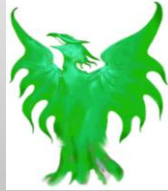


Phoenix Industries

Building Advanced Manufacturing in Old Industrial Regions



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Phoenix Industries

Phoenix industries have risen out of the ashes of the old industrial centers. They have several features in common.

- They are located in regions with a history of occupation-based expertise in the processes, materials, and technologies in a particular industry.
- Universities in the region have specialized programs supporting basic research related to that industry's technologies, and engineering education around those technologies.
- Supplier, design and engineering firms have been spun off when the "anchor firm" vertically disintegrated, creating value-added capacity.
- Average wages are higher than the regional average and higher than the manufacturing average.

What Do These Phoenix Industries Have in Common?

- They are made up of small and medium size companies.
- They are export-oriented: they serve national and international markets.
- They are enabling industries, not just suppliers to a local end-market manufacturer.
- They take advantage of regional labor pools and engineering/R&D.

Phoenix Industries Focus on Process, Design, and New Technologies – Some Examples

- **Photonics (precision optics and Imaging)**

Location: Rochester, New York, USA

Originating Firm: Kodak

Markets: Healthcare, Defense, Media production, Retailing, Sensors and Monitors



- **Environmental Systems (Indoor air quality)**

Location: Syracuse, New York, USA

Originating Firm: Carrier Heating and Air Conditioning

Markets: Construction, Healthcare, Green HVAC

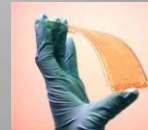


- **Electronic Packaging/ Flexible Electronics**

Location: Binghamton, New York, USA

Originating Firm: IBM

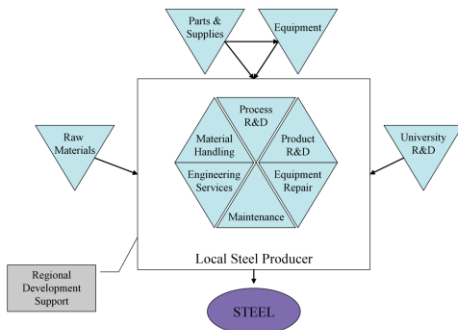
Markets: Defense, Healthcare, Circuit board Design for Manufacture, Systems Integration



An Example: Photonics in Rochester

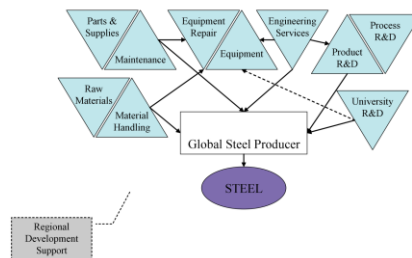
- Emerged from the old photographic equipment and supply industry, the “Kodak” sector. New technologies are in precision optics and imaging.
- Over 110 SMEs in the Rochester region.
- Other global centers – Berlin, Silicon Glen (Scotland)
- RE and EE Applications: Optoelectronic devices providing optical sensing and control for smart management and green metrics, such as energy balance and life cycle waste management; smart LED lighting systems

Figure 7: Vertically-Integrated, Domestically-Based Steel Production



What Happened as Phoenix SMEs Replaced Old Routine Manufacturing Giants?

Figure 8: The Steel Technology Cluster and Global Production



Source: Treado, Carey et al. "Sustaining Pittsburgh's Steel Technology Cluster"

What Elements Are Missing in a Strategy to Build Phoenix Industries?

- The connection between these firms and the regional development community is weak. An industry composed of SMEs is less visible to state and regional policy makers.
- An “Industry Partnership” approach -- focused on workforce development and on helping firms understand and reach global markets – is needed.
- Efforts to build the supply chain within each region.

Conclusion: Why Should We Focus Attention on Phoenix Industries?

- They are creating the industries of the future and have existing and potential global markets.
- They build on and utilize key regional assets - university engineering and applied research and development programs, and workforce skills.
- They are growing “in place” in old manufacturing centers.



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