

# Workforce Development for A Clean Energy Economy



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# This Weekend News Highlights Some of the Challenges



A highly automated Texas factory was supposed to bring the manufacturing of Craftsman mechanics' tools back to American shores. Three years later, the \$90 million project is a bust.

- John Keilman, Wall Street Journal, July 22-23, 2023

## Seems to Lack 3 Rs of Manufacturing:

- Reliability
- Reproducibility
- Repeatability

In addition, it seems supply chain issues were not fully considered

Highlights training in manufacturing for Productivity, Producibility and Profitability

# Nature of the Workforce is Different

- **More Interdisciplinary**
- **Absence of mentors for on-the-job training**
- **Multiple Functions: Project management, teamwork, supply chain knowledge, etc.**
- **New processes and Technology**

# Manufacturing Has Image Problems and Communication Is Key

- **4Ds: ‘Dark, Dirty, Dangerous and Declining (moving offshore)’**
- **Usage such as ‘Rust Belt’ does not project an inviting image**
- **AI & ML hype – keeps folks away from hardware type of work**
- **Not high tech**
- **Not cool**

## Need to Change Image

- **Communication is important (Tesla- high tech vs. Ford – low tech)**
- **Perception must change: It is high tech, It is digital, it is smart, it is cutting edge, I am doing good to the world, being part of the future, etc.**
- **Need to change the image : ‘cool to work in clean Tech’**

# What Can Educational Institutions DO?

- **Bring 'Manufacturing' as against 'Design' to the curriculum**
- **More hands-on experience. 'create the experience of making'**
- **Hook undergraduates early to manufacturing. Manufacturing-related projects in the first spring semester and manufacturing internship in the first summer.**
- **Multiple Functions: Project management, teamwork, supply chain knowledge, etc.**
- **Multiple 1 credit elective courses. Expose students to a large number of options so they can find what excites them.**
- **Start Professional Master program in Manufacturing**
- **K-12 Expose young students to manufacturing examples and hands-on experience**
- **Expose High School teachers to manufacturing lessons**

# Items That DOE Could Encourage

- **Fund training programs similar to the NSF Research Traineeship (NRT) Programs but with more emphasis on manufacturing.**
- **Establish National Education Centers in Manufacturing with multiple universities.**
- **Encourage sharing of best educational practices between institutions.**
- **Support industrial internships.**
- **Encourage University-Ivy Tech partnerships for manufacturing education**



Thank you