

**Service ID** S00214



**Location** Austria, Poland

## Functional safety testing of machines

### Provider service

Lukasiewicz - Poznanski Instytut Technologiczny

### Link to content

<https://agrifoodtef.eu/services/functional-safety-testing-machines>

### Type of Sector

Food processing, Greenhouse, Horticulture, Livestock farming, Tree Crops, Viticulture

### Accepted type of products

Physical system

### Type of service

Certification, Conformity assessment, ELSA assessment, LCA assessment, Performance evaluation, Test design, Test execu

### Description

Within the framework of this service, we offer the possibility of carrying out functional safety tests of objects in the form of, for example, autonomous vehicles, robots, machines, agricultural equipment and components, etc. The service provides opportunities to test these devices with measurements of their mechanical, physical, acoustic, electrical parameters and electromagnetic compatibility to assess the overall safety of the user of the tested vehicles, machines, equipment and components for agriculture, horticulture, forestry and food. Verification of the tested parameters is based on the requirements of standards and directives declared by the manufacturer as compatible with its product and general normative safety regulations. Initial evaluation of an object is carried out based on its provided design documentation and/or measurements made on a prototype based on harmonized and non-harmonized standards with relevant EU and sector regulations. In the case of autonomous vehicles, we also offer tests of the correctness of response and operation of safety devices built into their structures in standardized cases of hazardous situations. The results obtained can be used in the further process of product labelling, declaration of conformity to place the CE mark on the device.

## How can the service help you

Our testing service provides the opportunity to use a wide range of test and measurement equipment along with the participation of research staff specialized in its operation and interpretation of results. Within the proposed scope of the service, the client will have the opportunity to take advantage of a wide range of possibilities for testing their product. This is because the service provides opportunities to test these AI-equipped objects with measurements of their mechanical, physical, acoustic, electrical and electromagnetic compatibility parameters to assess the overall safety of the user of the tested vehicles, machinery, equipment and agricultural, horticultural, forestry and food components. Tests can be carried out on a prototype of a device, installation, system, as well as a finished device. Along with the object, its technical documentation can also be subjected to verification to indicate the necessary changes and corrections towards improving the safety of operation and handling of the device. Thanks to the use of this service, the client will obtain extensive information on the studied object in the field of safety of its operation and handling, as well as its impact on the environment and surroundings. These studies are carried out according to methodologies that comply with relevant standards and other legal documents. The service also supports the process of developing a risk analysis in accordance with the requirements of ISO 12100, the results of which can be used by the customer in the process in further optimizing its product. In the case of autonomous vehicles, we also offer testing of the correctness of response and operation of the safety devices built into their structures in standardized cases of hazardous situations, such as stopping in front of an obstacle in accordance with ISO 18497. The result of the measurements and tests can also be a guideline for the prototype to prepare the right device, the product to obtain a declaration of conformity to place the CE mark on it. The effect of this service, in this case, will be to assist manufacturers in the legal introduction of agricultural products into the EU single market and in the CE marking process.

## How the service will be delivered

Our service offers customised testing of electronic and mechanical equipment, robots and artificial intelligence-based systems. In addition to physical testing, we offer the possibility to analyse the technical documentation of an object to meet safety requirements. We offer tests focused on analysing changes in the state and behaviour of specific components, safety systems, with the possibility of extending measurement equipment and applying advanced data analysis techniques. For the service to be implemented properly, the customer must provide full access to the data in its possession, documentation and other research that has been carried out for the innovation (device, technology, system) that is the subject of the service. Data transmission will be carried out using cloud technologies, therefore the client is obliged to have connections and ICT infrastructure allowing for seamless transmission and reception of large data packets. Test reports are personalised and can be supplemented with workshops and training for your team.

We require a fully functional prototype and complete technical documentation. There are limitations regarding the dimensions and weight of the devices, and some tests may require prior resource reservations. All information is treated confidentially, with the option to sign a Non-Disclosure Agreement (NDA). Please be aware of the risk of prototype damage during endurance tests. If the tests need to comply with specific industry standards or regulations, kindly inform us in advance. The timeframe and costs are determined individually based on the scope and complexity of the tests.

## Service customisation

Our service is based on a structured process of preparation for testing and the testing of the object itself for the purposes of assessing their impact on the environment, the safety environment of their operation and the operation of objects (equipment, machines or their prototypes) equipped with systems integrated with artificial intelligence:

- You provide a functional prototype or test model of your solution, along with any previous analysis of its operation, the technical documentation you have to help identify the ranges and possibilities of its operation.
- A comprehensive analysis of the system is conducted, taking into account specific guidelines and expectations. It allows us to determine the necessary scope of preparation of the facility and the range, span of tests to be performed.
- We prepare materials, methods and scopes of testing, focusing on the legal documents norms, directives relating to the tested object and the expected scope of its work and impact on the environment.
- A detailed test plan is developed, defining the scope, methodology and schedule of activities. This plan is discussed with