

Smart Sustainable Manufacturing: From Literature Review To A Green Framework

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Abstract

It is quite impressive what the industry 4.0 ,the big buzzword flying at the moment ,and its technologies have done to the manufacturing world that has moved from hands to machines , farms to factories using steam and water power , automation and assembly lines,to computers and electronics ,to finally reach a new generation of technologies that includes additive manufacturing, Big Data , IOT , Robotics..etc.This transformation has motivated many organisations around the world to rethink their business and to integrate a new world of manufacturing that is not only smart but also sustainable.Nowadays so many red flags are raised around sustainability as we are living in a critical time where global supply of natural resources and ecosystem services is declining dramatically while demand of these resources is escalating.The rapidly growing interest from both academics and practitioners in the field has urged the need for review of up to date papers.104 papers were selected in order to identify the current status of research in the domain of smart sustainable manufacturing.We propose a green framework that aims to reduce and optimize water , energy , raw materials consumption and CO2 emissions focusing on 6 pillars : Equipements , Transportation , Product Design and properties,Process,Human and Flow of information through the rising technologies of the Industry 4.0 mainly Artificial Intelligence , Additive manufacturing,Robotics, Internet of things, Big Data and cloud computing

Keywords (12 font)

Industry 4.0 , sustainability, smart sustainable manufacturing, new technologies

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