



Half Day Seminar on Precision Engineering for Higher Value-Added Industrial Products

by Ir. Prof. Dr Dominic C. Y. Foo

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A half day seminar on precision engineering was organised by Chemical Engineering Technical Division (CETD) on 5 Aug 2017. The seminar was delivered by Prof Richard C. T. Lee from Taiwan. Prof Lee was appointed as professor in the National Tsing Hua University upon his return from the United State in 1975. He was later appointed the President of Providence University as well as the President of National Chi-nan University. Upon retirement in 2007, he served as a senior adviser of the President for seven years. He founded the Taiwan Society for Precision Engineering in 2014 and served as the chairman for two years. During his visit to some schools in Malaysia, he decided to share with the IEM community on how the basic industrial technologies have helped Taiwan in producing high value-added industrial products.

In the introduction, Prof Lee explained that the citizens of all levels in developed countries (especially in those northern European countries), including those farmers, carpenters as well as cleaners have much better incomes as compared to citizens of in less developed countries. However, this does not mean that the farmers and carpenters are having better skills than those in less developed countries. Prof Lee has the opinion that nearly all developed countries have a common characteristics – they are good in industries. For instance, France has the famous Airbus company. Hence, its transportation industry benefited a lot from this multi-national corporation that is based at France. For the case of Sweden, even though their population is only 9.9 million, they own Ericsson – the world largest communication company and the second largest company for cutting tools. Similar characters also applied to Netherland (who owns Phillips and ASML), Finland (with Nokia who owns Alcatel-Lucent – the third largest communications company), Switzerland (with two largest pharmaceutical companies), etc. Prof Lee also emphasized that, apart from helping their employees, the good industrial companies also help many people outside their companies. Through tax paying, the companies also help their countries to get good income. With sustainable income, the government of developed countries can afford to provide good subsidies to support their lower income citizens, such as farmers.

Prof Lee feels that for a country to become rich, it must possess industries which make high value-added products. He generalised these as “precision industries”. By definition, precision industries make products with very high specifications, e.g. metal wire with 18 μ m diameter, electron beam with less than 10 nm for its diameter, measurement equipment which can detect current of 2 femto ampere (note: 1 femto ampere = 10⁻¹⁵ ampere).

In the second session after the break, Prof Lee gave several examples for the precision industries in Taiwan. These examples include technologies in various engineering disciplines, such as chemical engineering (mixing, separation and purification), mechanical engineering (machine design), electrical and electronic engineering (circuit design, light encoder), as well as material engineering (grinding). For each of these technologies, Prof Lee outlined their basic underpinning engineering principles. The participants are attracted with those advanced technologies. The workshop ended with an interactive question and answer session.

Note: Slides of the presentation is made available on the Facebook page of CETD – <https://www.facebook.com/CETD.IEM>



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