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A potential research area under shadow in engineering: Agricultural machinery design and manufacturing

Today, as a branch of global machinery industry, the agricultural machinery design and manufacturing or agricultural engineering industry has become one of the most important industries to be supported and focussed on in the era of hunger threats foreseen in the world's future. Increasing world populations can be considered as the key trigger on this issue. Global food/agricultural production has become vitally important as the current world population is rapidly increasing and is expected to reach 8.5 billion by 2030, 9.7 billion in 2050 and 11.2 billion in 2100. In order to produce sufficient volumes of food from current limited agricultural land, well-designed machinery and high technology-supported mechanisation of the agricultural production processes is a vital necessity. However, although novel improvements are observed in this area, they are very limited, it is seen lack of implementation of advanced engineering design and manufacturing technologies in this industry (relative to the other machinery industries) therefore agricultural engineering research area can be considered as a potential engineering research area under shadow. Most especially, this area suffers from a lack of professional leadership and management in modern machinery technology, and the ability to tackle problems in optimal design and manufacturing issues. This study aims to highlight the potentials, gaps, sector specific challenges and limitations of the agricultural engineering research area in macro level. In the study some of the key statistics related to agricultural production and agricultural machinery market in global range have been presented and focused on Turkey's current situation as this industry and research area in Turkey shows promise because of the agricultural production potential of the country. Under consideration of the sector specific indicators, the study revealed the major result: Insufficient level of sector-specific research on implementation strategies for up-to-date design and manufacturing technologies.

Speaker Biography

Huseyin Kursat Celik completed his BSc and MSc degrees at the Department of Mechanical Science Education in Kocaeli University (Turkey). He completed his Ph.D. study at the Department of Agricultural Machinery in Akdeniz University (Turkey). His main research interests are related to Computer Aided Design & Engineering, Engineering Simulations, Finite Element Method, Structural Optimisation, Material Testing, Experimental Stress Analysis, Design of Agricultural Machinery / Equipment, Reverse Engineering and Additive Manufacturing Applications. He has excellent professional/ practical experience in machinery design - manufacturing industry and academia for more than ten years. He has been certified as an advanced user for related engineering design and simulation software. He has taken part in funded scientific industry jointed research projects in Turkey and in the UK (Lancaster University) and he has more than 60 published papers in the peer-reviewed journals, congress/conference proceedings and industrial magazines both in national and international scientific arenas. He is a member of academic staff in Akdeniz University in Turkey and he has been a visiting researcher on a yearly basis at Lancaster University in the UK since 2009.

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