Sûreté de fonctionnement des systèmes critiques
Diagnostic et tolérance aux fautes
Ecole Centrale de Lille – Jeudi 25 octobre 2012

The selection of logic solver and field device technologies and configurations to meet safety and availability requirements in the process industries

Paul Gruhn
Global Process Safety Consultant, ICS Triplex | Rockwell Automation
Houston, Texas USA, 281-330-0393, pgruhn@ra.rockwell.com

Key-words: *Safety Instrumented System, Safety Instrumented Function, Safety Integrity Level, Safe Failure Fraction, Fault Tolerance, ISA 84 (IEC 61511) standard*

When a restaurant has only two choices (e.g., hamburger or chicken sandwich), choosing is easy and fast. However, when a restaurant has a menu that is twelve pages long, choosing is neither easy nor fast. Designing a safety instrumented system is similarly problematic. The sheer number of choices available, such as configuration (e.g., single, dual, triple, quad), design options (e.g., certified vs. prior use, centralized vs. distributed), determining test intervals, and the multitude of different vendor products and technologies for both logic solvers (e.g., relays, solid state, programmable) and field devices (e.g., switches, transmitters) means that choosing and designing a system is no longer as easy and simple as it used to be back in the days of relays and discrete switches. This paper will review different design configurations and options for safety instrumented systems in the process industries and their impact on system performance.