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AN OVERVIEW OF PLANT TURNAROUND MAINTENANCE IN MALAYSIA

A poignant statement in Adam Smith's Wealth of Nations is the conviction that "economic power stems from the ability to produce" (Smith, 1937 in Alcorn, 1997). A viable economy depends on the ability of the nation to maintain and develop this capacity. An economy experiences growth through industrial development that called for investments in the means of production namely plants, equipment, human resource, information technology, and others. This tenet has placed the importance of technology in the economic structure of a nation. Technology is one of the key attributes in developing and supporting the economy of a nation (Alcorn, 1997). In the case of Malaysia, the country has seen rapid industrial development during the last four decades in her effort to move towards an advanced industrial country.

The industrial sector has spearheaded the transformation of the Malaysian economy since the 1960s. The first phase of industrial development during the 1960s was aimed at import-substitution. This was followed by the construction for export-oriented industries during the 1970s which also witnessed the establishment of Free Trade Zones to encourage direct investments from foreign multinationals. In the 1980s the government gave further emphasis to import-substitution industries. During this period, Malaysia has seen rapid economic growth. Primarily, the increase was linked to the increasing role of the manufacturing sector.

Further industrial expansion was steered by the Fourth Malaysia Plan (1981-1985) that saw greater efforts by the private sector, both local and foreign, investing in heavy industries. The economic transformation brought by the industrial sector has resulted in significant structural changes in the composition of gross domestic product (GDP) of Malaysia in the period between 1970 and 2000. The manufacturing sector has become the most significant contributor to the Malaysian GDP. In between that period, the share to GDP of the manufacturing sector has grown from 13.7 percent to 37.2 percent (Anuwar, 1994).

Since the 1980s, the industrial sector saw a move to more capital and technology-intensive industries. Under the Industrial Master Plan (Sixth Malaysia Plan, 1991-1995), 12 industry groups were identified including, chemical and petroleum industry, palm oil products industry, non-metallic mineral products, rubber products industry, and food processing industry. In line with this expansion plan, there was an increased demand for electricity by these industries. As a consequence, Malaysia experienced the need to increase the supply of electricity at a rapid rate. As such, the nation saw the emergence of new electric power generating plants to meet the ever growing demands. The consequence of the oil price increase has further promoted significant development in the chemical and petrochemical industries in Malaysia.

The upshot of the rapid economic development experienced by Malaysia in the last four decades is the proliferation of plants in the manufacturing sector. There were unprecedented massive investments in capital intensive technology by local and foreign investors during the period. These technologies have to be managed to ensure reliable and efficient operations to generate a sustainable return to investors. The management challenge was made more complicated in light of the competitive global market. Safe and efficient operations of these technologies, in the form of plants, entail systematic maintenance management. These include routine servicing such as cleaning, fueling, lubricating, as well as periodic inspection and calibration. The following approaches to maintenance were adopted by various manufacturing plants (Kelly, 1997):