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Iterative Design Process for Development and Virtual Commissioning of Plant Control Software

Authors : Thorsten Prante, Robert Schöch, Ruth Fleisch, Vaheh Khachatouri, Alexander Walch

Abstract : The development of industrial plant control software is a complex and often very expensive task. One of the core problems is that a lot of the implementation and adaptation work can only be done after the plant hardware has been installed. In this paper, we present our approach to virtually developing and validating plant-level control software of production plants. This way, plant control software can be virtually commissioned before actual ramp-up of a plant, reducing actual commissioning costs and time. Technically, this is achieved by linking the actual plant-wide process control software (often called plant server) and an elaborate virtual plant model together to form an emulation system. Method-wise, we are suggesting a four-step iterative process with well-defined increments and time frame. Our work is based on practical experiences from planning to commissioning and start-up of several cut-to-size plants.

Keywords : iterative system design, virtual plant engineering, plant control software, simulation and emulation, virtual commissioning
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