Перспективные направления автоматизации современных лесозаготовительных машин

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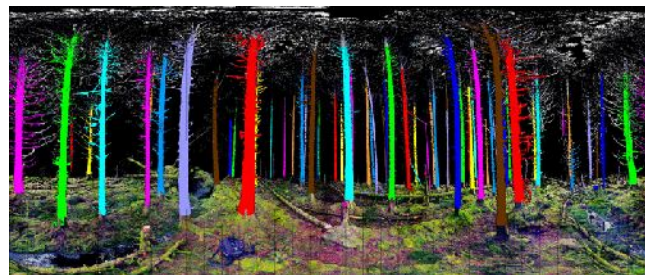# Perspective trends of modern logging machines automation

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The article examines the issues of increasing the efficiency of modern logging machines by automating the operations performed by them. A number of factors are highlighted that emphasize the urgency of modernizing different types of machinery for the forestry sector with a view to implementing automated functions (emphasis is placed on machines used for timber harvesting – the forwarder and the harvester). A brief assessment of the condition of the fleet of logging machines in the Russian Federation is given, and their quantitative and qualitative composition is analyzed. The main shortcomings of Russian-made machines are emphasized, including low MTBF performance, increased ground pressure, outdated construction equipment, negative impact on the forest environment, harm to the operator's health, etc. The most promising areas of automation are identified, among which, for example, the automated guidance of the harvesting machine on the object, the "boom-tip control" technology for more efficient management of the manipulator's working head, etc. The emphasis is on the importance of increasing the number of automated operations that make it possible to simplify and ease the hard work of the operator, reduce the negative impact of both physical and psychological stress, and minimize the harm to the environment. The main algorithms used for automation are briefly described; their advantages and disadvantages are revealed. A number of examples illustrating the achievements of domestic and foreign scientists in the field of automation of logging equipment are considered. Conclusions are drawn about the prospects for the introduction of automated functions that make it possible to improve the efficiency of existing and developed Russian-made cars and replace them with imported samples.

Keywords: automation of harvesting machines (forwarder, harvester); increasing the efficiency of harvesting; reliability indicators; facilitating operator's work; sparing soil effects.

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| Выделение точек на местности |
| Выделение горизонтальных срезов облака точек сканирования |
| Обнаружение ствола дерева путём поиска линий из точек |
| Соотнесение всех обнаружений ствола, относящегося к одному дереву |
| Создание графического представления (первоначальная траектория сканирования) и его оптимизация |
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