Safety Questionnaire for Working with the Astorino Educational Robot

Preliminary Legal Information

In accordance with the Machinery Directive 2006/42/EC, machines used in commercial environments must meet specific safety requirements. However, this directive provides an exception for machines intended for research and education, provided their purpose is clearly defined, and users are aware of the associated risks.

The Astorino robot, as an educational tool, is not equipped with a protective cage, which is justified by the need to ensure access and learning in a controlled environment. This questionnaire helps assess whether safety measures are sufficient and aligned with best practices and regulations.

Purpose of the Questionnaire:
To identify potential risks and ensure that safety measures comply with standards and best practices for working with educational robots.

Preliminary Information:

The Astorino robot is not enclosed in a protective cage, requiring special attention to safety. Completing this questionnaire will help identify areas for improvement and ensure a safe working environment in line with ISO 10218-1:2011 ("Industrial Robots - Safety Requirements").

Section 1: General Information

1.1. Teacher’s name:
1.2. Date of completion:
1.3. Robot's location of use:
1.4. Number of students present during the session:

Section 2: Training and Safety Procedures

2.1. Has the teacher undergone training on robot operation and safety? (YES/NO)
2.2. Is the teacher familiar with ISO 10218-1 safety standards for robots? (YES/NO)
2.3. Have students been trained in basic safety principles? (YES/NO)
2.4. Is a technical inspection of the robot performed before working with students? (YES/NO)

Section 3: Awareness of the Machinery Directive and Exceptions

3.1. Is the teacher aware that the Astorino robot is exempt from the full requirements of the Machinery Directive due to its educational purpose? (YES/NO)
3.2. Does the teacher understand that, under this exemption, some safety measures, such as a protective cage, may be omitted? (YES/NO)
3.3. Have risk-minimizing measures (e.g., collision detection, speed limitation) been implemented under this exemption? (YES/NO)

Section 4: Work Environment Assessment

4.1. Is the robot workstation adequately lit? (YES/NO)
4.2. Are there no obstacles or objects near the robot that could interfere with operation? (YES/NO)
4.3. Do students have sufficient space around the robot? (YES/NO)
4.4. Is the robot placed on a stable and secure surface? (YES/NO)

Section 5: Robot Operation Safety

5.1. Have students been informed about the robot's specific nature as an educational machine? (YES/NO)
5.2. Is the robot operating at a limited speed (max. 250 mm/s) according to educational safety principles? (YES/NO)
5.3. Is the collision detection function active and working properly? (YES/NO)
5.4. Is the robot used in accordance with the manufacturer's recommendations and in a controlled educational environment? (YES/NO)
5.5. Is an emergency stop button available? (YES/NO)
5.6. Do students know how to react in an emergency? (YES/NO)
5.7. Are potential risks from working with the robot (e.g., collisions, pinching) known? (YES/NO)
5.8. Have students been informed that the robot is not enclosed in a protective cage? (YES/NO)
5.9. Does the teacher monitor the robot's operation during the session? (YES/NO)

Section 6: Procedures in Case of a Hazard

6.1. Does the teacher know how to stop the robot in case of a malfunction or collision? (YES/NO)
6.2. Have students been instructed to report any unusual behaviour of the robot? (YES/NO)
6.3. Is an emergency stop button for the robot accessible? (YES/NO)

Section 7: Compliance Assessment

7.1. Have appropriate safety measures been implemented in the work environment despite exemptions from the full requirements of the Machinery Directive? (YES/NO)
7.2. Is the teacher aware of the potential risks associated with working with the educational robot (e.g., lack of a protective cage, risk of collision)? (YES/NO)
7.3. Are there procedures in place to enable quick stopping of the robot in the event of an incident? (YES/NO)

Section 8: Education and Training

8.1. Has the teacher undergone training on safety principles for working with educational machines? (YES/NO)
8.2. Are students informed about the specifics of the educational robot and associated risks? (YES/NO)
8.3. Does the teacher supervise the robot's operation during the session to minimize risks? (YES/NO)

Section 9: Opinions and Suggestions

9.1. Does the teacher consider the current safety measures sufficient for working with an educational machine? (YES/NO)
9.2. What additional safety measures could be implemented?
[Please provide detailed answers.]

Appendix: Information on the Machinery Directive

Machinery Directive 2006/42/EC:

- Applies to machines used in industrial environments.
- Exception: Machines intended for research and educational purposes can be used without full compliance with the directive, provided adequate protective measures are implemented.

Note: Users of educational robots should be aware of their limitations and specific usage characteristics to minimize risks. The robot manufacturer is obligated to provide full documentation and guidelines for safe operation.

Section 10: Signature and Acknowledgment

Signing this questionnaire confirms that the teacher is familiar with the safety principles, potential risks, and their responsibility to adhere to the rules for working with the robot.

Teacher's signature:
Date: