An indigenous solution to power crisis

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The Kerawalapitiya "Yugadhanavi" power plant is the largest power plant ever built by Sri Lankan engineers. Though, It looks like another multi-storeyed building, it is not so. Dhammika Nanayakkara, Project Manager regards it as a system of systems, just as our body, integrated into generate electricity.

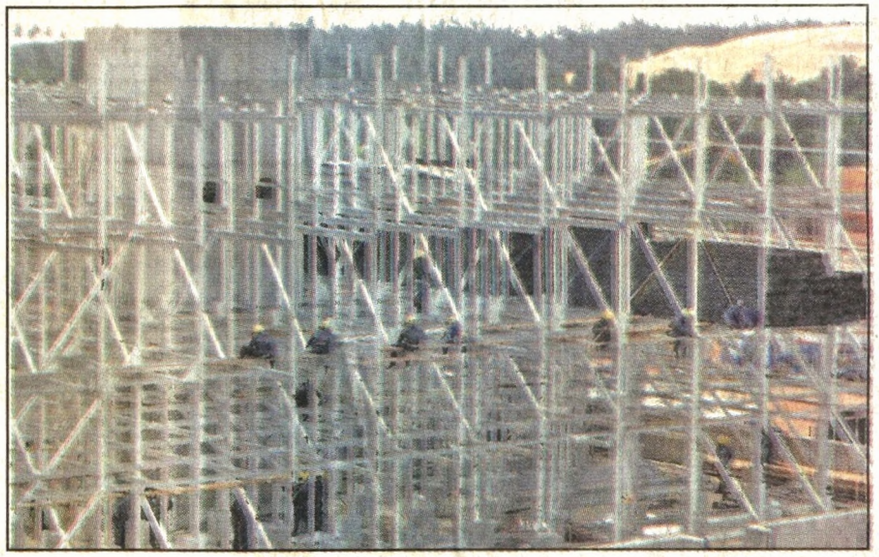
Two gas turbines, a steam turbine, heat recovery steam generators, chemical dosing system, power plant control system, electrical balance of plant, emission monitoring system, fuel washing and treatment system, sea water desalination/demineralisation system, waste water treatment and effluent water treatment, condenser and accessories, cooling tower and cooling water system, sea water intake system, storage tanks, pipe lines, and many of buildings are put together to produce power.

"We have only bought the high-quality equipment from world reputed companies from countries such as the USA, Netherlands and Germany to ensure the lasting service, may be for 25, 30 years," Dhammika said.

"This is truly a Sri Lankan marvel," he added, "because from the design up to the construction, everything was handled by the Sri Lankan engineers, perhaps, after Jethwanaramaya and Minneriya tank built by our ancestors."

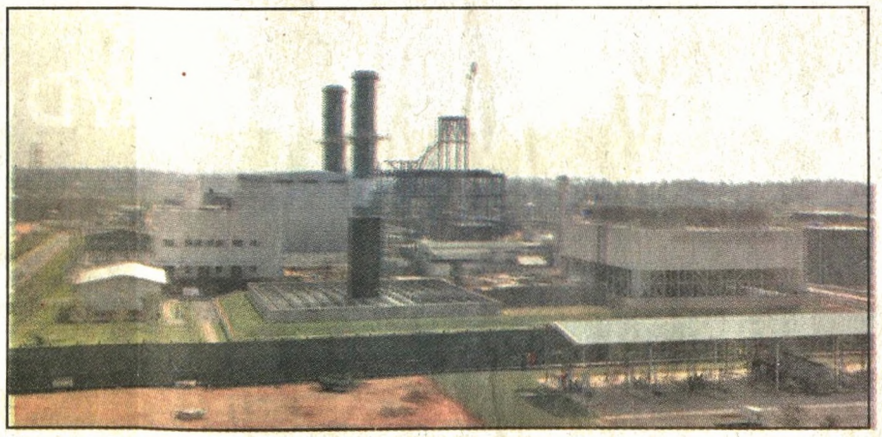
Power and Energy Minister W.D.J. Seneviratne regarded it as a good intermediate arrangement to face the country's growing power demands in 2009 and 2010, until the commissioning of the Upper Kotmale and Norochcholai Coal Power plants.

President Mahinda Rajapaksa during an inspection tour



Power transmission grid

Construction site



The completed plant

"This had been unnecessarily dragged on for five years," the Minister noted. As a result no new power plant was built since 2005, making the existing capacity fall short of the demand in 2009.

"This meant that if we did not build on time power cuts would have been inevitable," he remarked.

"Short sighted decisions to buy power generators using auto diesel plants owned by the private sector incurred a tremendous loss to the CEB," the Minister lamented.

He said that President Mahinda Rajapaksa took critical decisions to go ahead with projects such as Norochcholai and Upper Kotmale.

Its full name; Multi-fuel operated combine Cycle Power Plant, is evident of its technical complexity. "Multi-fuel operated is characteristic of its multi-fuel capability i.e. its ability to use three varieties of fuels; auto diesel, heavy fuel or LNG (Liquefied Natural Gas), explained Dhammika. "We did not want exhaust heat to go unutilized that is why we opted for a steam turbine in the second phase of our project. Simply, the HRSG system captures the exhaust heat to generate steam and to run another turbine.

This would generate more power thus decreasing the unit price. The significant feature is that the Kerawalapitiya is the first combined cycle power plant to use heavy fuel in the country.

"The plant is also LNG, and auto diesel ready," says Dhammika. "Furnace Oil or heavy Fuel," explains Dammika is the heaviest commercial fuel that can be obtained from crude oil, heavier than gasoline and naphtha, but cheaper than both.

The current market price of one litre of heavy oil is around Rs. 42 but a litre of auto diesel is Rs. 110. However, one litre of HF would produce 3.1 units of electricity while auto diesel could only produce units 2.8."

He added that the HFO is low cost and one litre could produce more electricity saving some Rs. 10 billion annually.

"We can pay off the entire cost of the plant in two years." The plant will get HFO through the CPC. The fuel stocks would take three months to arrive at the site after placing orders. "The plant is now running on the fuel we ordered last July when the oil prices were very high," he explained the reason for high unit prices by the CEB. "When the next fuel orders arrive we could sell one unit at Rs. 18.40 to the CEB."

Dhammika alleged that certain persons with vested commercial interests had written more than 10 paper articles stating that the power plant cannot run on HFO.

"They never thought about the fuel treatment plant and we proved that they were wrong and then they raised another issue of the unit cost," he declared.

Another unique feature of the plant is that it desalinates sea water for its entire fresh water requirements, "otherwise we would be putting a heavy burden on the fresh water sources," he added. The plant also uses sea water for its cooling towers."

According to Dhammika, the plant uses heavy fuel that is low in sulphur (2%). The stack of the plants is 80m taking the emissions higher up into the sky for a better spread.

"Aviation regulations restricted the height to 80m although we wanted to build it higher." However, he did not comment on the emissions of other hazardous heavy metals.

With many special features Yugadhanavi is a project by West Coast Power Company which is a subsidiary of the CEB and they have created history with the local talent saving much needed foreign exchange with an uninterrupted power supply to the nation in the next couple of years.

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