

## Evaluation Results

Q#	Question
1	<p><b>What are the methods of safeguarding in the safe committee handout 1</b></p> <p><b><u>Baseline:</u></b> Based on the provided text, the safe committee handout (implied to be ANSI B11.19-2003) lists safeguarding methods including: safe distance safeguarding, safe holding safeguarding, and safe opening safeguarding. These are considered secondary control measures. Additionally, safeguarding devices prevent inadvertent access to hazardous machine areas by preventing hazardous component operation if a body part is in the danger area, restraining or withdrawing hands from the danger area during operation, or requiring the use of both hands on machine controls. (ANSI B11.19-2003)</p> <p><b><u>Hybrid:</u></b> Based on the provided text, the Safe Committee handout 1 mentions these safeguarding methods: guards, safeguarding devices, awareness devices, safeguarding methods, and safe work procedures. These are defined in ANSI B11.19-2003 as methods of protecting personnel from hazards. The handout also lists specific examples of safeguarding devices that prevent inadvertent access to hazardous machine areas by preventing hazardous component operation if a body part is in the danger area, restraining or withdrawing hands from the danger area during operation, or requiring the use of both hands on machine controls. Additionally, safe distance safeguarding, safe holding safeguarding, and safe opening safeguarding are mentioned as examples of safeguarding work methods. (ANSI B11.19-2003)</p>
2	<p><b>what is the sistema cookbook?</b></p> <p><b><u>Baseline:</u></b> Based on the provided text (<a href="http://www.dguv.de/webcode/e109249">http://www.dguv.de/webcode/e109249</a>), SISTEMA Cookbooks are a series of publications. Cookbooks 1, 4, and 6 are mentioned, as well as Cookbooks 2, 3, and 5. Cookbook 5 (Version 2.0) is specifically referenced. The cookbooks provide support for using the SISTEMA software, a free tool for safety analysis of machine control systems according to EN ISO 13849-1.</p> <p><b><u>Hybrid:</u></b> Based on the provided text (<a href="http://www.dguv.de/webcode/e109249">http://www.dguv.de/webcode/e109249</a>), the SISTEMA Cookbooks are a series of publications (at least Cookbooks 1, 2, 3, 4, 5, and 6 are mentioned) that provide support in using the SISTEMA software. Cookbook 5, for example, is described as a guide to using the software (SISTEMA Cookbook 5 (Version 2.0)). The cookbooks cover topics such as the use of network libraries (Cookbook 2) and running multiple instances of SISTEMA (Cookbook 3).</p>
3	<p><b>what are hazards?</b></p> <p><b><u>Baseline:</u></b> Based on the provided text, hazards are defined by: (a) the inherent nature of a hazard related to machinery or a product's function, considering intended and foreseeable misuse; (b) the severity and reversibility of potential harm; (c) the number of people potentially affected; and (d) the</p>

	<p>frequency and duration of exposure.</p> <p><b>Hybrid:</b> Based on the provided text, hazards are defined implicitly through their relationship to risk assessment. A risk assessment is described as \"a comprehensive estimation of the probability and degree of possible injury or damage to health in a hazardous situation\" (Risk Assessment Definition). The text further describes characteristics of hazards in relation to machinery or products: \"(a) the nature of the hazard inherent to the function,\" \"(b) the severity of harm,\" \"(c) the number of persons potentially affected by the harm,\" and \"(d) the frequency and the duration of the exposure to the hazard\" (Risk Assessment Objective).</p>
4	<p>What is the verification and validation procedure?</p> <p><b>Baseline:</b> The verification and validation (V&amp;V) process for SRP/CS is a combination of steps addressing the system as a whole and its specific aspects (Chapter 7). Verification checks if the result of a phase matches the preceding phase's specifications (e.g., if a circuit layout matches the design, or if application requirements are fully compiled in the specification) (Chapter 7). Validation demonstrates whether the system meets imposed requirements (Chapter 7). The overall process involves a series of phases, with the results of earlier phases informing later ones (Chapter 7). A test plan for systematic validation is used in a later phase (Chapter 7).</p> <p><b>Hybrid:</b> The verification and validation (V&amp;V) procedure for SRP/CS is a combination of steps addressing the system as a whole and its specific aspects (Chapter 7). Verification checks if the result of a phase matches the preceding phase's specification (e.g., if a circuit layout matches the design, or if application requirements are fully compiled in the specification). Validation demonstrates whether the system meets imposed requirements (Chapter 7). The process is iterative, with results from earlier phases informing later ones (Chapter 7). A test plan, used for systematic validation of software, is implemented later in the process (Chapter 7).</p>
5	<p>Explain the Key terms and concepts that are in todd dickey -irsc2022?</p> <p><b>Baseline:</b> Based on the provided text, the key terms and concepts from \"todd dickey -irsc2022\" are not explicitly defined. The document mentions concepts like Mean Time To Failure (MTTFd), B10d value, and fault detection (DC) in the context of safety components (first paragraph). Additionally, \"Safety function (SF)\" is defined as \"Safety-oriented response to a triggering event (demand upon the...\" (Annex A). The document also distinguishes between normative and informative guidance, explaining the use of \"shall\" and \"should\" to indicate requirements versus recommendations (Key Terms and Concepts). However, there is no mention of \"todd dickey -irsc2022\" in the provided text to link these concepts to that specific source.</p> <p><b>Hybrid:</b> Based on the provided text, the key terms and concepts from \"todd dickey -irsc2022\" are not explicitly defined. The document mentions concepts like Mean Time To Failure (MTTFd), B10d value, and fault detection (DC) in relation to safety system components (paragraph 1). Additionally, Annex A defines \"Safety function (SF)\" as \"Safety-oriented response to a triggering event\" (Annex A). The document also discusses normative versus informative</p>

	<p>guidance, differentiating between \"shall\" (required) and \"should\" (recommended) statements (Key Terms and Concepts). However, there is no mention of \"todd dickey - irsc2022\" within the provided context.</p>
6	<p>what are the risk reduction strategy?</p> <p><b>Baseline:</b>  The risk reduction strategy, adopted from EN ISO 12100 [3] and supplemented by EN ISO 13849-1, is a three-step method (Figure 13, 8007988/2024-10-21   SICK):  1. Design the machine to eliminate risk as much as possible.  2. Define, apply, and check required protective measures.  3. Define how remaining residual risks can be reduced and inform the user.  Before these steps, the limits of the machinery must be defined and hazards identified (8007988/2024-10-21   SICK).</p> <p><b>Hybrid:</b>  The risk reduction strategy involves a three-step method: 1) designing the machine to eliminate risk as much as possible; 2) defining, applying, and checking required protective measures; and 3) defining how remaining residual risks can be reduced and informing the user. This strategy is based on EN ISO 12100 [3], adopted in Figure 1 of EN ISO 13849-1 and supplemented by aspects detailed in the latter standard (8007988/2024-10-21   SICK).</p>
7	<p>what are the three types of protected devices?</p> <p><b>Baseline:</b>  device ineffective by not adjusting the device properly.  Table 2. Types of Safeguarding Devices  Types of Machine Guards  4 Occupational Safety and Health Administration  Type  Restraint  Devices  Presence-Sensing  Devices  Presence-Sensing  Mats  Method of Safeguarding  Wrists are connected by cords and secured to a fixed anchor point which limit operator's hands from reaching the point of operation at any time.  Interlock into the machine's control system to stop operation when the sensor devices for locking landing doors;  (b) devices to prevent the load-carrying unit from falling or unchecked upwards movement;  (c) overspeed limitation devices;  (d) energy-accumulating shock absorbers, non-linear or with damping of the return movement;  (e) energy-dissipating shock absorbers;  (f) safety devices fitted to jacks of hydraulic power circuits and used to prevent falls;  (g) safety switches containing electronic components.  e.g., coded RFID tag  Type 3 and type 4 interlocking devices usually feature a high degree of protection (e.g., IP67, IP69K), are affected less by soiling, and are more tolerant to guard misalignments.  If a type 3 or type 4 interlocking device is the only interlocking device, it must meet the requirements in IEC 60947-5-3.  Designs are still grouped as with and without guard locking.  12.3  The way to a safe machine  The way to a safe machine  Overview of relevant safety standards  119</p> <p><b>Hybrid:</b>  Based on the provided text, there is no mention of three types of *protected* devices. However, Table 2 in the document \"The way to a safe machine\" lists three types of *safeguarding* devices: Restraint Devices, Presence-Sensing Devices, and Presence-Sensing Mats. The document also lists several types of devices related to safety, (a) through (g), but these are not explicitly categorized as types of protected devices.</p>

8 what are the Protection against other risks mentioned in celex?

**Baseline:**

product design and construction); (ii) take the necessary protective measures in relation to risks that cannot be eliminated; (iii) inform users of the residual risks due to any shortcomings of the protective measures adopted, indicate whether any particular training is required and specify any need to provide personal protective equipment. (22) Where products within the scope of this Regulation present risks that are addressed by the essential health and safety requirements set out in this Regulation but which are also wholly or partly covered by more specific Union harmonisation legislation than this Regulation, this Regulation should not apply to the extent that those risks are covered by that other Union legislation. In other cases, products within the scope of this Regulation might present risks that are not covered by the essential health and safety requirements set out in this Regulation. For example, products incorporating a Wi-Fi function might present risks not addressed by the essential health and safety requirements set out in this Regulation, as this Regulation does not deal with risks specific to such Wi-Fi function. (23) For trade fairs, exhibitions and demonstrations or similar events, it should be possible to display products within the manufacturer of the component that is included in the final product. As an exception, the safety components to be used in the safety functions of the machine, are CE marked according to Machinery Directive by the component manufacturer/representative in Europe. The machine manufacturer is responsible for carrying out the related risk analysis, following through the steps presented in Part 3, and ensuring compliance with the 27 Risk assessment using Safexpert

**Hybrid:**

Where products within the scope of this Regulation present risks that are addressed by the essential health and safety requirements set out in this Regulation but which are also wholly or partly covered by more specific Union harmonisation legislation than this Regulation, this Regulation should not apply to the extent that those risks are covered by that other Union legislation. In other cases, products within the scope of this Regulation might not the manufacturer of the component that is included in the final product. As an exception, the safety components to be used in the safety functions of the machine, are CE marked according to Machinery Directive by the component manufacturer/representative in Europe. The machine manufacturer is responsible for carrying out the related risk analysis, following through the steps presented in Part 3, and ensuring compliance with the present risks that are not covered by the essential health and safety requirements set out in this Regulation. For example, products incorporating a Wi-Fi function might present risks not addressed by the essential health and safety requirements set out in this Regulation, as this Regulation does not deal with risks specific to such Wi-Fi function. (23) For trade fairs, exhibitions and demonstrations or similar events, it should be possible to display products within product design and construction); (ii) take the necessary protective measures in relation to risks that cannot be eliminated; (iii) inform users of the residual risks due to any shortcomings of the protective measures adopted, indicate whether any particular training is required and specify any need to provide personal protective equipment. 27 Risk assessment using Safexpert