

Industry 4.0 in forest operations: A review of key challenges

Abstract

Industry 4.0 was first formalized in an official German government report of 2013 aimed at strengthening the competitiveness of their manufacturing sector. It refers to the fourth wave of industrial revolution that is currently emerging. The vision outlined in industry 4.0 is relevant to solving the production and social issues currently facing forest operations. However, a literature search using the terms “forest industry” or “forest operations” and “Industry 4.0” yielded just one conference proceeding. As such, there is a need to study the concept in the forest industry context in detail to facilitate its application. Although industry 4.0 is a new concept to the forest industry, vast number of forestry research have focused on various technologies that are enablers of industry 4.0. This article synthesises the forestry literature with the aim of identifying opportunities and challenges to implementing the concept of industry 4.0 specifically in forest operations. Recent examples of artificial intelligence applications and cyber-physical systems development for forestry applications will be presented. The authors share a roadmap for increased implementation of Industry 4.0 in forest operations and wood supply activities.

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