



## Training for functional safety of electrical/electronic/programmable electronic safety-related systems and machinery

### Standards:

**IEC 61508-x:** Functional safety of electrical/electronic/programmable electronic safety related systems

**ISO 13849-1:** Safety of machinery — Safety-related parts of control systems

**IEC 62061:** Safety of machinery: Functional safety of electrical, electronic and programmable electronic control systems

<p><b>Day 1: Introduction</b></p> <ul style="list-style-type: none"> <li>• Day 1: Introduction</li> <li>• Overview</li> <li>• Risk analysis</li> <li>• Standards &amp; Regulations</li> <li>• Terms, Definitions</li> <li>• FSM, V-Model</li> <li>• Requirements engineering</li> <li>• Concept:             <ul style="list-style-type: none"> <li>- SRS S-FMEA</li> <li>- Safety Concept</li> <li>- V&amp;V</li> </ul> </li> <li>• System evaluation</li> </ul>	<p><b>Day 2: Software</b></p> <ul style="list-style-type: none"> <li>• Terms, Definitions</li> <li>• Development Process, V-Model</li> <li>• Techniques and Measures</li> <li>• Pre-existing SW</li> <li>• Tools</li> <li>• Documentation</li> <li>• Configuration management</li> <li>• Introduction in SOFTEMA</li> </ul>	<p><b>Day 3: Hardware</b></p> <ul style="list-style-type: none"> <li>• Terms, Definitions</li> <li>• Development Process</li> <li>• Techniques and Measures for avoidance and control of systematic failures</li> <li>• Failure rates and FMEDA</li> <li>• PFD/PFH-and SFF-Calculation</li> <li>• Data communication</li> <li>• ASICs / FPGAs</li> <li>• Introduction in SISTEMA</li> </ul>
<p><b>Day 4: Safety of machinery</b></p> <ul style="list-style-type: none"> <li>• Design aspects of safety-related control systems for machinery according to ISO 13849-1 and IEC 62012</li> </ul>		
<p><b>Day 5: Examination</b></p> <ul style="list-style-type: none"> <li>• Test (3h) for Functional Safety Certified Engineer / Professional IEC 61508</li> <li>• Certificate of attendance states IEC 61508, ISO 13849-1 and IEC 62061</li> <li>• Condition for the Functional Safety Engineer/Professional examination is the participation in all training days.</li> </ul>		
<p><b>Qualification levels</b></p> <p><b>Level 1: Leading to title: “Functional Safety Engineer”</b></p> <ul style="list-style-type: none"> <li>• Proof of project experience is not required</li> <li>• It is recommended to participate to the 3 days training</li> <li>• Multiple choice and open questions</li> </ul> <p><b>Level 2: Leading to title: “Functional Safety Professional”</b></p> <ul style="list-style-type: none"> <li>• Requirements for admission to the course:</li> </ul>		



- 6 years of industry experience in Functional Safety Technology
- Evidence of participation in 2 Functional Safety projects
- Multiple choice and open questions

**Tentative trainings date – April 21-24, 2020**

**Conditions:**

- Minimum of 8 and maximum of 20 participants
- Last day to confirm the training to the trainers: March 01, 2020
- Training will take place at: TÜV SÜD Canada | 4479 Autoroute 440 O, Laval, Quebec, H7P 4W6, CANADA, Office: (905) 883-7305/7308
- Training will be performed by one USA based expert of TÜV SÜD
- Training material will be provided electronically as PDF-File. The material is in English language.