



United Arab Emirates' Nuclear Power Plant

The United Arab Emirates (UAE) is the first country to start construction of its first nuclear power plant in the past three decades. Four APR 1400 design, Korean-built nuclear power units are projected to be operational by 2020 to generate electricity. With four reactors online, Barakah nuclear power plant will be generating up to a quarter of the nation's electricity supply.



"The UAE is making safe and consistent progress in the development of its peaceful nuclear energy programme."

*Yukiya Amano,
IAEA Director General*

In December 2009, the Emirates Nuclear Energy Corporation (ENEC) was established. ENEC is responsible for the construction and operation of the UAE's nuclear power plant.

In 2009, ENEC awarded the Prime Contract to a consortium led by the Korea Electric Power Corporation (KEPCO) to build and help operate four APR 1400 nuclear reactors. The value of the Prime Contract awarded to KEPCO was estimated at US\$20 billion. The APR 1400 reactors are Generation-III reactors - a technology that complies with the highest international standards for safety, performance and environmental impact.

The APR 1400 reactors are based on a Combustion Engineering System 80+ design, certified by the Nuclear Regulatory Commission (NRC) in the United States.

*Construction work on the UAE's Barakah Nuclear Power Plant:
current progress on Units 1 and 2*



PHOTO: ENEC

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IAEA Director General Visits Barakah Nuclear Power Plant Construction Site

On 29 January 2013, the IAEA Director General Yukiya Amano visited the UAE's Barakah construction site to review the progress of the country's nuclear power plant project during his official visit to the Emirates. The Director General (DG) toured the construction site and met with senior officials to discuss construction progress of Barakah nuclear power plant.



IAEA Director General Yukiya Amano tours the construction site of the Barakah nuclear power plant, Abu Dhabi, 29 January 2013

IAEA Completes Emergency Preparedness Review (EPREV) of the UAE Programme

From 21 to 31 March 2015, the IAEA completed an 11-day review of the UAE's emergency planning efforts at the request of the UAE. Seven IAEA experts visited the UAE and their review found that the country's plans include some key areas of excellence such as co-location of the emergency operations centers. In addition, the IAEA lauded the UAE for establishing a clear definition of roles and responsibilities for the organizations involved in emergency planning.



IAEA Experts and UAE national stakeholders during the EPREV mission in Abu Dhabi, March 2015

Future Barakah Operators

ENEC, in cooperation with FANR, put in place a comprehensive Human Resource Development programme aimed at developing a nuclear workforce to operate, maintain, and sustain the UAE's nuclear power plant project. To this end, a Scholarship Programme was developed in cooperation with the Khalifa University of Science, Technology and Research. With the aim of Emiratisation, ENEC intensively provides corporate trainings and fellowship programmes to its employees and Scholarship graduates, in cooperation with partnering countries.



PHOTO: ENEC

Participants of Energy Pioneers – ENEC's Human Capacity Development programme

Nuclear Energy Management School

In May 2015, ENEC collaborated with the IAEA to hold the Nuclear Energy Management (NEM) School at Khalifa University in Abu Dhabi, in conjunction with the Federal Authority for Nuclear Regulation (FANR). The event was a joint UAE-IAEA initiative which provided a unique international educational experience aimed at building the future leadership to manage nuclear energy programmes through knowledge sharing and global networking.



IAEA Technical Cooperation delegation and participants of the second NEM School hosted at Khalifa University in Abu Dhabi, May 2015



Current Status

On 2 September 2015, ENEC celebrated the pouring of the first safety concrete for Unit 4, making it the world's leading nuclear energy construction site with four identical reactors being safely constructed simultaneously on one site.

The event was attended by the UAE Minister of Energy who commended ENEC's progress in its delivery of the programme, which adheres to the highest international standards of safety, quality and performance.

As of August 2015:

- Unit 1 is more than 75% complete
- Unit 2 is 53% complete
- Units 3 & 4 – 27% complete
- Overall construction completion rate for Units 1-4 is at 50%

Construction of the Barakah Nuclear Power Plant (Barakah NPP) in the Western Region of Abu Dhabi continues to progress safely and steadily.

The plant will eventually consist of four nuclear power generating units with a combined capacity of approximately 5,600 MW, providing up to 25% of UAE's electricity needs.

Unit 1 is scheduled for completion in 2017, with the additional units following at 12 monthly intervals, with the fourth unit set to commence commercial operations in 2020, pending regulatory reviews and licensing.

In June 2015, ENEC installed the reactor vessel for Unit 2. An event was held to celebrate the occasion and was attended by Sheikh Hamdan, the Ruler's representative in the Western Region.

In July 2015, ENEC installed its second full scope APR-1400 training simulator in its Simulator Training Center (STC) at Barakah, and also completed a major upgrade of the entire center.



PHOTO: ENEC

Barakah Nuclear Power Plant Construction Timeline

- On 17 July 2012, the nuclear regulator, the Federal Authority for Nuclear Regulation (FANR), approved the issuance of the Construction Licence for Barakah Nuclear Power Plant Units 1 & 2. The following day, ENEC started the construction of the UAE's first nuclear power plant, pouring the first batch of nuclear safety concrete for Barakah Unit 1.
- On 28 May 2013, ENEC commenced the construction of the second nuclear reactor.
- On 12 February 2014, FANR granted ENEC the approval for additional civil works relating to Barakah Units 3 & 4 under a Limited Construction License.
- Construction License for Units 3 & 4 was granted by FANR to ENEC in September 2014.
- ENEC submitted its Operating License Application to the Federal Authority of Nuclear Regulation (FANR) to operate Units 1 & 2 of the Barakah Nuclear Power Plant in March 2015.
- In 2016, fuel loading for Unit 1 is projected.
- The first Barakah Unit is projected to enter into commercial operation in 2017, with all four nuclear reactors to be operational by 2020.

Construction progress on Unit 1 of the UAE's Barakah Nuclear Power Plant: more than 75% is now complete

PHOTO: ENEC

