Legal Framework for Autonomous Machinery

Antanas Juostas\*

Vytautas Magnus University, Agriculture Academy, Department of Agricultural Engineering and Safety, Studentu str. 15, Akademija, LT-53362, Kaunas reg., Lithuania; phone +370 620 67207, [antanas.juostas@vdu.lt](mailto:antanas.juostas@vdu.lt)

Egle Jotautiene

Vytautas Magnus University, Agriculture Academy, Department of Agricultural Engineering and Safety, Studentu str. 15, Akademija, LT-53362, Kaunas reg., Lithuania; phone +370 680 86029, [egle.jotautiene@vdu.lt](mailto:egle.jotautiene@vdu.lt)

**Keywords.** Legal framework, autonomous machines, environment, agriculture, economic benefits

**Abstract.** The progress of Artificial Intelligence, robotics, and Remote monitoring systems has enabled the development of agriculture machines to intelligent Autonomous Machine (AM) level. Still many decisions on field applications depends on the machine operators. The decisions may vary from driver to driver and can still be a range of requirements. Talking about AM, they must be constructed to make their own judgment according to the natural, road or outdoor conditions. The AM must decide how to behave in different situations and do the job as human operator does. Furthermore, these machines constructed to communicate with other vehicles and surrounding environment. Although autonomous machinery should be capable carrying out the assigned work. Currently, the autonomous machines are not capable to handle all possible failures and unexpected situations. Secondly, computer science has to play a significant role for implementing the objectives and goals for the autonomous machines. To make machine self-aware the certain norms, rules, restrictions must be implemented too.

Another important issue is the legal basis. Economic analysis indicates that autonomous machinery positive economic and environmental benefits for agriculture, but those benefits will only be realized if policy and regulations are enabled. Autonomous machines now is constructed under a standard for industrial equipment (ISO 3691 4). This standard does not require on site supervision, does limit speed to 0.8 km/h. The main question is who takes the responsibility for the accidents caused by autonomous machines, the impact on people and the environment. The target is, make autonomous machines conform to the rules, but not to structure the rules so that they can conform with autonomous machines. Currently, rules governing autonomous field equipment varies from almost none to quite restrictive. Some example shows that human supervision requirements could reduce the economic benefits from autonomous field equipment, especially for small and medium scale farms. In general, regulation of autonomous machines will influence adoption to the technology and determine who benefits.