

NUCLEAR HAS A FUTURE AFTER FUKUSHIMA

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In March 2011 Japan suffered one of the worst natural disasters in its history when a massive earthquake and tsunami hit the country followed by a serious nuclear accident at the Fukushima Dai-ichi site. While about 100 people died in the earthquake itself; about 16 000 lost their lives or were missing after the tsunami. 138 000 buildings were destroyed. Japanese response was very quick and effective: in a perimeter of up to 30 km, about 465 000 people were evacuated in a very short period of time.

Challenges facing Japan were tremendous not only because of direct consequences such as electricity production decreased by 30 to 40 % in Tokyo and Tohoku areas and contamination spreading in a large area, but also because it was concurrent of economic situations as:

- Yen currency appreciation (+ 40% in 4 years)
- national debt reaching 220% GDP in 2010

The effects of the accidents went far beyond Japan. In some countries the global support for nuclear has fallen drastically since the accidents.

So, that event became the new test of robustness for the world nuclear industry.

There are 437 operating nuclear power reactors in the world today. The latest IAEA projections suggest that number could increase by 80 or 90 in the next 20 years.

There are 67 new reactors under construction. The main growth in the coming decades is expected in countries such as China and India.

China hosts the world's largest nuclear development program. On top of 16 existing nuclear reactors, 26 are under construction and a further 51 reactors are firmly planned.

India has 20 nuclear reactors in operation in six nuclear power plants, while seven other reactors are under construction. New Delhi's plans to increase its nuclear capacity are moving faster than ever.

Some European countries announced plans to move away from nuclear power by their political judgment but none of these moves were made based on scientific evaluation. On the other hand, a number of other countries have looked at the latest safety nuclear technology option which can even cope with catastrophic hazards, and maintain their plan to introduce nuclear power, including Brazil, South Africa, Turkey, Jordan, Poland, Vietnam and other Asian nations. Even some emerging countries who produce oil and gas and currently depending on fossil thermal power generation and desalination, seriously plan to build nuclear power, since their oil and gas resources have more value in global market than consuming as fuels for electrical and water production and of course these reserves are limited in future.

Nuclear power provides many benefits. It can help to improve energy security, reduce the impact of volatile fossil fuel prices, mitigate the effects of climate change without CO₂ emission and make economies more competitive.

Beside the political stances, Governmental regulators, nuclear operators and nuclear vendors have identified lessons learned from the accident mainly regarding design, communication and safety culture.

Let's illustrate what it means on the most recent reactor developed jointly by 2 major nuclear countries - France (AREVA) and Japan (Mitsubishi Heavy Industries, Ltd) – the ATMEA1 reactor, a Generation 3+ reactor.

The ATMEA1 reactor is an evolution of existing reactor designs from the same technology as ANGRA reactors (pressurized water reactors). Being a very recent design, it is composed of fully-operated, licensed, certified systems and components with the optimum integration of the most-modern, proven technologies by AREVA and Mitsubishi Heavy Industries, Ltd.

“French nuclear regulatory authority (ASN) assessed that ATMEA1 is robust enough against Tsunami which cause Fukushima-Daiichi event. Even if a Fukushima-Daiichi type event take place, ATMEA1 reactor is designed to cause no consequence on the people living on the outskirt of the power plant.” according to Philippe Namy CEO of ATMEA the French-Japanese joint-venture in charge of the design and construction of the ATMEA1 reactor.

The ATMEA1 reactor is currently considered for construction in several countries such as Jordan, Vietnam, Hungary, Turkey, Brazil (where it was presented to the market on November 28th 2012) and Argentina.

The ATMEA1 example illustrates how the nuclear industry – including the Japanese one – has already moved forward to prepare the future. Even if a few European countries have abandoned nuclear, most of the emerging countries have understood that nuclear shall be part of their global energy mix.

To sum up, the fundamentals of nuclear energy need are still there, same as before the accidents. Safety standards have increased which lead to the implementation of Generation 3+ reactors like ATMEA1, a new generation of safer reactors.

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