

Empirical Investigation of Barriers to Industrial Energy Conservation Measures in the Manufacturing Small and Medium Enterprises (SME's) of Pakistan

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Abstract : Industrial sector in Pakistan accounts for 25% of total energy consumption in the country. The performance of this sector has been severely affected due to the adverse effect of current energy crises in the country. Energy conservation potentials of Pakistan's industrial sectors through energy management can save wasted energy which would ultimately leads to economic and environmental benefits. However due to lack of financial incentives of energy efficiency and absence of energy benchmarking within same industrial sectors are some of the main challenges in the implementation of energy management. In Pakistan, this area has not been adequately explored, and there is a lack of focus on the need for industrial energy efficiency and proper management. The main objective of this research is to evaluate the current energy management performance of Pakistani industrial sector and empirical investigation of the existence of various barriers to industrial energy efficiency. Data was collected from the respondents of 192 small and medium-sized enterprises (SME's) of Pakistan i.e. foundries, textile, plastic industries, light engineering, auto and spare parts and ceramic manufacturers and analysed using Statistical Package for the Social Sciences (SPSS) software. Current energy management performance of manufacturing SME's in Pakistan has been evaluated by employing two significant indicators, 'Energy Management Matrix' and 'pay-off criteria', with modified approach. Using the energy management matrix, energy management profiles of overall industry and the individual sectors have been drawn to assess the energy management performance and identify the weak and strong areas as well. Results reveal that, energy management practices in overall surveyed industries are at very low level. Energy management profiles drawn against each sector suggest that performance of textile sector is better among all the surveyed manufacturing SME's. The empirical barriers to industrial energy efficiency have also been ranked according to the overall responses. The results further reveal that there is a significant relationship exists among the industrial size, sector type and nature of barriers to industrial energy efficiency for the manufacturing SME's in Pakistan. The findings of this study may help the industries and policy makers in Pakistan to formulate a sustainable energy policy to support industrial energy efficiency keeping in view the actual existing energy efficiency scenario in the industrial sector.

Keywords : barriers, energy conservation, energy management profile, environment, manufacturing SME's of Pakistan

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