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SEMINAR ON NUMERICALLY CONTROLLED MACHINE TOOLS  
OPENING ADDRESS BY DR LEE CHIAW MENG,  
MINISTER FOR SCIENCE AND TECHNOLOGY

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R.E.L.C.

1            Since time immemorial, man has been experimenting with mechanisation and automation. The objective is to make the best possible use of available resources, that is, manpower, material, capital and machinery.

2            In Singapore where industries are increasingly playing a vital role in the economy, it is inevitable that we must place attention to mechanisation. There is no doubt that it brings about greater efficiency and productivity among other things; and if Singapore is to produce a wider range of goods at competitive prices, its people must learn to automate more of their work processes.

3            It is in this context that I wish to congratulate the organisers of this seminar on NC machine tools. By their initiative, they have demonstrated that they are keenly aware of the necessity of introducing such processes if the Republic's manufacturing sector is to enter into the next phase of more sophisticated and technologically advanced industrialisation.

4            Like other developing countries, Singapore's manufacturing sector started with primary industries processing raw materials. The early factories required small capital outlays and had only unskilled labour. Value-added per worker was naturally low and so were the wages of the employees and the quality of their products.

5           In the late sixties, the Government launched an intensive programme to attract more capital-intensive industries requiring better skilled workers. Largely through the efforts of the EDB, Government incentives, and not in the least, our reputation of being a nation of hardworking people, we succeeded in convincing foreign investors to start such industries in Singapore.

6           More recently, these efforts to attract high value-added industries into the country have been stepped up and provisions have been made to enable organisations which need more capital to expand their production capacities as well as to increase the skills of their employees, to obtain loans at reasonable rates. To encourage manufacturers to invest in more sophisticated work processes, the Government is also prepared to give financial assistance for the training of workers.

7           The reasons for this shift in emphasis to higher technology industries are many-fold. I shall only mention two. Firstly, since manpower is our primary resource, common sense dictates that attention should be focussed on developing it. If the economy is to be further improved, it is essential that our human resource be better developed so that value-added per worker could also increase. Needless to say, this in turn would raise the wages and the standard of living of our people. Secondly, it will buttress the Government's efforts to make Singapore a centre for professional services in this part of the world. This is particularly so as industrial complementation will be one answer to the future progress of the region and Singapore can be a catalyst to further growth and development.

8           This brings me to the question of NC machine tools, the subject of this seminar. It is a logical extension towards higher technology industries. There are many misconceptions about automation and

mechanisation. For example, it is commonly believed that automation can only be adopted by major industries or by factories involved in mass productions, where economies of scale would justify the adoption of such a process. Coupled with this, there is a view held by many that automation implies the replacement of man by machines. A casual study of recent developments in the automation process will reveal that it can also be employed on batch production where small quantities of a number of different articles of the same type can be produced on the same machine. Examples of such economic application of automation to batch production are numerical control of machine tools, frame cutting of blades and ready-mixed concrete. The last process in fact, has now become a common sight in Singapore.

9           It is also not true that automation will result in redundancy. Most people fail to realise that automation releases man from low-level mental decision work, and relegates this to the control system. This aspect is not commonly realised by many. Thus, there have been extremist views that mechanisation is bad for the soul because it dehumanises the work process, and claims that machines are a scourge rather than a boon to mankind.

10           Frankly, I find such extremist views against automation difficult to accept. For one thing, they overlook the fundamental fact that the introduction of automated work processes inevitably upgrades the skill of the operator, who would be exercising his dominance on the machine and would, at the same time, be increasing his productivity.