

In general legislation forces industry to take preventive action to preserve and protect the environment and human. This can be achieved by applying European directives by manufacturers and also system operators. According to an ARC Group study in 2007 the worldwide market for safety systems reached 1.4 Billion US\$. With an expected growing rate of 12% per year it could reach 2.5 Billion US\$ in 2012. Since this significant trend will affect many companies, also those with almost no safety development experiences, the complex methods for realizing system safety must become more practical.

Although developing functional safety will raise the development costs, it can also save overall costs within the whole lifecycle of a product. The productivity can be increased by preventing accidents and ensuring health and safety of personnel. Costs can be cut by (i) reducing physical harm, (ii) reducing insurance premiums, (iii) reducing production loss and delay penalties, and (iv) limiting harm and cost of maintenance. Safety is the ability of a device to keep the risk below acceptable limits. Nowadays safety development stands for more than lowering risks but also for improving the product by optimizing the availability of the safety system:

reducing failures

eliminating restrictions if extending or updating the product

minimizing required maintenance work

Based on a system design and a clear understanding of the environment, operation and system usage, the potential harm that the system can cause should be investigated. Identified unacceptable high risks may enforce additional system functionality specially designed to reduce the risk to an acceptable level. It is vital that the equipment or system used to mitigate risks is functioning correctly, hence the term functional safety.

