

Rewiring for Success | AMN's EV Pivot

Case Study



SECRETARÍA
DE INNOVACIÓN
Y DESARROLLO ECONÓMICO



WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN

Rewiring for Success | AMN's EV Pivot

Case Study



Company context

About the company AMN Quality Solutions offers quality inspection, advanced manufacturing, and warehouse and logistics services, with offices in Ciudad Juárez, Chihuahua; Queretaro, Queretaro; and El Paso, Texas, USA. It serves industries including automotive, manufacturing, house appliances, and electronics. Examples of its services include performing quality control before an automotive supplier sends its product to an original equipment manufacturer (OEM), or allowing their clients to use AMN's facilities for some of their manufacturing.

Founded 1991

Employees ~400, with nearly half in Ciudad Juárez

Clients 700+ companies

Role in the automotive industry in Chihuahua

AMN has served the automotive industry since its founding, and over half of its clients are in this industry. AMN primarily works with Tier 1, 2, and 3 suppliers¹, and in some cases also works directly with OEMs. As a global EV shift toward EV production occurs and is becoming evident in North America and in Chihuahua, the company is preparing to serve its clients in new ways by pursuing business opportunities related to the transition to EVs and developing strong training programs to ensure its talent base is ready for such opportunities. Two focus areas are related to vehicle electrical harnesses and battery diagnostics. As described below, AMN is well positioned to capture these opportunities, creating new revenue streams and broadening their client base based on changes brought about by the EV transition.

Key Strategies for the EV Transition

1. Capturing short-term internal combustion engine-related business while building capacity to serve EV customers long-term

What As AMN's automotive supplier clients shift their focus from Internal Combustion Engine (ICE) vehicles to EVs, certain ICE products become less of a priority. This is the case for example when it comes to electrical harnesses, of which Chihuahua is a top producer, with 25% of its ~300 maquiladora companies focused on harnesses or related areas. ICE vehicles primarily use low-voltage harnesses, whereas EV vehicles not only require more harnesses, but also have high-voltage requirements for harnesses because of the greater quantity of electronics in the vehicle and nature of the electric motor and other technologies. Several suppliers of low-voltage harnesses for ICE vehicles, including some of AMN's customers, are shifting to produce more high-voltage harnesses for EVs. In the short term, there is still high demand for ICE harnesses, and suppliers are looking to outsource production of these harnesses while they build additional internal capacity for EV harnesses, anticipating higher growth ahead.

How While AMN has never manufactured vehicle harnesses before, the company has taken steps to position itself to produce low-voltage ICE harnesses for its customers in the short term. In 2022, AMN set up a new entity in Mexico and started securing new certifications in anticipation of moving into this new area. The new entity enables AMN to operate a new business line, and has made it possible for AMN to enter into a joint venture (JV) with a Chinese company that brings expertise in manufacturing of high and low voltage harnesses. Through this JV, AMN will build its capacity to produce both types of harnesses, and the Chinese company will benefit from AMN's knowledge of business requirements in Mexico as they build up this new business line. Ultimately, AMN anticipates that this partnership will help them lay the groundwork to potentially produce high-voltage EV harnesses in the longer term as demand grows.

When AMN aims to begin production of low-voltage harnesses in early 2025.

2. Expanding existing diagnostics services to new products

- What** Existing AMN clients that are seeking new opportunities in the EV value chain face challenges related to one of the most important components of an EV: the battery. AMN seeks to leverage its quality testing and control expertise by expanding into testing and balancing of battery cells before modules and packs are assembled, which is needed to ensure optimal battery performance. AMN sees a big market opportunity in battery testing, especially in harsh environments, and is keeping a close pulse on the market in this area. The company will begin with testing and balancing lithium batteries but in the longer term, AMN is interested in expanding its capabilities to other battery chemistries, and to address needs related to the second life of batteries.
- How** AMN is initially moving into this space in response to a specific need identified by a long-time client. To start, AMN is working at a pilot scale with this client by manually testing and balancing a small number of lithium battery cells. As they learn together from this pilot effort, AMN will begin scaling these services for this and other clients. Longer term, AMN envisions incorporating autonomous testing technologies and exploring new partnerships that could provide complementary expertise to AMN as it continues to grow this business.
- When** AMN started piloting its testing and balancing of lithium battery cells with one client in January 2024, and aims to be doing so at scale on a production line by 2026.

Internal



Culture

Instilling a growth and learning mindset, being open to exploring new opportunities and pivoting. Hiring people who will thrive in such a company culture.



Infrastructure

Approaches to acquire or expand infrastructure include:

- Using or repurposing existing AMN facilities/equipment;
- Providing an additional valuable service to clients by acquiring equipment for clients who cannot or do not want to acquire it themselves; and
- Starting new operations on a small-scale embedded at a client site, using their facilities and equipment, prior to AMN scaling operations on their own.



Workforce

Cultivating a robust internal talent base through tailored training programs. Workers are drawn to opportunities at AMN given its strong training programs, bolstering the company's workforce with skilled professionals eager to contribute to its success.

External



Policy framework

Recently-enacted US policies related to the EV supply chain create new opportunities for Mexico to support EV production in line with the US market.



Infrastructure

Availability of new facilities for expansion and reliable, affordable electricity is crucial for company productivity.



Workforce

A large, available and experienced workforce in the automotive sector is important. Upskilling and reskilling of the current workforce, as well as training the workforce of the future in new areas – through local academic programs and company training programs – contributes to a workforce that is prepared and relevant.

Key Tips and Initial Lessons Learned

1. Take a proactive stance

This is especially important in times of transition when business needs and opportunities shift quickly. Anticipating new customer needs and potential problems, and working together to define new ways of working is crucial for a business to survive and thrive in a shifting environment. Related, obtaining new certifications and trying to anticipate other administrative requirements when moving into a new space, such as establishing new legal entities, could enable companies to move forward more quickly with clients and partners.

2. Consider new partnerships

It can be difficult for small companies to move into new spaces as this can require significant investments in new equipment, facilities, and talent. Building mutually beneficial partnerships, including with players outside of the norm, can help build complementary assets and prepare to make moves at scale. Helpful strategies include:

- Leveraging longstanding and close relationships with clients to move into new areas together on a pilot basis before making significant investments.
- Seeking partnerships to build expertise in a new area and to gain credibility in a new space with a different set of customers.
- Connecting with local economic development players to better understand the local ecosystem and leverage different stakeholders' connections, including participating in trade missions or other activities to expand the network.

Key Tips and Initial Lessons Learned

3. Invest in market research early

It is important to do sufficient market research to understand the nuances of an opportunity before committing significant new resources to minimize risk and avoid costly changes later.

4. Know the cross-border landscape

Having knowledge of the cross-border landscape gives companies like AMN a big advantage in knowing how to navigate dynamics, policies and players in a highly-connected and interconnected North American value chain.

Endnote

1. Automotive suppliers, Tier 1: specialize in making “automotive-grade” hardware directly supplied to OEMs. Tier 2: Produce smaller parts and components as inputs to T1 suppliers, but also serve non-automotive customers. Tier 3: supply diverse companies with raw, or close-to-raw materials like metal or plastic and other inputs.

Source: <https://wdi.umich.edu/wp-content/uploads/WDI-Mapping-e-mobility-transition-web.pdf>

About this Case Study

The automotive industry is undergoing a global transformation related to electrification, shifting to producing more electric vehicles (EVs). Many companies are looking to take advantage of opportunities along the EV value chain. This case study highlights one such company in Chihuahua, Mexico. The case study was developed by the [William Davidson Institute at the University of Michigan](#) as part of the [Chihuahua Charging Forward](#) project, supported by the [Secretaría de Innovación y Desarrollo Económico \(SIDE\)](#), [Frente Norte](#), and [Instituto de Innovación y Competitividad \(I2C\)](#) in Chihuahua.

For more information, reach out to the [WDI energy & mobility team](#).



SECRETARÍA
DE INNOVACIÓN
Y DESARROLLO ECONÓMICO



WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN