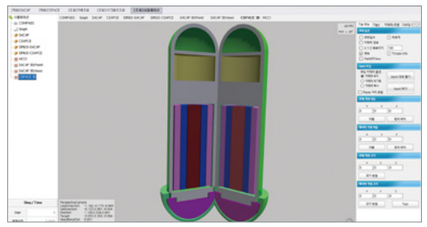


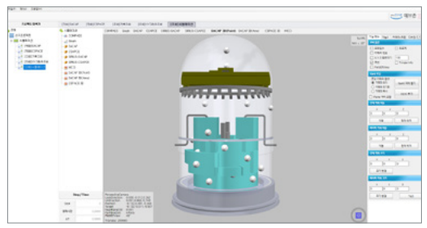
▲ CINEMA code

- SACAP
  - Thermal hydraulic analysis module
  - Hydrogen combustion analysis module
  - Core melting-concrete response analysis module
  - Steam explosion analysis module
  - Containment direct heating analysis module

- Utilization of Severe Accident Analysis Codes
  - Comprehensive understanding and analysis expertise of MAAP, MELCOR, GOTHIC and GASFLOW codes for supporting customers keeping up with the state-of-the-art
  - Steam explosion load analysis using TEXAS-V and full-scope analysis extended to structural response with LS-DYNA

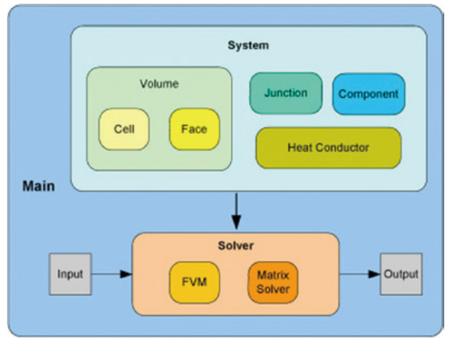




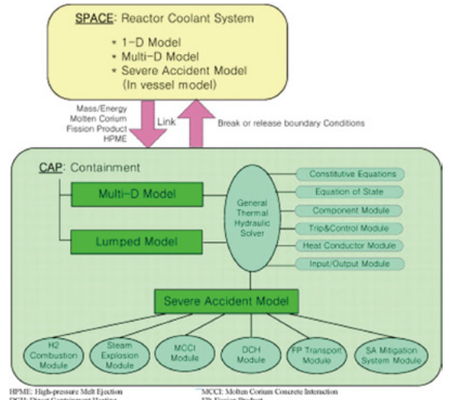


2. Development of Containment Safety Analysis Code and DBA Safety Analysis of NPP

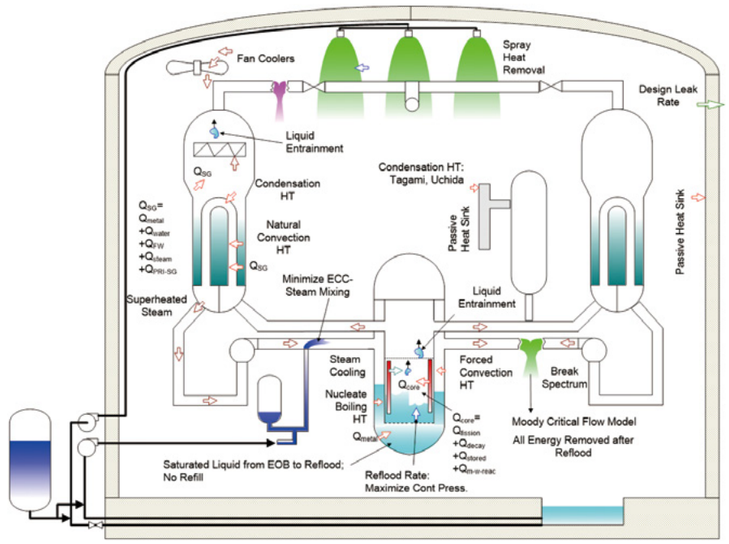
- CAP (Containment Analysis Package)
  - Developed by FNC to analyze the thermal-hydraulic behavior of nuclear plant containment as the fourth barrier
  - Using state-of-art technique including 3-fields and 3-phases
  - Coupling with SPACE (System code independently developed in Korea)
  - Successfully licensed by NSSC (Nuclear Safety and Security Commission)



- Applicable Fields of CAP
  - Design pressure/temperature
  - ECCS efficiency
  - Subcompartment pressure
  - Long-term containment pressure and temperature
  - Hydrogen concentration



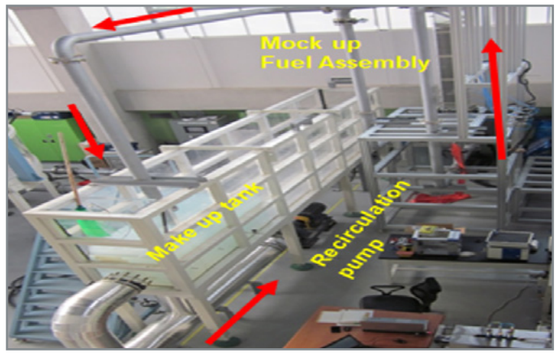
- Utilization of Safety Analysis Codes
  - Covering single-phase and two-phase thermal hydraulic analysis, accident analysis, and DEC analysis with RELAP, RETRAN, MARS, GOTHIC, and CFX
  - Application to design passive safety systems of NPP, such as PAFS (Passive Aux. Feedwater System) and PECCS (Passive Emergency Core Cooling System)



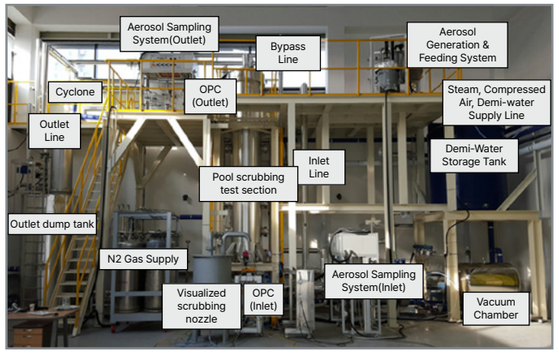
Research Facilities

FNC's Institute of Future Energy Technology has the highest level of research facilities among domestic nuclear private companies and contributes to improving the safety of nuclear power plants.

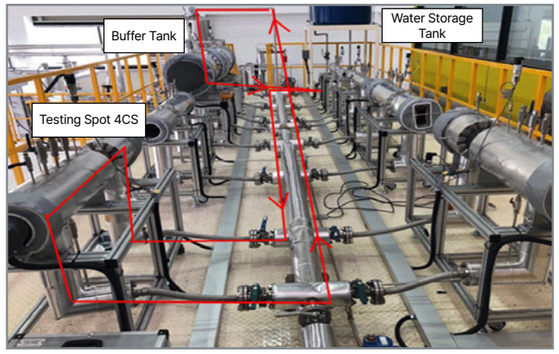
· ECCS Sump Strainer Performance Test Facility



· CFVS Test Facility



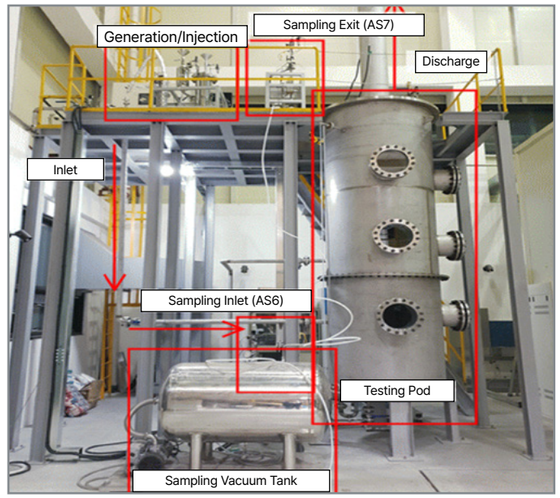
· Gas Void Monitoring and Control System (GVMCS)



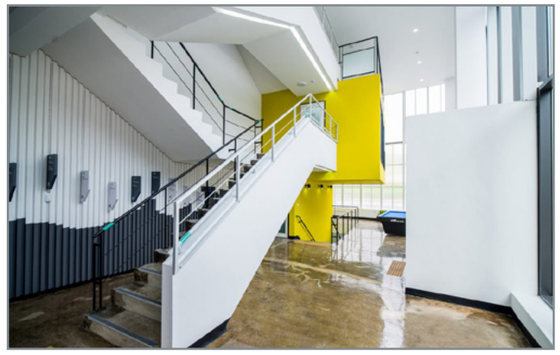
· Decontamination Performance of Aerosol in Piping Test System

· In-core Debris Flow Visualization Test Facility

· Aerosol Decontamination Performance Test Facility

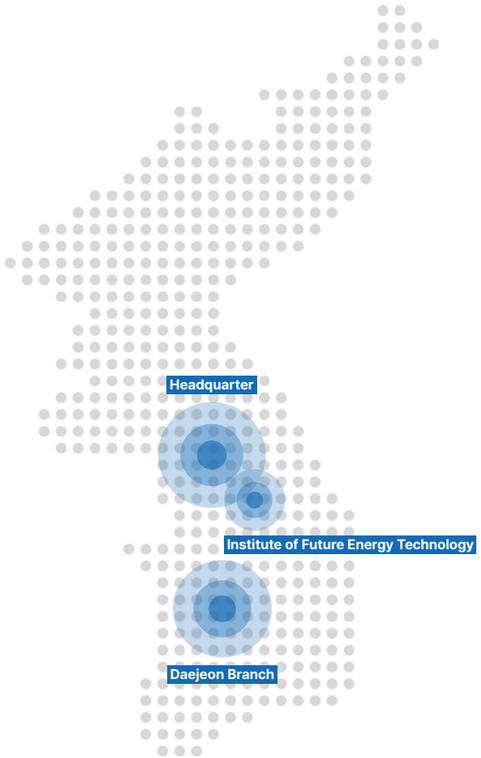


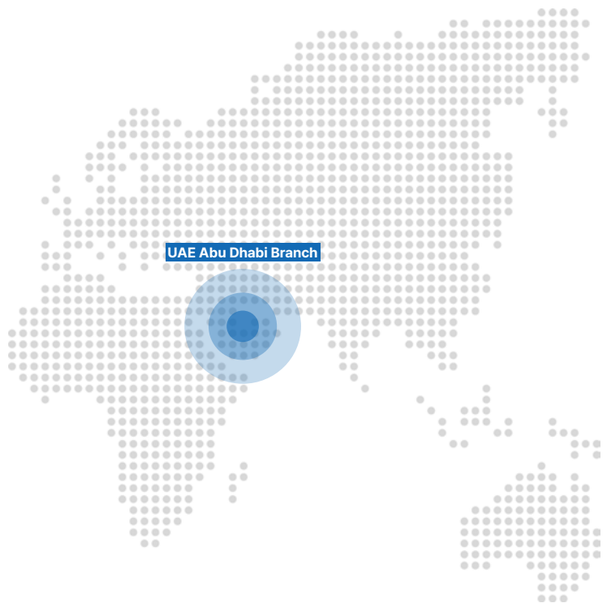
· Inside of the Institute



· Institute of Future Energy Technology

Headquarter & Branches





Headquarter

Heungdeok IT Valley Bldg. 32F, 13, Heungdeok 1-ro,
Giheung-gu, Yongin-si, Gyeonggi-do, 16954, Korea

T. +82-31-8065-5114
F. +82-31-8065-5111
E. info@fnctech.com

Institute of Future Energy Technology

46, Tapsilro, Giheung-gu, Yongin-si Gyeonggi-do,
17084, Korea

T. +82-31-8005-5618
F. +82-31-8005-6014

Daejeon Branch

Daeduk Tech Business Center, 1004-2, 593,
Daedukdae-ro, Yusung-gu, Daejeon-si, 34112, Korea

T. +82-42-867-5114
F. +82-42-867-5110

UAE Branch (Abu Dhabi)

#2335, Sky Tower, Al Reem Island
PO Box 5101041, Abu Dhabi, UAE

T. +971-2-406-9719
E. abudhabi@fnctech.com

FNC Technology Co., Ltd.

Engineering and R&D Solutions for Nuclear Safety

Smart Solutions for the Clean Future