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System control diagram

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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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SYSTEM CONTROL DIAGRAM

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Norsok I-005:2013/AC:2016 has served as a basis for the elaboration of this PAS. The structure and editorial rules used in this PAS reflect the practice of the organization which submitted it.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

Draft PAS	Report on voting
65/669/DPAS	65/672/RVDPAS

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INTRODUCTION

This PAS is based on Norsok I-005:2013/AC:2016. Edition 1 of Norsok I-005:2013/AC:2016 was issued in 1995 and it has been widely used in the Norwegian Oil and Gas industry since then together with some international use on FPSOs and other fixed Oil and Gas installations.

The main objective for this PAS is to define a limited set of complete operational control functions (objects) and an explanatory condensed logical diagram, suitable for use in the continuous control process industry – e.g. Oil and Gas processes.

The main drivers for establishing this as a standard are the advantage of efficient engineering, implementation, and commissioning, as well as reuse of the control application across different suppliers of control systems. The diagrams give an unambiguous logical representation that is suited for data transfer.

This PAS also includes a method of documenting sequences (ref. IEC 60848) and their interaction with the control objects.

This PAS will provide the means to fill the gap between the P&ID's and the Functional requirement diagrams. (Ref IEC 61804.) The control functions definitions include required behavior descriptions of control modes, interlocking (Safeguarding), blocking and other operator commands. It gives a standardized operator interface on a functional level.

The logic diagrams carry a simplified process sketch as background, inherited from PFD/P&ID's, which enables reviews of the control applications in a multi-discipline environment.

This PAS can also be used as basis for defining a companion standard to OPC-UA (IEC 62541).

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NORSOK I-005:2013 Rev. 3 was adopted as NORSOK Standard in February 2013.

Annex A, B, D and F are normative. Annex C, E and G are informative.

The success of a plant development project depends on good and efficient means of communication between the involved parties, during all phases of the project.

Present extensive use of computerized systems and 3D modeling provide efficient tools for specifying and handling of physical equipment in a standardized manner. However, the development of methods and tools to specify functional relationships has not reached a corresponding level.

During the plant development the process engineers specify the process through the development of the P&IDs. Throughout this work process the process engineers acquire a thorough understanding of the total plant behaviour. However, the P&IDs provide limited facilities for documentation of the overall functionality as well as operational aspects of the plant.

It is the control system engineer's task to design the control system so as to fulfill the process functionality required to achieve product specifications as well as the requirements imposed by the overall operating and control philosophy and manning levels. To conserve the functional relationships implicitly specified by the P&IDs, the control system engineers have to transform the process engineers understanding of plant behaviour into the control system design and implementation.