INTRODUCTION

PRISM is the Partnership for Research and Innovation in Sustainable Manufacturing (PRISM). It is an emerging alliance of industry, government, and academia with the goal of defining and executing a pragmatic, business-driven agenda for achieving and maintaining sustainable manufacturing. PRISM is funded primarily by the National Institute of Standards and Technology (NIST) Advanced Manufacturing Technology Consortia (AMTech) program.

Project Objectives
- Strengthening the existing industry-led consortia focused on developing advanced technologies to promote the growth of sustainable manufacturing in the U.S.
- Identifying and prioritizing research projects supporting long-term strategic industrial research needs in sustainable manufacturing
- Developing shared-vision technology roadmaps for the development of technologies to enable transformational innovations for next generation manufacturing
- Developing the multi-partner consortia to develop technology infrastructure and promote American excellence in sustainable manufacturing

SUSTAINABLE MANUFACTURING

Sustainable manufacturing can be defined as an integrated approach that addresses reduced negative environmental impact, improved energy and resource efficiency, minimized wastes, and assures operational safety and personal health while maintaining and/or improving the product and process quality. PRISM will explore sustainable manufacturing via three perspectives: products, processes, and systems.

PRODUCT, PROCESS, AND SYSTEM INTEGRATION FOR SUSTAINABLE MANUFACTURING

The primary objective in defining and the various elements of manufacturing process sustainability is to establish a standard scientific methodology to evaluate the degree of sustainability of a given manufacturing process. Given that manufacturing processes are numerous and differ widely, this is a complex task. However, general elements have been identified that are common to all such processes.

The following six factors can be regarded as significant to making a manufacturing process sustainable:
- Energy Consumption
- Manufacturing Cost
- Environmental Impact
- Operational Safety
- Personnel Health
- Waste Reduction

PRODUCT SUSTAINABILITY

Research shows six product sustainability elements and numerous sub-elements:
- Environmental Impact
- Societal Impact
- Functionality
- Resource Utilization and Economy
- Manufacturability
- Product’s Recyclability/Remanufacturability

REFERENCES


