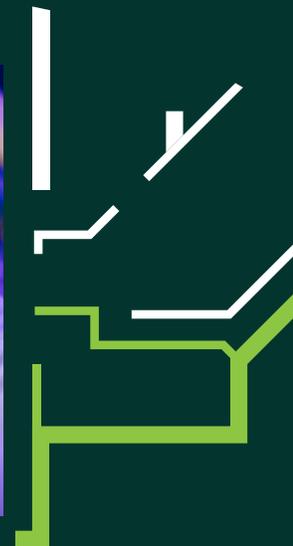
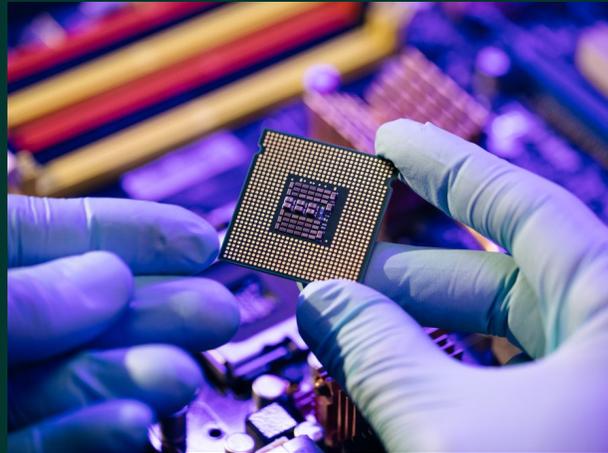
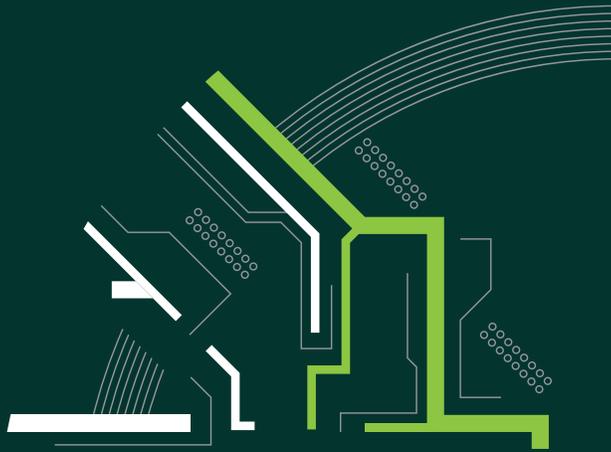




# TPMA

Bold Solutions.  
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*UNLEASHING INDIANA'S ENGINEERING &  
TECHNICAL TALENT POTENTIAL*

## **Analyzing the Talent Supply for Semiconductor & Electric Vehicle Battery Manufacturers**

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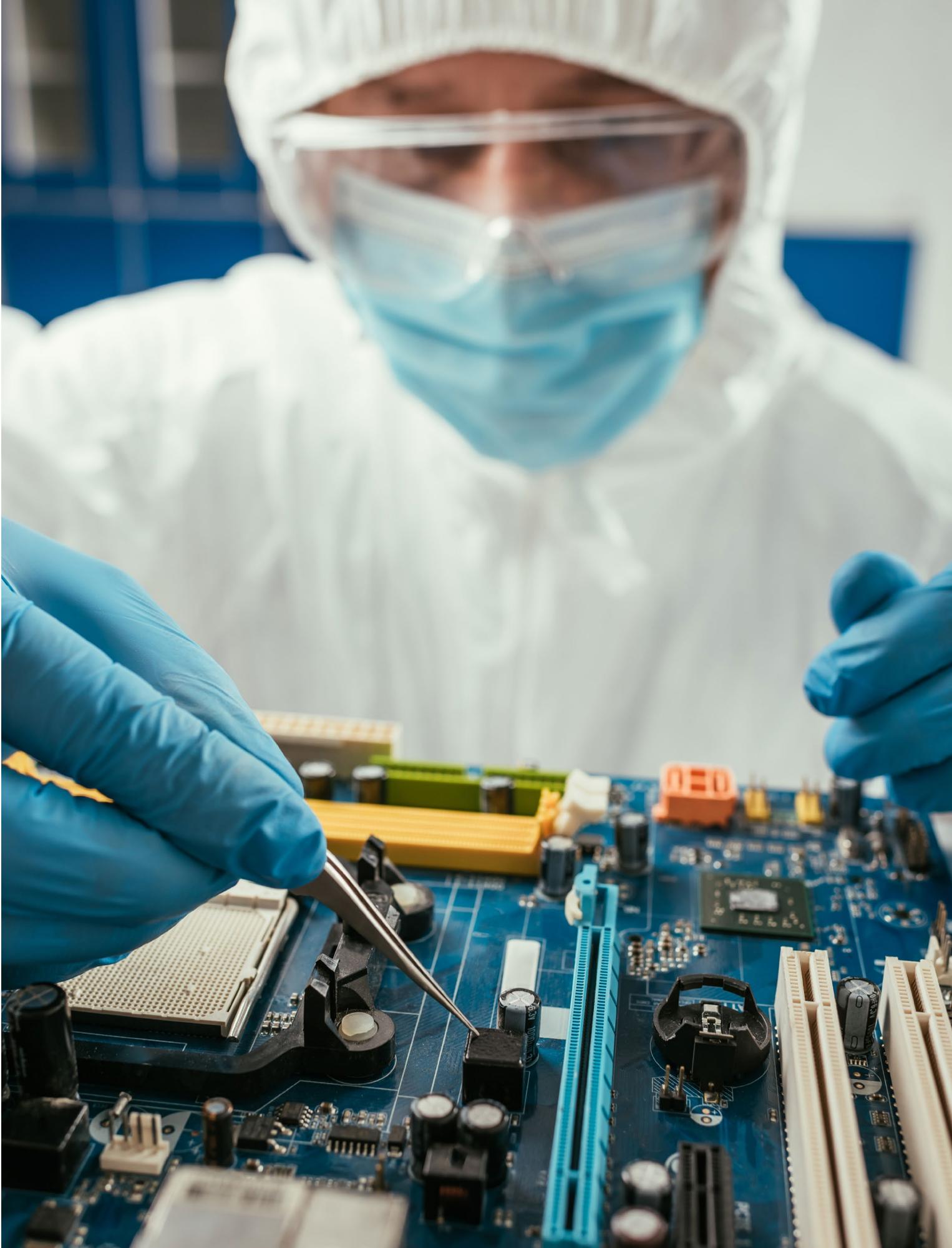
Strong Performance Management, LLC

# Summary

In an era defined by rapid technological advancements and the urgent need for sustainable solutions, the semiconductor and electric vehicle (EV) battery industries have emerged as critical drivers of economic growth and environmental stewardship. Indiana, with its rich manufacturing heritage and skilled workforce, is poised to become a prominent hub for these industries. However, to fully realize this potential and to continue to attract semiconductor and EV battery manufacturers, it is imperative to assess the state's engineering and technical talent supply, a key pillar of these sectors. By unlocking Indiana's engineering and technical talent potential, we can position the state as a magnet for semiconductor and EV battery manufacturers, fostering innovation, job creation, and sustainable economic development for years to come.

To achieve a comprehensive understanding of Indiana's engineering and technical talent supply for the semiconductor and EV battery industries, it is essential to examine the current landscape, identify potential challenges, and devise targeted strategies for talent development and retention. We need to understand anticipated future investment and the number of estimated jobs and compare these with the current and forecasted talent supply. Additionally, to truly unleash Indiana's engineering and technical talent potential, an in-depth analysis of the factors influencing Indiana's technical workforce, including educational institutions, training programs, workforce demographics, and industry collaborations, needs to be conducted. Presently, we lack an understanding of the current and projected technical workforce needs for the entirety of Indiana. By conducting a comprehensive analysis, we can uncover opportunities for strengthening the talent pipeline, promoting STEM and related educational initiatives, and cultivating a supportive environment that nurtures the growth of skilled engineers and technical professionals. Through these concerted efforts, Indiana can solidify its position as a preferred location for semiconductor and EV battery manufacturers, attract new investments, foster groundbreaking research, and reap the long-term benefits of sustainable economic prosperity.





# Background

## Semiconductor Manufacturing

### The CHIPS and Science Act: Boosting U.S. Semiconductor Manufacturing

With the signing of the CHIPS and Science Act in August of 2022, the U.S. semiconductor supply chain became poised for development and growth. The legislation encourages investment in semiconductor manufacturing facilities and growth in research and development. It also promotes financial support for domestic chip-making investments, including grants, loans, and loan guarantees, and a 25 percent tax credit for semiconductor investments. As a country, we are placing significant emphasis on semiconductor manufacturing to safeguard our national interests, particularly considering global tensions and the supply shortages experienced during the Covid-19 pandemic. The semiconductor industry plays a crucial role in ensuring our technological independence and resilience. For Indiana, the potential impact could be significant given we have already witnessed a commitment to job creation by various companies. One such company is Skywater Technologies, they have announced plans to build a \$1.8 billion semiconductor R&D and production facility in West Lafayette with an estimated 750 jobs.<sup>1</sup> In addition, a total combined investment of \$84 million is planned for the semiconductor industry at the WestGate@Crane Technology Park, where a total of 549 jobs are estimated to be created by NHanced Semiconductors, Everspin Technologies (NASDAQ: MRAM), Trusted Semiconductor Solutions (TSS), and Reliable MicroSystems.<sup>2</sup>

### Strengthening Domestic Semiconductor Production for National Security

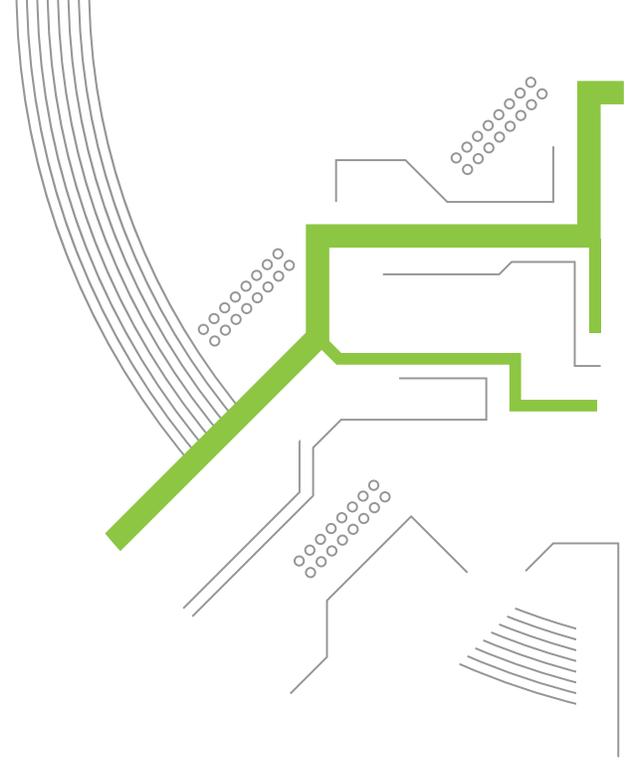
In the United States, the semiconductor manufacturing sector is at a pivotal stage, requiring strategic attention due to its vital importance. It is essential for us to strengthen and expand domestic semiconductor production capabilities to reduce dependence on foreign sources and mitigate potential vulnerabilities. By investing in and fostering semiconductor manufacturing, we can bolster our national security, protect critical infrastructure, and maintain our competitive edge in cutting-edge technologies. For instance, the recent supply chain disruptions and semiconductor shortages have underscored the urgency of developing a resilient domestic semiconductor industry. By focusing on expanding our manufacturing capacity and reducing reliance on external sources, we can mitigate the impact of future disruptions, secure the availability of critical components, and ensure the smooth functioning of various sectors, including telecommunications, automotive, healthcare, and defense.

<sup>1</sup> Brown, Alex. (2022, July 20). *Semiconductor Manufacturing Planning \$1.8B Indiana Plant, 750 Jobs*. Inside Indiana Business. Retrieved July 31, 2023, from <https://www.insideindianabusiness.com/articles/semiconductor-manufacturer-planning-1-8b-indiana-plant-750-jobs>

<sup>2</sup> IEDC (2022, November 21). *Indiana Advances Leading Edge Semiconductor Research*. Indiana Economic Development Corporation. Retrieved July 31, 2023, from <https://www.iedc.in.gov/events/news/details/2022/11/21/indiana-advances-leading-edge-semiconductor-research>

## Indiana's Talent Shortage: A Challenge for Semiconductor Manufacturers

Nurturing a robust semiconductor manufacturing sector creates job opportunities, stimulates economic growth, and promotes technological innovation. It not only strengthens our national economy but also fosters the development of advanced technologies that can drive progress in diverse fields, from artificial intelligence and data analytics to renewable energy and smart infrastructure. This is good news for Indiana's economy from numerous perspectives. However, despite the attraction of several manufacturers to Indiana, an imminent operational challenge arises in the form of a talent shortage required to support facilities. The reality is that the state is witnessing the development of manufacturing plants amidst one of the tightest labor markets experienced in decades. This tight labor market poses a significant obstacle for manufacturers in terms of acquiring the necessary skilled workforce.



# Electric Vehicle Battery Manufacturing

## Indiana's Manufacturing Capabilities and Infrastructure for Electric Vehicle Battery Manufacturing

Indiana boasts a robust manufacturing sector and well-developed infrastructure, making it an attractive location for electric vehicle (EV) battery manufacturing. The state has a strong tradition of automotive manufacturing, with a highly skilled workforce and a well-established supply chain. Indiana's central location within the United States provides easy access to major markets, reducing logistical costs and enhancing distribution capabilities. In addition, the state offers excellent transportation networks, including a vast network of highways, railways, and waterways, facilitating the efficient movement of goods and materials. Indiana's manufacturing capabilities and infrastructure provide a solid foundation for establishing and scaling up electric vehicle (EV) battery manufacturing operations.

## Evaluating Key Factors for Indiana's Competitiveness in Battery Manufacturing

To determine Indiana's competitiveness in battery manufacturing, several key factors need to be evaluated. First, Indiana possesses a highly skilled workforce with a deep understanding of advanced manufacturing processes. The state's strong emphasis on vocational and technical education produces qualified workers who can meet the specialized demands of battery manufacturing. Second, Indiana's robust research and development (R&D) environment, including renowned universities and research institutions, fosters innovation and collaboration between academia and industry. This network enables the development of cutting-edge technologies and facilitates continuous improvement in battery manufacturing processes. Lastly, Indiana's access to raw materials and its well-established supply chain strengthens its competitiveness in battery manufacturing, ensuring a reliable and cost-effective flow of materials and components.

## Potential Economic and Employment Impacts of Electric Vehicle Battery Manufacturing in Indiana

The establishment of electric vehicle battery manufacturing plants in Indiana holds significant potential for generating economic growth and employment opportunities. By attracting battery manufacturers, Indiana can leverage its existing manufacturing capabilities and infrastructure to create a thriving ecosystem around EV battery production. This development would lead to substantial direct and indirect economic impacts, including increased investments, job creation, and the establishment of ancillary industries to support the battery manufacturing sector. Additionally, the multiplier effect generated by the presence of battery manufacturing plants would stimulate local economies through increased consumer spending, tax revenue, and community development.



# Conclusion and Recommendations

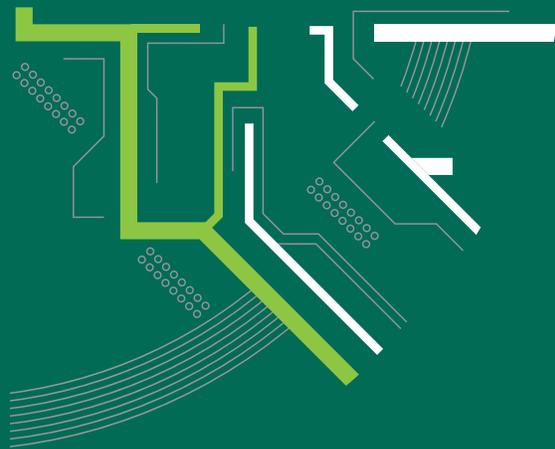
Indiana is positioned to emerge as a major hub for the semiconductor and electric vehicle battery industries, benefiting from its strong manufacturing base, favorable business climate, and existing engineering and technical talent pool. However, there is a pressing need to address the shortage of engineers and technical talent in the state, as demand is forecasted to outpace supply. A comprehensive analysis will examine the talent supply for both semiconductor and electric vehicle battery manufacturers in Indiana and propose strategies to increase the engineering and technical talent workforce. These strategies potentially encompass boosting engineering enrollment, expanding training and upskilling opportunities, and attracting talent from other states. Implementing these and other recommendations developed through collaboration supported by data will unlock Indiana's engineering and technical talent potential and establish it as an attractive location for semiconductor and electric vehicle battery manufacturers.

Addressing this pressing issue becomes imperative to ensure the smooth operation and sustained success of semiconductor and EV battery manufacturing in Indiana. This challenge takes on an even greater urgency considering Indiana's position as a contender for a potential \$50 billion semiconductor plant. The significance of this opportunity is further underscored by the recent announcement of a joint venture between General Motors and Korea-based Samsung SDI, which entails a substantial \$3 billion investment in an EV battery cell plant in St. Joseph County. This groundbreaking venture is expected to create 1,700 manufacturing jobs, marking the largest EV battery investment in Indiana's history to date. As these transformative projects loom on the horizon, the need to address the talent shortage becomes even more critical, as it directly impacts the successful implementation and operation of these landmark ventures.<sup>3</sup>

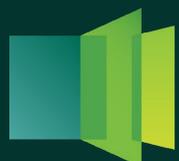
<sup>3</sup> IEDC (2023, June 13). *Gov. Holcomb Announces Largest EV Investment in State History Attracting a More Than \$3B Battery Plant*. Indiana Economic Development Corporation. Retrieved July 31, 2023, from <https://www.iedc.in.gov/events/news/details/2023/06/13/gov-holcomb-announces-largest-ev-investment-in-state-history-attracting-a-more-than-3b-battery-plant>

## Estimating Job Creation and Workforce Development Opportunities

To fully capitalize on the potential job creation and workforce development opportunities in semiconductor and electric vehicle battery manufacturing, a comprehensive approach is required. While we know our educational institutions graduate talent with the skills and abilities in demand by semiconductor and electric vehicle battery manufacturers, we lack a comprehensive analysis of the current and forecasted demand with the estimated supply. Such an analysis involves estimating the number and types of jobs that would be created at different stages of production, from manufacturing to R&D and supply chain management. By collaborating with industry experts and conducting detailed labor market analyses, we can identify the specific skills and training needed to support these jobs. Such information can inform the creation of targeted workforce development programs, training initiatives, and partnerships with educational institutions to ensure a skilled and adaptable workforce capable of meeting the evolving demands of manufacturers. Implementing these steps would pave the way for maximizing job creation and nurturing a sustainable talent pipeline for the growth of semiconductor and electric vehicle battery manufacturing in Indiana.







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