Abstract

Implementation of Information and Communication Technology (ICT) enabled wireless control systems to manage plant operations are growing far and wide. Several ICT enabled wireless remote open loop systems such as wireless transmitters, control valves and smart sensors are available now. However, such systems are not yet introduced in the control of processes. In this work, authors attempt to choose the best suitable ICT enabled wireless control method in process industries, with the help of industrialists in a leading fertilizers and chemicals industry in central Kerala. For decision-making Analytic network process (ANP), a powerful tool in multi-criteria decision-making is used and it analyzes the performances of the control methods. Three types of control models are introduced for the ANP analysis. Control within the process, centralized control within a particular area and control from geographically diverse locations are the wireless control models used for the analysis. ANP measures the comparative strength and impact between elements in the network models. This decision model incorporates and relies upon the distinctiveness of ICT enabled control system. The result indicates that the best suitable control method is control within the process.

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Index Terms

Computer Science Wireless
Keywords

ANP; Multi Criteria Decision Making (MCDM); ICT; Wireless control system; Super matrix; Total desirability indices