IEEE-USA POSITION STATEMENT

U.S. ECONOMIC AND JOB GROWTH THROUGH MANUFACTURING INNOVATION

Adopted by the IEEE-USA Board of Directors, 23 June 2017

For the United States to remain vibrant as a global economic and technological leader, it is essential that innovation in the manufacturing sector continue to increase. The United States' strength in national security and economic security--as well as its ability to create wealth and new skilled jobs--depends upon a robust, adaptive and innovative domestic manufacturing industry.

To accomplish these objectives, IEEE-USA recommends that federal, state and local governments:

- Provide incentives for U.S. companies to innovate and turn new concepts into onshore manufacturing operations
- Provide small- and medium-sized manufacturers access to the resources necessary to make investments and upgrades--for example: using low interest loans, tax incentives, SBIR/STTR programs, or matching grants
- Support such sustained federal funding for manufacturing R&D and technology transfer programs in the United States as Manufacturing USA (National Network of Manufacturing Innovation) and the Manufacturing Extension Partnership
- Support continuous technical skills training to facilitate the necessary upgrading of the US manufacturing workforce

This statement was developed by the IEEE-USA Research and Development Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of the nearly 200,000 engineering, computing and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE, or its other organizational units.

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BACKGROUND

Manufacturing continues to be a key component of the U.S. economy as demonstrated by the following metrics:

- In 2016, the United States exported $1.265 trillion to more than 200 countries. (Source: Trade Stat Express – data from International Trade Administration, www.tse.export.gov).

- In 2015, the U.S. manufacturing sector contributed $2.17 trillion to the economy. (Source: National Association of Manufacturers citing the Bureau of Economic Analysis, www.nam.org/Newsroom/top-20-Facts-About-Manufacturing).

- U.S. total R&D spending was $462.8 billion in 2015 (2.756% GDP). (Source: www.data.oecd.org/rd/gross-domestic-spending-on-r-d.htm).

- R&D in the manufacturing sector accounted for $229.9 billion in 2014. (Source: www.nam.org/Newsroom/Top-20-Facts-About-Manufacturing).

The United States needs a vision for generating high-value jobs, including goals and metrics for traditional and environmentally friendly manufacturing success. Many examples of materials and product technologies have been innovated in the United States, but most of the significant commercial market share these technologies enabled, has been lost to other countries. Examples include rechargeable lithium-ion batteries; oxide ceramics; semiconductor memory devices; and manufacturing equipment, such as wafer steppers, flat panel displays, robotics, solar cells, and advanced lighting.

Note that SBIR grants have led to less invasive lung and breast biopsy devices--reducing medical complications and patient discomfort, and creating manufacturing jobs. This example is just one of many SBIR/STTR success stories (SBIR/STTR, 2017). Another high-impact example is Manufacturing USA--a true interagency program. It has established or announced 13 new innovation institutes in four years. Advanced manufacturing is a job multiplier. Each job in advanced manufacturing supports up to an estimated 16 jobs in the rest of the economy (Deloitte, 2017).

Leadership in frontier research and in new process technologies is essential for manufacturing and innovation job growth and opportunities in the United States.

Additional References:

For general information on manufacturing trends and the importance of manufacturing to the U.S. economy, see:

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