An evaluation of the Selection Criteria used for Purchasing and Using either Distributed Control Systems (DCSs) or Programmable Logic Controller (PLCs) in industrial control applications

By

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A research project submitted to the Faculty of Industrial Technology, National University of Science and Technology, in partial fulfillment of the requirements of the degree of (Honours) Bachelor of Technical Education – Applied Physics and Computer Science

Abstract

Different users have developed preferences towards either the Distributed Control Systems (DCSs) or the Programmable Logic Controllers (PLCs) in their purchase of industrial control systems. It can be argued that both systems are capable of providing the same functionality. However the effectiveness and efficiency of each control system applied to various processes will vary considerably. This research project seeks to explore and evaluate the selection criteria used by consumers of these control systems, in the procurement process. A number of questions can be posed regarding the selection criteria employed – Is the choice between the control systems business-oriented or technically inclined? Are the differential advantages claimed by both suppliers of equipment substantiated in the selection process? To what extent does the operator feedback influence the purchasing decision?

This investigation focused on the users from PLCs and DCSs working backgrounds. The crucial question central to the investigation was to uncover what these users value in their choice of a specific control system. Evaluation of equipment procurement documents and feasibility study reports on projects that have been implemented was carried out. Furthermore, evaluation of PLCs and DCSs advertisements was done and subsequent interviews were held with marketers and salespeople of both control systems. Interviews and questionnaires were administered to engineers, technicians and operators, in this field.

The research found out that different people have different perceptions and opinions, which often cloud their decisions when selecting between PLCs and DCSs. The researcher suggests that users should approach the selection of a control system with an open mind and evaluate all factors. Factors to be evaluated range from technical specifications, costs at various stages of the project, quality aspects, spares, safety considerations, operations and maintenance costs to training of operators and technicians. PLCs and DCSs are now interchangeable in their applications and therefore users should not restrict their choice on a particular system but explore offerings from the other type of control system.

With the myriad of manufacturers producing a wide selection of control systems, choosing the right PLC or DCS can prove to be a time consuming business and the researcher provides information on some of the differential advantages of each control system in the various factors evaluated in this research project.