



# PDS forum

Norwegian centre of force for developing  
Safety Instrumented Systems (SIS) in the  
petroleum industry



[www.sintef.no/pds](http://www.sintef.no/pds)



It is a known fact that any kind of safety systems alter peoples perception of risk and hence their behaviour. And very often the change in behaviour is eating away the safety margin that the safety system is supposed to provide. People drive faster with airbags and ABS breaks. They are less vigilant with fire if there are sprinklers and smoke detectors in their home. This implies that when safety systems fail, people are exposed to higher risk then before the introduction of the safety systems. Methods to ensure the reliability performance of safety systems are therefore an indispensable tool in the safety engineer's toolbox.

Computer based safety systems are complex in the true sense of the word. And as Ross Ashby, the father of cybernetics, stated more than fifty years ago: "only variety can destroy variety". Our interpretation of the Law of Requisite Variety is that the analysis of computer based safety systems requires more heads than the design of the system. That is why we from the very beginning formed a vast network of people from different industries to take part in the development and application of the PDS Method.

## THE PDS METHOD

PDS is a method used to quantify the unavailability of safety instrumented systems (SIS) as required in international safety standards like IEC 61508 and IEC 61511. The PDS method is widely used in the petroleum industry, but is also applicable to other business sectors. The method has been developed in close co-operation with oil companies as well as vendors and researchers of control and safety systems.

Predicting the future reliability performance of equipment and systems is a challenging subject full of pitfalls and conflicting interests. Questions related to how reliability predictions shall be performed and what a reliability analysis shall include therefore frequently arise. PDS is a method that has been developed to answer these questions in a realistic and as simple as possible manner.

## THE PDS HANDBOOKS

The PDS method is documented through a PDS method handbook and a PDS data handbook, both available in 2010 edition. The PDS handbooks present simple calculation formulas together with generic reliability data. The handbooks provide formulas for calculating Probability of Failure on Demand (PFD) and recommended failure data on various components. Recently, the handbooks have been extended to provide unavailability formulas also for continuously (high demand mode) operating systems.

For more information about the PDS method and the PDS handbooks, please visit

[www.sintef.no/pds](http://www.sintef.no/pds).

## THE PDS FORUM – NETWORK ON RELIABILITY OF SAFETY INSTRUMENTED SYSTEMS

PDS Forum is a co-operation between oil companies, engineering companies, consultants, vendors and researchers, with a special interest in safety instrumented systems (SIS). The forum's vision is to be the Norwegian centre of force for development of SIS within the petroleum industry.

At present there are 23 participating companies, meeting twice a year for workshops, presentations and technical discussions.

The main topics of the PDS forum are to:

- Exchange experience and ideas related to design and operation of SIS
- Exchange information on new field developments and SIS application areas
- Exchange and use of reliability field data
- Use of new standards for safety systems and development of guidelines for the use of these standards
- Provide input and ideas for the PDS handbooks.

The official language of the forum is Norwegian.

