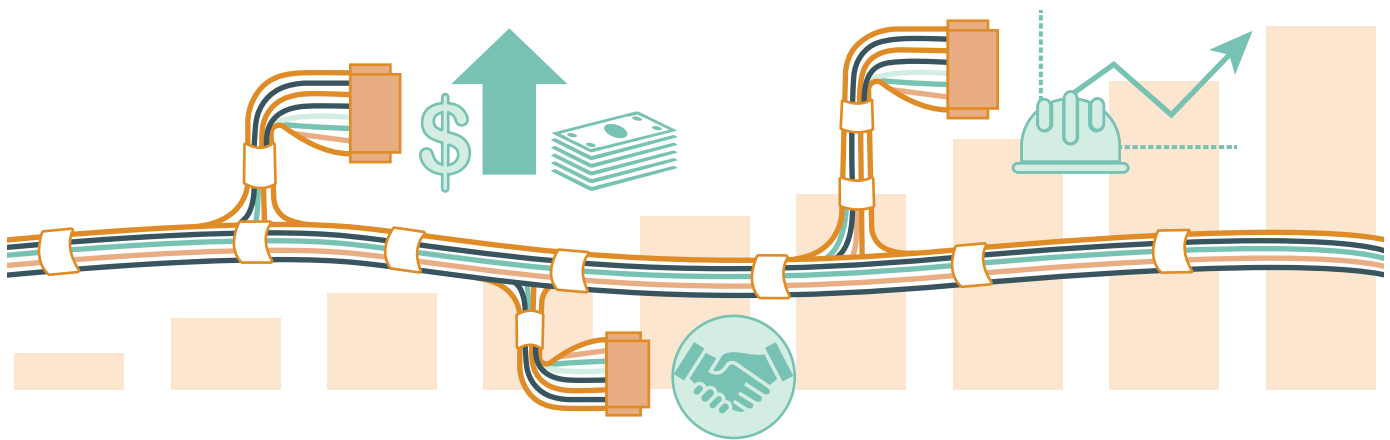


Wire Harness Manufacturing in Mexico: The Key to Staying Competitive in North America

For many years, The Sentral Group (which went on to be acquired by Kauffman Engineering in 2016) found themselves staring down an issue commonly faced by American and Canadian wire harness manufacturers: an almost single-minded customer focus on cost reduction. The Indiana-based company, a leading provider of wire harness and cable assemblies, was regularly pressured to re-quote jobs to retain customers.

By 2013 it became clear to Dave Ritland, then President of The Sentral Group, that his company soon would need to situate at least some of its production outside of the U.S. in order to survive. "We saw the trend," Ritland recalls. "The need to have a low-cost manufacturing location in order to be competitive was obvious."



The Sentral Group decided to base its wire harness production in the state of Zacatecas, Mexico, located at the 1 million+ sq. ft. manufacturing campus of Entrada Group. The move to Mexico not only enabled Sentral to stay competitive, it led to future growth, new customers in Mexico and, eventually, an acquisition by Kauffman Engineering - one of the largest and most advanced manufacturers of wire harness and cable assemblies in the world.

This whitepaper looks at the cost pressures facing all wire harness manufacturers in the U.S. and Canada, highlighting in particular the experiences of four of Entrada Group's current roster of harness assembly clients. Each of the four turned to Entrada Group for their own nearshore Mexican production and experienced business expansion throughout the years.

Constant Need to Re-quote Business

Dave Ritland and Sentral Group's motivation in 2013 for considering Mexico as a production location was a familiar one, driven almost solely by the goal of cutting costs. Ritland's customers kept approaching the company nearly every month seeking cost cuts and having Sentral re-quote its business regularly. "Mexico seemed to be the right place for us, for our industries and the customers that we had," Ritland says, reflecting on the prevailing weight of cost-cutting the company was facing at that time.

But as Sentral conducted its due diligence and considered different locales throughout Mexico, Ritland and his management team became aware of another interesting phenomenon. They uncovered numerous situations where Sentral was actually losing business to manufacturers that had existing Mexican operations. They realized their lack of a Mexico location made it impossible for them to even quote on customer work. "That re-emphasized and solidified our strategy of having a location in Mexico in order to better compete and also be able to enter into new customer accounts that we didn't have [at the time] because we didn't have that low-cost manufacturing site available," Ritland says.

Our customers finally told us basically to move to a low-cost country or we would lose the business.

John White
Exec. V.P., Operations of Industrial Solutions Group,
Telamon

Customer Cost-Cutting Demands

The Mexico manufacturing story of origin is similar for another longtime Entrada Group client, Electrex. Electrex, Inc. is a leading, Kansas-based supplier of electrical systems products including

wire harnesses, battery cables and control panels. One of Electrex's clients, whom it had supplied for nearly four decades, informed Electrex that it was under immense price pressure, and was examining relationships with all its suppliers. At that time, Electrex was conducting all of its wire harness assembly in the U.S.

Since our first year in Mexico, our workforce there has probably grown five to six times or more than that at this point. And our United States staff has not been reduced. We've actually grown our U.S. staff in that same time, as our revenue has tripled.

Nick Coulter
formerly Chief Operating Officer, Electrex

Nick Coulter, Electrex's Chief Operating Officer at that time, describes what happened after the client approached them. "They kind of showed us the edge of the cliff and they said, 'If you can't figure out a way to cut your cost by 20 or 30 percent, then we're moving on to a different supplier and you're going to lose our business.' So, we went into immediate action at that point and within six months of that conversation, we had the factory up and running in Zacatecas," with Entrada Group. "So, to be honest, we were forced into it but, in hindsight, it was one of the best decisions we ever made," Coulter says.

Customer pressure to lower cost is a constant theme all wire harness producers in the U.S. and Canada face regularly; Mexico's cost-competitive labor is a big reason many American and Canadian producers look south of the border for relief in the first place. However, many producers are often pleasantly surprised when they witness firsthand the full extent of growth and new customer expansion opportunities a Mexico production footprint delivers.

Mexico Footprint = Growth

While all of Entrada's wire harness-producing clients may set up in Mexico for cost-competitive labor, few stay at the same headcount size or footprint for very long. The explosive growth story of Telamon, an Indiana-based wire harness manufacturer for customers in various sectors (automotive, industrial, telecommunications) illustrates this trend well.

Telamon launched operations at Entrada's manufacturing facility in 2007. At its startup phase in Mexico, Telamon employed 30 people (directs and indirects) in wire harness and cable assembly. From there, headcount and production grew rapidly, as customers appreciated Telamon's competitive operating costs, courtesy of its Mexico facility. By 2014, Telamon had expanded to 600 employees performing harness assembly in Mexico. But it was between 2014 and 2018 that things got really interesting.

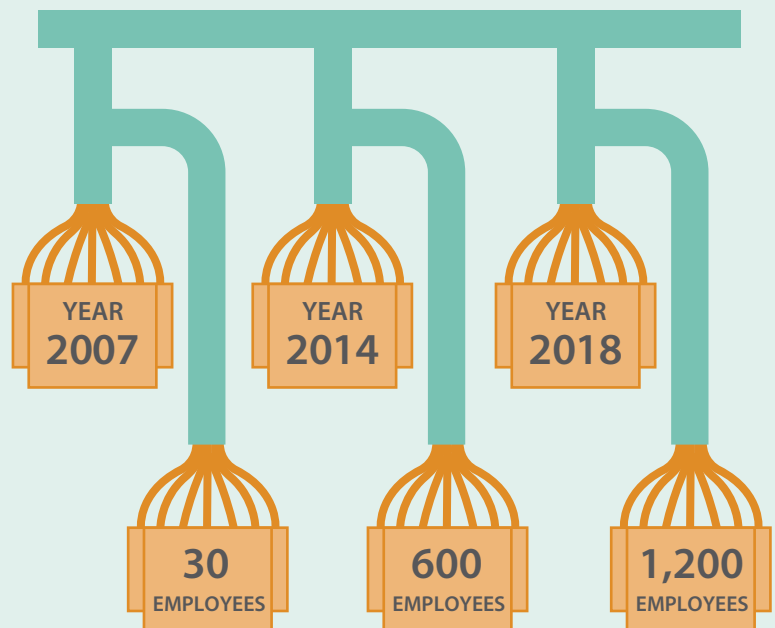
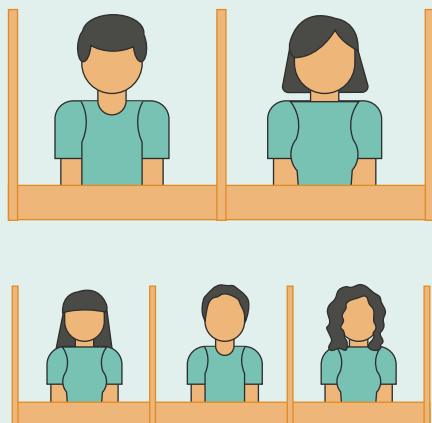
Throughout that period, Mexico's auto sector experienced runaway expansion. This resulted in higher demand for cost-competitive wire

harness production in Mexico, and Telamon was well positioned to benefit from the spiking need. Headcount doubled from 600 to 1,200 employees, as word spread that Telamon produced locally, and was able to handle growing demand.

This rapid growth experienced by Entrada's wire harness manufacturing clients in central Mexico is largely due to the expansion of Mexico's auto industry as well as the need for greater production of machinery, parts and electrical equipment across multiple sectors in the country. In addition, there are also two regional strengths within central Mexico that manufacturers are enjoying: lower operating costs compared to other areas of the country and abundant labor that is becoming increasingly adept at more sophisticated processes and techniques beyond assembly.

Mexico Production Leads to Explosive Headcount Growth

Entrada Group client Telamon saw its workforce in Mexico explode in response to growing demand for wire harness production in Mexico, especially within the auto sector.



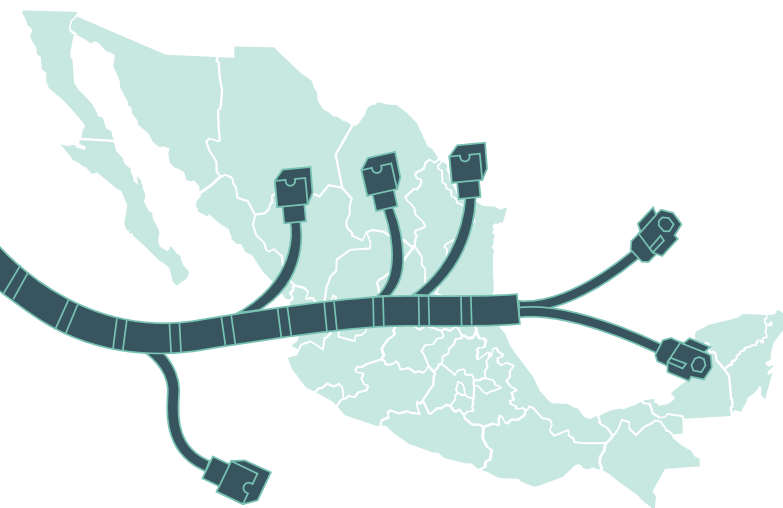
Why Central Mexico for Wire Harness Production?

Mexico's cost-competitive workforce presents a tremendous advantage for a process as labor-intensive as wire harness assembly. Hourly labor costs for fully loaded direct workers are a fraction of prevailing rates in the U.S. and Canada.

What is not as widely known is the tremendous variance in costs across the regions of Mexico. Operating costs in Mexico's interior, for example, where Entrada's Zacatecas manufacturing campus is located, can be as much as 40% lower than those experienced in Mexico's near-border regions. This is due not only to more cost-competitive labor costs but also to Zacatecas' mild climate year-round. Wire harness manufacturers at Entrada's campus in Zacatecas require neither heating nor air-conditioning, resulting in cost savings at startup and in ongoing operations.

Further, wire harness assembly is particularly well suited to a central Mexico production location like Zacatecas. The light-weight and easy transportability of the finished product is one key reason for that. Freight can be trucked from Entrada Group's manufacturing campus to the U.S. border in under one day.

Additionally, wire harness assembly has a long-established tradition in central Mexico. More than 7,000 people are employed in harness assembly for more than a dozen companies in the state of Zacatecas alone. This access to and abundance of affordable labor gives central Mexico a pronounced advantage over not only American and Canadian production locations, but also over other regions of Mexico.



ADDED BENEFITS OF ENTRADA'S MANUFACTURING SUPPORT PLATFORM

In addition to all the above benefits of Central Mexico, Entrada's wire harness-producing clients enjoy some additional strengths courtesy of Entrada Group's manufacturing support platform, which includes the campus, corporate infrastructure and shared services center. With this approach, Entrada is responsible for all non-production-related support for their clients.

Here are just a few ways this benefits wire harness manufacturers:

- **Less-than-load shipping:** Entrada clients benefit from daily trucking to the U.S. border, at a per-pallet cost that is much more affordable than third-party alternatives.
- **Faster startup:** With pressure to transition to Mexico quickly, wire harness manufacturers appreciate that Entrada enables them to setup their own Mexico production in a fraction of the time a standalone launch requires. A company's startup phase can be completed in as little as 90 days.
- **Shared services and facilities:** Entrada's clients gain economies of scale for all campus facilities, maintenance and support services. Entrada is flexible and scalable, to support client growth needs.
- **Mexico Expertise:** Entrada has subject matter experts on all facets of Mexico manufacturing, enabling clients to draw on a wealth of knowledge they could never attain on their own. Investment in continuous improvement keeps Entrada's experts abreast of ever-changing trends and requirements in the industry.
- **Full Mexico compliance:** Entrada assumes responsibility for all legal, tax, union, governmental, environmental, health/safety and other compliance requirements in Mexico.
- **Fast track import/export:** Entrada's difficult-to-obtain certifications from the Mexican government entitle all clients to shorter wait times at the border and other first-priority privileges.

An Answer to Labor Shortages

According to a late 2018 study¹ by Deloitte and The Manufacturing Institute, 2.4 million manufacturing jobs in the U.S. could go unfilled between now and 2028. The study cites many key factors for this shortage, including a general skills gap, more job openings than people unemployed, greater education requirements in manufacturing today than a few decades ago and baby boomer retirements. The situation in Canada isn't much better. A recent study conducted by Canadian Manufacturers and Exporters found that 22% of the manufacturing workforce will need to be replaced due to retirement throughout the coming decade.

This increasing pressure on labor will only be exacerbated by rising healthcare costs in the U.S. and Canada, particularly as the manufacturing labor force ages in both countries. By contrast, according to the U.N.'s World Population Prospects report (2017 Revision), 68% of Mexico's population will be between the ages of 15 and 64 in 2035, compared to just 61%, for the U.S. and Canada, respectively (see "Mexico's Youthful Workforce," below).

Mexico's Youthful Workforce

Percentage of Total Population that Will Be of Working Age in 2035, by nation

Mexico

68%

Canada

61%

United States

61%

Source: World Population Prospects report (2017 Revision), United Nations

Mexico Wire Harness Manufacturing: High Quality, Productivity and Product Mix

In addition to being extremely cost-competitive, Mexican labor is also highly productive, even in comparison to workforces in the U.S., Canada or Europe. The "2018 Boston Consulting Group Global Manufacturing Cost-Competitiveness Index" ranks Mexico as the most cost-competitive production location among the 15 highest exporting nations in the world. Mexico manufacturing is even more affordable than in China in the BCG index, which accounts for overall productivity. In addition to being more efficient, the work week in Mexico is 48 hours instead of 40, as it is in most developed manufacturing nations.

In fact, the quality of work and efficiency of Mexican labor is so high that some of Entrada's wire harness manufacturers are actually doing re-work in Mexico, primarily of wire harness and cable assemblies made in Asia.

A common trend among manufacturers, at least with Entrada Group's clients, is an elevation in processes and more advanced manufacturing techniques as the producer spends more time in Mexico. Two longtime Entrada clients that make wire harnesses exemplify this trend. The first is Electrex, which moved from a high-volume/low-mix assembly to more low-volume/high-mix production at its facility in Mexico. This shift took some time to implement and was only possible due to the capability and adaptability of the company's Mexican workforce in Zacatecas.

A second Entrada client, Pacific Insight, also initiated more sophisticated production techniques and product mixes, once it witnessed the more advanced capabilities of its Zacatecas workforce. Specifically, Pacific Insight (a Canadian electronic producer for the automotive and commercial vehicle markets) started in Mexico with basic wire harness assembly before deciding to also bring its SMT lines down to Mexico for the production of interior lighting systems. Pacific Insight also transitioned its mold-making process to Mexico, to further enhance its in-country capabilities.

¹ "2018 Deloitte and The Manufacturing Institute skills gap and future of work study"

This theme of starting in Mexico at a relatively modest size/ footprint and then expanding to more sophisticated techniques, product lines, headcount and expanded footprint is common. Once international manufacturers realize that Mexican production has matured significantly from the early days of basic assembly, they are eager to grow their operations to support new customer growth.

Conclusion

Wire harness producers in the U.S. and Canada face relentless pressure to keep costs low. As Entrada's numerous clients in Mexico have demonstrated, central Mexico is an attractive location for not only cost-competitive production, but also new client acquisition.

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About Entrada Group

Entrada Group guides manufacturers in establishing and running their own cost-effective Mexico operations, enhancing their global competitiveness. Our manufacturing platform reduces risk and supports long-term growth, giving small- and medium-sized foreign companies a production footprint in Mexico, and empowering them to anticipate needs and deliver solutions to their clients, in an accelerated way. On behalf of the manufacturer, Entrada Group assists with the strategic, legal and practical requirements of setting up operations in Mexico, and also provides ongoing production support (General & Administrative) services. This leaves producers free to focus fully on their key competency: manufacturing great products.