Disruptor Series: The Internet of Things, Manufacturing and Innovation

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Good morning to the members of the Committee and to my colleagues who have come to Washington to discuss the importance of the Internet of Things (IOT). Before I begin, I would like to thank Congressman Latta for his continued leadership and engagement on this issue. I also thank the committee for the opportunity to discuss why IOT is important to US manufacturing companies and my company, Owens-Illinois.

Owens-Illinois, headquartered in Perrysburg, Ohio is the world largest manufacturer of glass containers serving some of the world's best known brands in the beer, wine, spirits, non-alcoholic beverage and food industries located throughout the world. Our business is composed of 79 manufacturing plants throughout the world, 17 of which are located in the United States.

Glassmaking has historically been a trade where master craft-person and apprentice would develop expertise on the art of glassmaking. At the turn of the century Michael Owens invented automated glass manufacturing which was a huge step change in productivity and worker safety. While the glassmaking process is highly automated the industry is poised for the next step change which will come from the factory becoming increasingly connected with IOT technologies throughout the end to end process. The information collected will be used to transform the “craft” of glass making to that of a data driven science which will enhance the competitive position of glass in the packaging industry. Glass container products are the most sustainable material in the competitive landscape with a lifecycle that goes not from cradle to grave but from cradle to cradle. Glass containers are recycled and reused in many markets throughout the world. Additionally, the product is also infinitely recyclable into a new glass containers or other products.

Owens-Illinois is on an IOT journey which will transform our manufacturing process and the value of the products and services that we sell our customers. There are several areas of focus for the company:

1. Improved manufacturing performance through higher yields, increased quality, reduced costs.
    a. IOT will deliver deeper insights into our end to end manufacturing process. The data generated from sensors in the plants will provide insights into environmental conditions, process settings, control variances enhancing our ability increase first time yields and improve quality. This work will require skilled engineers, information technology professionals and data scientists.
    b. The data acquired through IOT will be used to reduce reaction time of the trained workforce glassmakers to adjust the process if the controls are slipping out of tolerance or variations are being realized in a more proactive manner.
    c. Finally, the IOT platform will transform the manufacturing process from one of reactivity to one which is proactive and highly automated. The information generated by sensor technology, data science, and manufacturing automation will increase yields, improve quality while achieving reduced cost structure enhancing my company's ability to compete in the US and markets that we serve around the world.

2. Energy management and predictive maintenance are the second area of IOT development.
    a. While glass containers are the most sustainable packaging solution, it takes a great deal of energy to melt and form glass and to operate a glass container manufacturing facility. Sensor technology used to collect information while monitoring equipment throughout the manufacturing facility is critical to seeking ways to reduce energy consumption.
3. Finally, IOT technologies and thought processes enables the company new and differentiated products and services to our customers with the goal to ensure the integrity, safety and authenticity of the contents.

There are numerous barriers and potential concerns regarding the successful deployment and sustainability of an IOT. These are areas where policy changes or Congress may be able to help.

1. The cost to achieve a full deployment of IOT throughout an enterprise can be quite daunting. A successful deployment of IOT requires sensors, PLC's, IT systems, networking, massive amounts of storage, and software to achieve the desired business outcomes. Seeking

ways to make these investments more affordable can be a way to help US manufacturing accelerate their investment in IOT technologies.

2. Cybersecurity risks become even more critical to mitigate when deploying IOT within a manufacturing facility. Manufacturing equipment, devices, sensors and control systems that previously may have been standalone may be exposed not just within a plant location but potentially an enterprise. Cybersecurity related disruptions can cause unplanned downtime or impair productivity. Cybersecurity attacks could also put the health and safety of people at risk.
3. Transformation of the work force becomes critical. The workforce must be increasing knowledgeable about the use of information technology within a plant. Engineering disciplines and information technology skills are needed to deliver and sustain these solutions. Finally, the use of business intelligence, analytics and the role the data scientist also become critical to the success of IOT. Data scientists are in short supply and high demand.

There are ways that Congress can help:

1. Assist with making IOT technologies more affordable by encouraging research and investment in these capabilities or programs that encourages manufacturing companies to deploy these solutions.
2. Programs or resources that address cybersecurity in US business.
3. Encourage research in the data science discipline and seek ways to encourage a pipeline of talent through universities in this critical resource.

Thank for your time and attention.