Dr. A. N. S. Kulasinghe: Creator of Concrete Revolution

by Dasun Edirisinghe

Well known Sri Lankan Engineer Dr. A. N. S. Kulasinghe, 86 years, passed away last Tuesday (14) after ailing for a long period. He is a superior engineer who introduced the method of pre-stressed concrete construction.

Dr. Kulasinghe obtained a Degree qualification and his Doctorate from local and foreign universities and was awarded honourary membership by many international engineering institutions including those in the United Kingdom and India.

He was the creator of the concrete revolution which opened a new dimension in the construction industry through the introduction of the pre - fabricated concrete method. He was instrumental in using rubber, ash, coir dust and paddy husk as supplements in making concrete posts as an alternative to the traditional concrete based on cement, metal and sand. He pioneered the use of local raw materials in a number of inventions using coconut charcoal for energy production and coal and wood for operating machines, promoted mini-hydro electric schemes using rural waterways and reservoirs, minimised the use of wood for house building and invented a fuel conserving carburettor.

Dr. Kulasinghe was a practical engineer who spent most of his time in the field than in air-conditioned office. His career starting from the hydro electricity field spread into other areas making vast contributions to many institutions such as the Ports Authority, State Engineering Corporation, State Hardware Corporation and the Steel Corporation.

Arumadura Nandasena Silva Kulasinghe was born in Udammita in Ja-Ela on October 26, 1919. After his mother's death, he shifted to his sister's home in Wadduwa in the Kalutara District. As his first school he entered the Wadduwa English Boys College. After studying seven years at the Wadduwa English College, he was moving to the Mari Stella College, Negombo in 1934 when his residence changed back to Ja-Ela. Young Kulasinghe passed the Junior School Certificate Examination with first class level at the Maris Stella College.

Dr. Kulasinghe had an ambition to be an engineer from his childhood. He wanted to study Physics as a subject in his higher education. That time, Kulasinghe was waiting for higher studies at his home. However, he was not spending time without studies. He was participating in the evening classes of the Technical College. Yet Kulasinghe could obtain little knowledge about technology at these evening classes.

Afterwards, the advanced level classes started. Kulasinghe entered St. Benedicts' College Kotahena for his advanced level studies. He chose Sinhala as a subject in addition to Physics and Mathematics. Sinhala language was neglected at that time due to several reasons. But, Kulasinghe wanted to study Sinhala because of his unending desire for learning local languages. He could have got first place in first term test. But, Kulasinghe was not going to stop participating the evening classes in the Technical College.

Dr. Kulasinghe is not only a scientist. He is a good Tabla and flute player. He was learning Music at the time of attending the evening classes of the Technical College. At that time, he participated in the SLBC programmes too as a Tabla and Flute player.

In 1939, the Second World War time, he could not wait for exams for a long time. Kulasinghe joined the Norton Bridge Hydro Power Project as a Technical Assistant in 1940. The Principal of the Technical College supported him to join the project. The Norton Bridge Project was a golden opportunity to Kulasinghe to learn the practical application of what he had learnt. After some time, in 1943, he was promoted as the residential engineer of the project. However, Kulasinghe left the project and joined the Colombo harbour in 1944 as a junior assistant engineer.

1946 was a memorable year to the young Kulasinghe. He got married with Dulsy Swarnalatha in 1946. After 1948, the year of independence, Kulasinghe was promoted as the deputy engineer of the Sri Lanka port. He was playing a breaking role in this post.

However, Dr. Kulasinghe became famous with his concrete technology. At that time, the pre stressed concrete construction technology was only in Europe. Kulasinghe introduced the pre stressed concrete technology to Sri Lanka in 1949 by his own researches. After several researches, Kulasinghe obtained a patent for his pre stressed concrete technology in 1956. Then Kulasinghe was famous for his researches. He was given a chance to attend the pre stressed concrete federation held in Oslo in 1957. Kulasinghe presented his concepts at the federation as the Sri Lankan representative.

In 1962, Kulasinghe was appointed as the director of several institutions such as Tyre Corporation and Steel Corporation by the Minister of Industries, Maithreepala Sirisena.

Dr. A. N. S. Kulasinghe

At that time, the funds came to Sri Lanka from socialist countries such as Russia. They did not like to give constructions to western countries based companies. Then, there was the need of a local institution for constructions. It paved the way to the birth of the State Engineering Corporation (SEC). The Sri Lankan government established the State Engineering Corporation under the Industrial Development Act. A. N. S. Kulasinghe was appointed as the first chairman of the SEC.

After that, the SEC contributed to a large number of key constructions in the country. The Planetarium was constructed for the Industrial Exhibition of 1964 according to a concept of Kulasinghe. The Kalutara chetiya was also constructed according to Kulasinghe's concept. Kothmale Maha Seya, Waraya Chethiya other Chetiyas were also constructed under his concepts.

He retired from the SEC in 1971 and went abroad. There he participated in conducting lectures in Malaysia, Thailand and Indonesia on the request of the United Nations Organisation.

However, in 1977, he returned to Sri Lanka and was appointed as the Chairman of the National Engineering Research Institute (NERD) at the request of the Mahaveli Development Minister Gamini Dissanayake. He was also the founder Chairman of the Inventors' Commission of Sri Lanka.

Dr. Kulasinghe who has immensely contributed to the Engineering field in this country today sleeps his last sleep. Sri Lanka as a third world country, which looks to the West for everything has lot to learn from his life. Being blessed with natural resources, but not so with intellects to get the full use of them, Sri Lanka will miss Dr. Kulasinghe more than ever.

Some inventions of Dr. Kulasinghe

1. Crop drying machine using solar energy — Could be used for drying scraped coconut, vegetables, fruits and fish.
2. Domes measuring 100'x33', interior, with the concrete roof, remains without subotancial renovation for the last 37 years.
3. "Umbrella-shaped" roof — a technology that could be used as roof cover of vehicle-parking sheds.
4. Mahaweli Maha Seya, dome-shaped stupa at Kotmale with 200' diameter at the circular base with 1" thick interior concrete plaster and Kaolin brick cover in the enterior.
5. Kalutara Bodi Stupa, the first of its kind with semi-globular shape 100' in diameter 5'.5" in thickness, using "thin-concrete" technology.
6. Sambuddha Jayanthi Stupa — Chetiya Road.
   Thin concrete laid chetiya, using thin concrete, measuring 250' in height with the arch, the slab being 60'x60', consists a library, shrine room, oration room and a public hall, erected on Sambuddha Jayanti Commemoration in 1956.
7. Water-pumping tank, with an inverted conical shaped summit with a supporting pillar, at the B.M.I.A.
8. Sewers manufactured in rubber covered moulds, at Mahiyangana hospital.
9. A low-cost water-boiling equipment, using solar energy.
10. 4' length clay tiles launched by the State Engineering Cooperation.
    Garbage re-cycling plant 30 ton plants used in Manning Town market complex.
12. Baking Machine — operated using saw dust, with capacity for baking 128 loaves of bread per hour.
13. Kulasinghe auditorium at the NERD Centre made of thin concrete, 200' in diameter; a replica is found at the Peradeniya University.
14. The interior at Lanka Laylands with composite clay covered rafters.
15. Gas crematorium - used with fire wood converted to gas.
16. Concrete boats - launched by the Engineering Corporation in 1967, founded in Singapore in 1971 and in Malaysia in 1972.
17. Plane forming with "V" shaped concrete rafters.
18. Arch-shaped asbestos roof.