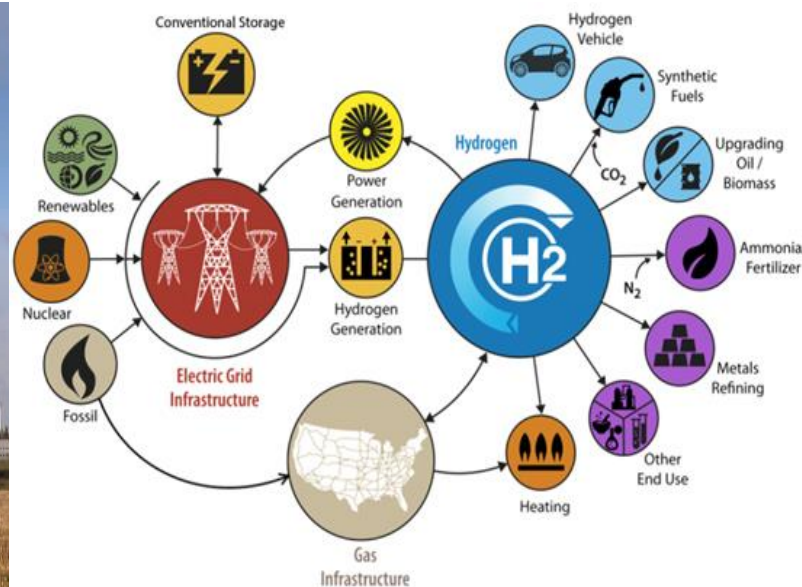


# Introduction to ISMR

## Interconnecting Space for Modern Reactors



## Interconnecting Space for Modern Reactors (ISMR)

- The ultimate goal of ISMR is to be a global hub and platform to provide one-stop services for power plants and moreover.
- ISMR provides every service in business areas not only by self but also by partners with a global network.
- ISMR provides services by cutting edge technology and high quality with consideration of customer satisfaction and customer value.



ISMR strives to achieve the following values:

❖ **Ethics**

We establish and implement a robust set of principles based on global standards.

❖ **Safety & Health**

We are continuously making risk zero and a healthy work environment.

❖ **Quality Assurance**

We aim to achieve the highest standards in safety, quality, availability, and reliability.

❖ **Culture**

We respect clients' culture and heritage and are mindful of the culture surrounding the work environment.

❖ **Innovation**

We develop and apply world-class technology, especially striving for compliance with the rapidly changing ICT environment.

❖ **Sustainability**

We continue to grow and remain committed to the evolution and development of our sustainability program to meet and respond to our clients and partners.



- Project management
- Feasibility studies
- Concept development and evaluation
- Process development design of plants
- Safety and reliability assessments
- Support the licensing processes
- Automation technology and instrumentation

- Researching existing and new markets & products
- Negotiating supplier contracts and terms
- Evaluating supplier performance
- Resolving supplier issues and performance
- Maintaining supplier relationships
- Procurement reports (e.g., KPIs) and supplier performance to customer

- Radioactive Waste Management
- Evaporation, Concentration & Cementation
  - Vitrification

- Spent Fuel Management
- Comprehensive case study
  - Casks, Vault, and others

- Decommissioning
- Development of appropriate decommissioning strategies
  - Studies and technical restoration concepts

- Plant Reliability, Availability, and Maintainability (RAM) Monitoring and Analysis
- Operating Management System upgrade (Core management system, Computerized procedure upgrade, etc.)
- Maintenance Management System upgrade (3D or Virtualization of SSCs for maintenance)
- Equipment Upgrade and Licensing Support Services

- Manpower supporting Service
- International Employee Deployment & Staffing
- Training Services
- International Conference and Trade Show



## Design & Engineering Services

ISMR's primary goal is to execute a project that meets the clients' objectives and the quality of the product.

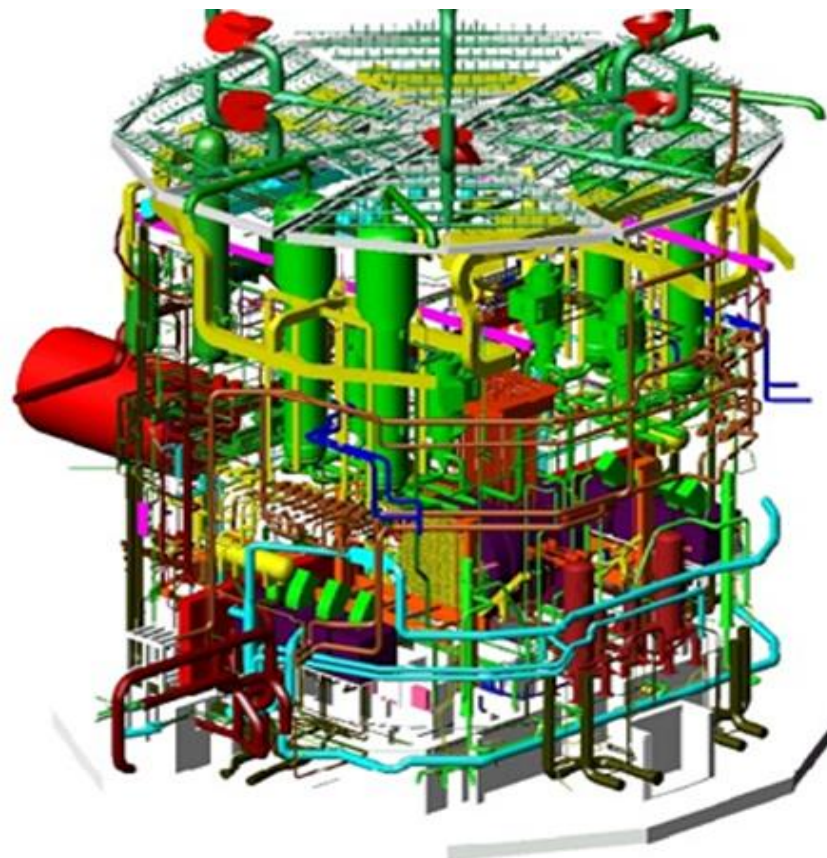
At the conceptual design phase, each project's function, scope, cost, and schedule with client objectives are optimized for project success.

The detailed engineering and design phase is a key step in delivering capital projects. ISMR develops plans to ensure that the designs reflect client requirements and facilitate the construction of facilities meeting its clients' strategic objectives.

ISMR generates the digital design data for the plant's life cycle management from conceptual designing. These will be applied for cost, schedule, and material management in the construction stage. These will also be input for the planning and implementation of plant operation, maintenance, and decommissioning.

### Service Areas

- Project management
- Feasibility studies
- Concept development and evaluation
- Process and mechanical engineering design of plants
- Safety and reliability assessments
- Support the licensing processes
- Automation technology and instrumentation



## Equipment Supply & Procurement

ISMR is a company acting on behalf of leading Korean and international suppliers in the nuclear industry. ISMR is a leading voice of the nuclear supply chain and actively promotes a safe and reliable nuclear industry base.



ISMR's equipment supplies and procurement services are based on quality sourcing through its established strategic partners in the supply of equipment for the SMRs as well as the nuclear industry area.

Nuclear suppliers provide materials, equipment, and services to nuclear power plants and nuclear facilities and are subject to the unique requirements and procedures of the nuclear industry area. ISMR's supply chain develops strategic relationships with its suppliers who can meet the price, quality, delivery, and service level requirements.

### Service Areas

- Researching existing and new markets and products
- Identifying relevant suppliers
- Negotiating supplier contracts and terms
- Evaluating supplier performance
- Resolving supplier issues and performance
- Maintaining supplier relationships
- Procurement reports (e.g., KPIs) and supplier performance to customer

## Dismantling & Decommissioning



ISMR has competent capability in Radioactive Waste Management, Spent Fuel Management & Decommissioning of nuclear power plants, and a good relationship with global partners.

### Service Areas

#### Radioactive Waste Management

- Evaporation & Concentration
- Cementation
- Microwave drying
- Vitrification
- Sorting / Segregation
- High-force compaction & Incineration

#### Spent Fuel Management

- Comprehensive case study to delivery
- Different kinds of storage technologies (Casks, Vaults, and others)
- Fuel assembly monitoring systems
- Classification systems for defective fuel
- Systems for handling and preparation for storage of defective and heavily damaged spent fuel elements

#### Decommissioning

- Development of appropriate decommissioning strategies
- Studies and technical restoration concepts
- Planning for regulatory approval
- Support for or management of licensing processes



## Plant O&M Services

ISMR is equipped with plenty of experience and qualified experts to participate in operation and maintenance activities for nuclear and conventional power plants such as oil & gas plants.



### Service Areas

- Plant Reliability, Availability, and Maintainability (RAM) Monitoring and Analysis
- Operating Management System upgrade (Core management system, Computerized procedure upgrade, etc.)
- Maintenance Management System upgrade (3D or Virtualization of SSCs for maintenance)
- Equipment Upgrade and Licensing Support Services
- O&M Manpower Supporting (Resident O&M Crew) Service



## Nuclear-related Services

ISMR is a group of experts with long experience and know-how in the nuclear fields. Based on such experience and know-how, ISMR is always ready to provide various services related to nuclear power according to the needs of our customers.



### International Employee Deployment & Staffing

ISMR can help you to supply the optimal human resources for domestic and overseas projects. ISMR will provide you with all the necessary manpower at your project construction site as quickly as possible, as well as skilled civil, mechanical, electrical and I&C engineers in the following areas, as well as technicians performing civil, mechanical, electrical and welding works.



### Training Services

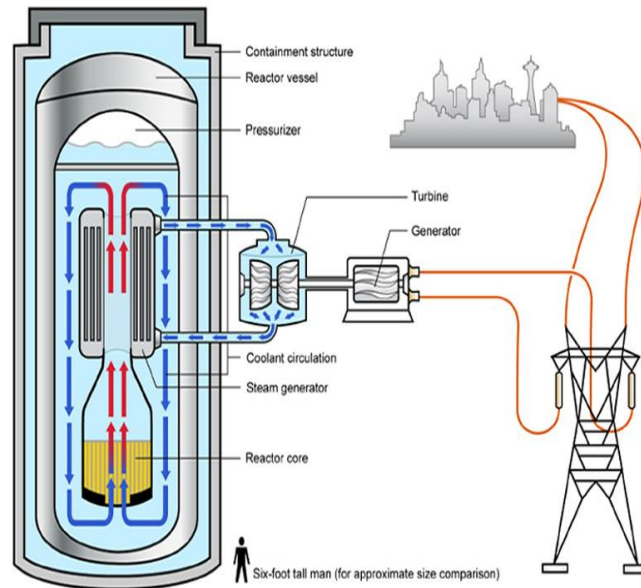
ISMR provides various training programs related to the large-scale nuclear power plant and SMRs based on its excellent technical expertise and abundant experience, to countries that want to construct nuclear power plants and to companies and organizations that want to participate in the nuclear business.



### International Conference and Trade Show

ISMR is offering plenty of chances to attend, exhibit, and sponsor international conferences and trade shows. ISMR provides a hub remaining open 365 days a year accompanied by events and attractions with the global nuclear community.

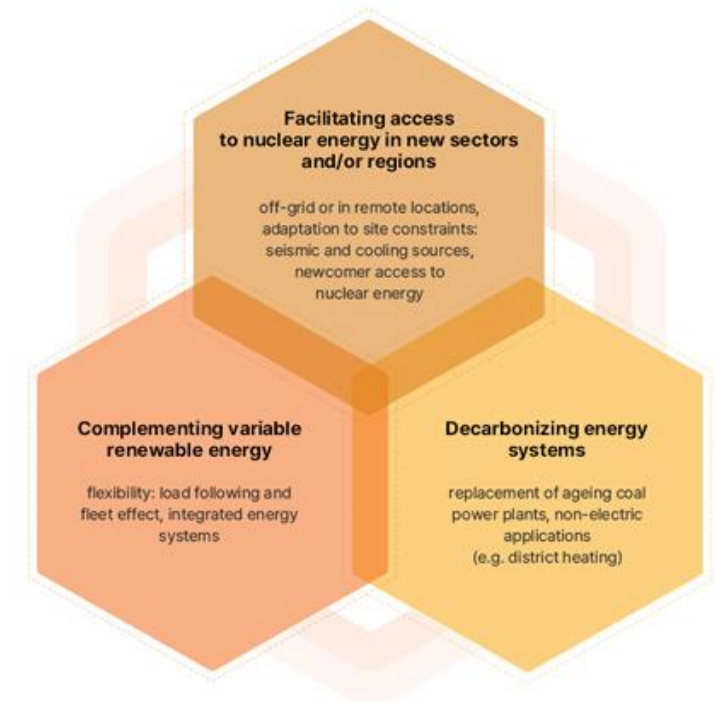
## Small Modular Reactors (SMRs)



Design Concept

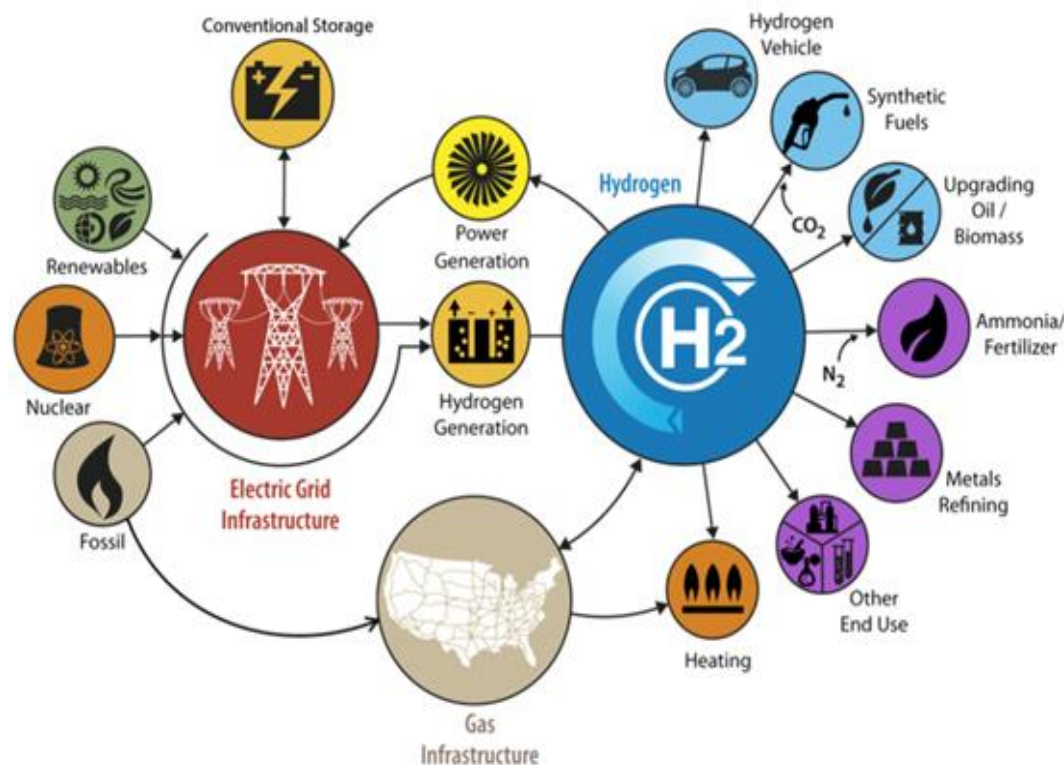
- Small power and compact architecture and usually (at least for nuclear steam supply system and associated safety systems) employment of passive concepts. Therefore there is less reliance on active safety systems and additional pumps, as well as AC power for accident mitigation.
- The compact architecture enables modularity of fabrication (in-factory), which can also facilitate the implementation of higher quality standards.
- Lower power leading to reduction of the source term as well as smaller radioactive inventory in a reactor (smaller reactors).
- Potential for sub-grade (underground or underwater) location of the reactor unit providing more protection from natural (e.g. seismic or tsunami according to the location) or man-made (e.g. aircraft impact) hazards.
- The modular design and small size lends itself to having multiple units on the same site.
- Lower requirement for access to cooling water – therefore suitable for remote regions and for specific applications such as mining or desalination.
- Ability to remove reactor module or in-situ decommissioning at the end of the lifetime.

Design Features



Design Applicability

## Nuclear Hydrogen



ISMR is building the hydrogen economy as a link to the hydrogen ecosystem.

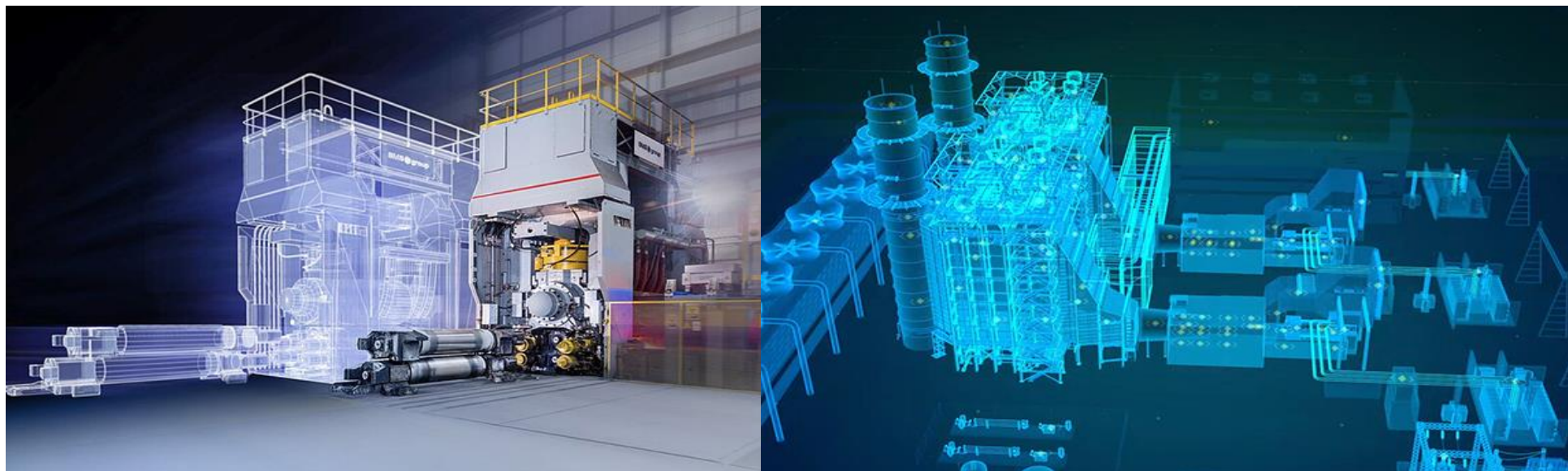
Nuclear power already produces electricity as a major energy carrier with well-known applications. Operating at very high capacity factors, nuclear energy is well placed to produce zero-carbon hydrogen as an emerging energy carrier with a wide range of applications.

The evolution of nuclear energy's role in hydrogen production is seen to be:

- Cold electrolysis of water, using off-peak capacity (needs 50-55 kWh/kg)
- Low-temperature steam electrolysis, using heat and electricity from nuclear reactors
- High-temperature steam electrolysis, using heat and electricity from nuclear reactors
- High-temperature thermochemical production using nuclear heat
- Use of nuclear heat to assist steam reforming of natural gas (methane)

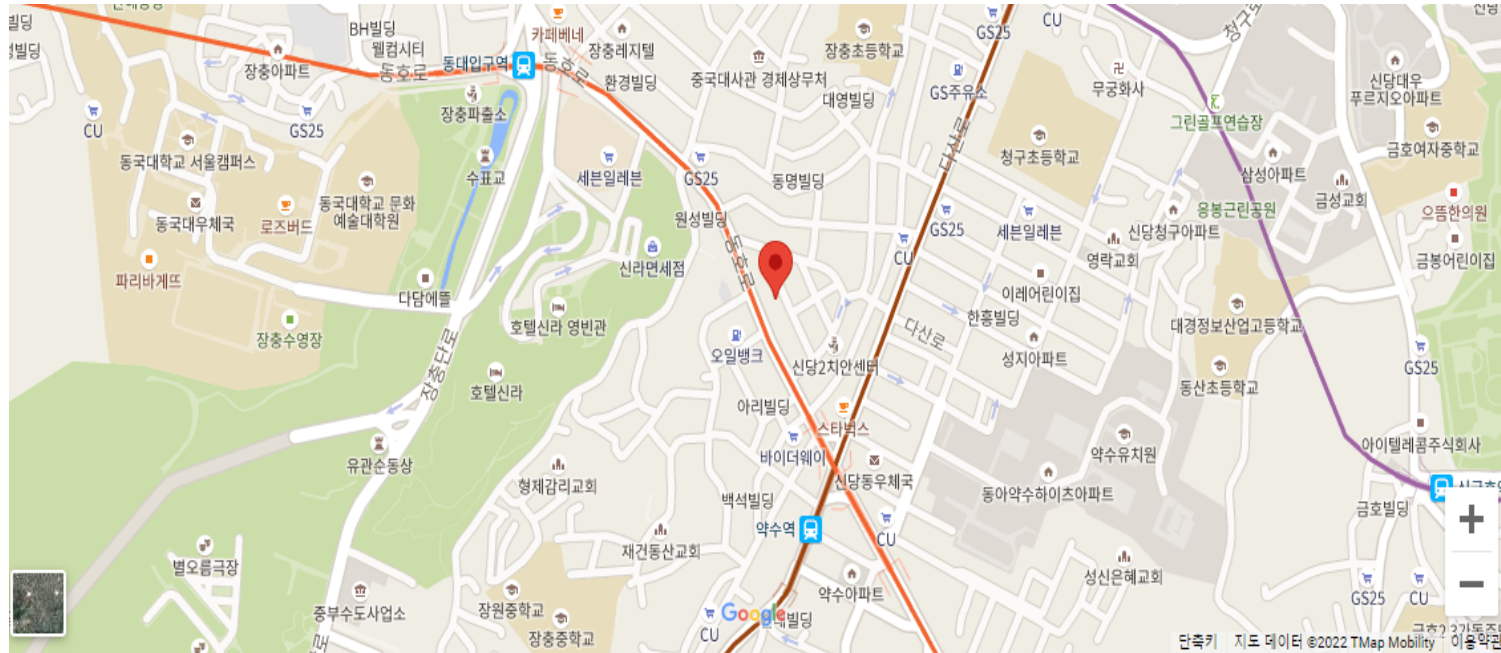


## Digital twin



ISMR can provide a virtual environment where process control and operational solutions are designed and tested before being applied to the live plant.

A digital twin is a software-based virtual replica of the complete physical assets of a production facility, including its process equipment, instrumentation, and controls, as well as the production processes. Through this replica, the operation of these assets is modeled and simulated through their lifecycles.



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