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photo: Antonio Mercado

Tijuana: North America's Medical Device Manufacturing Capital

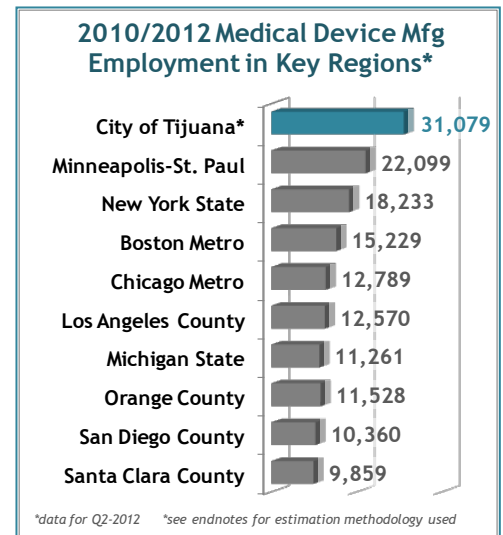


Tijuana: the Capital for Medical Device Manufacturing

Deciding where to grow your company should always include an objective analysis of real information - using facts, independent professional assessments, and looking at the true experiences of other companies and their executives. The medical device industry is no different, and in today's highly competitive (and regulated) environment, it can sometimes come as a surprise that the quality, IP protections, lower-cost and logistical benefits of the City of Tijuana have allowed it to grow the **largest concentration of medical device manufacturing employment in North America**.

It's a bold statement, but one backed up by a healthy dose of facts about today's Tijuana. As seen at right, Tijuana actually leads in employment levels amongst all other medical device manufacturing regions of North America¹ - **with over 32,000 employees in 2013**.

Tijuana is also only minutes from Downtown San Diego, and (with nearly 1.7 million residents) it's the second-largest city on the West Coast of North America. The next few pages are meant to provide a fact-based introduction to help potential investors understand why - in 2013 - Tijuana is not only still the number-one city in Mexico for the number of nearshore, maquiladora (IMMEX) manufacturing companies², but also a leading city on the frontiers of medical device manufacturing.



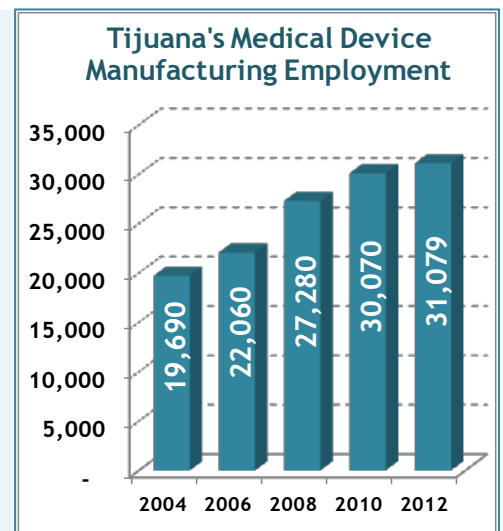
A Growing Cluster of Medical Device Firms

As of Q1 2013, there were **over 40 medical device manufacturers operating in Tijuana**, making a wide range of high- and low-tech products including: dentures, electronic thermometers, hemodialysis components, infusion pumps, IV administration sets, lenses, nebulizers, orthopedic braces, oximeters, pacemakers, stents, surgical kits and equipment, urinary catheters, wheelchairs, x-ray film marking systems³ - and much more. While most of these companies are stand-alone subsidiaries, there are also **at least 14 medical device contract manufacturers**, as well as companies using shelter maquiladora services. As seen below, the number of employees also continues to grow in this sector, with over 11,000 positions added and an average annual growth rate of 7.2% since 2004⁴.



“I don't think that many of us in San Diego were fully aware of the quality of medical device manufacturing in Tijuana...I can certainly confirm they are comparable to facilities found in the United States. I have no doubt device companies will be looking at the opportunities there firsthand, just as I did.”⁵

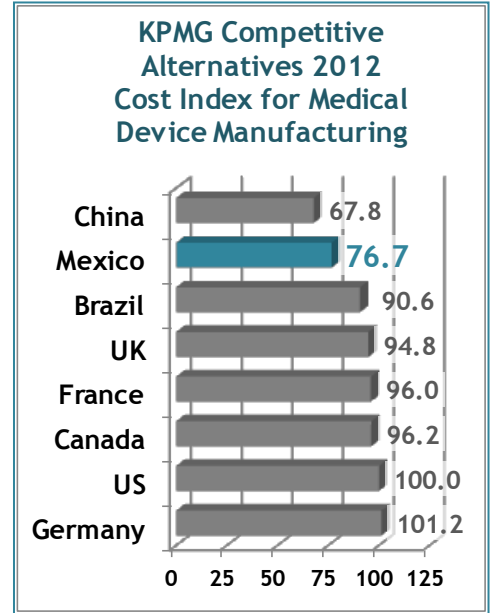
-Joe Panetta
CEO
BIOCOM



Why Mexico and Why Tijuana? The Experts Agree...

Competing in a global environment isn't just a goal, it's often a requirement for today's medical device companies who face increasing competition from around the world. This force of globalization is, in fact, why the U.S. FDA has established 10 overseas offices to foster better international oversight and collaboration - including one in Mexico.⁶

As more options exist for offshore and nearshore manufacturing, it's also useful to note that **Mexico was ranked as one of the lowest-cost countries** among fourteen analyzed by KPMG in their *2012 Competitive Alternatives* study. This study evaluated the "impact of 26 significant business cost components that are most likely to vary by location", finding (as seen at right) that **Mexico provided medical device manufacturers with more than a 23% cost advantage compared to the U.S.**, as well as significant cost advantages compared to other global locations - with only slightly higher costs than China, but significantly lower than even Brazil.⁷



Also notable: while many regions market themselves as possible locations for globally-expanding companies, no other international city offers the unique combination of:

- A large base of 40+ existing medical device manufacturers;
- A "next-door", nearshore location to the U.S. with quick logistical access to the West Coast, and adjacent to several major international seaports and airports;
- A trained, quality-conscious and highly bilingual workforce - in a low union, business-friendly environment;
- Strong intellectual property-rights protections guaranteed via NAFTA, TRIPS, and other Free Trade Agreements; and
- Savings with lower-cost (as seen in the sample at right⁸), just-in-time production capabilities and experience.

Using sample data derived from industry representatives and the Tijuana EDC, significant savings can be gained for both smaller and larger medical device manufacturing operations in Tijuana:

Description	U.S. Cost	Tijuana, Mexico Cost
Employees		
Number of Employees	140	140
Direct	101	101
Indirect	25	25
Administrative	14	14
Hours/Work Week	40	48
Hours per Year	2,080	2,496
Labor Cost per Hour		
Direct Labor Cost/Hr	\$ 12.97	\$ 2.95
Indirect Labor Cost/Hr	\$ 21.71	\$ 12.35
Admin. Labor Cost/Hr	\$ 24.47	\$ 22.65
Factory Cost		
Labor	\$ 12.97	\$ 2.95
Overhead	\$ 7.90	\$ 4.64
General & Administrative	\$ 3.87	\$ 3.70
Factory Cost/Hr	\$ 24.74	\$ 11.29
Total Factory Operating Cost	\$ 5,196,584	\$ 2,846,436
Potential Annualized Savings		\$2,350,148



"I have been involved with three global companies all over the world. At the end of the day, Tijuana is one of the best options for quality, service and cost - not to mention a prime location."

*-Gerardo de la Concha
VP Operations Mexico
Medtronic Mexico*

Access to Customers & Suppliers

Just-in-time production isn't just a theoretical concept for Tijuana's medical device companies - it's a real, strategic logistical benefit that allows many of the city's manufacturers to not only reduce or avoid inventories, but also to ship finished product into the U.S. market in as little as a few hours.

Physically located only 15-minutes from downtown San Diego, California, companies operating in Tijuana are both easy to access for corporate communications and control, and actually *have* easy access

to transportation infrastructure so medical device products can be trucked to anywhere in the U.S. within one- to five-days (with global or time-sensitive shipments flown from SAN, LAX, SNA, TJ and other cargo airports to customers in only hours).

Great access isn't just about geographic proximity - it's also what medical device manufacturers get with their suppliers. Tijuana's existing medical device companies already take advantage of a well-developed network of suppliers - many of them in Southern California and the Southwest United States. These networks grow larger each year with industry-sponsored "Supplier Day" events that are organized in Tijuana as yet another way to support the medical device cluster (note: the next supplier event the MEDSummit 2013 is scheduled for September 5th and 6th 2013).

This high-degree of industry access and cooperation, in fact, has attracted another key supplier to Tijuana: the e-beam sterilization provider, Avantti Mediclear, expected to be in operation by 2013, and located adjacent to the binational cargo facilities at the Otay Mesa Port of Entry⁹.



Nearly all of Tijuana's 40+ medical device manufacturing firms operate under FDA or CE marking regulatory requirements (depending on final market for products, and if a regulated device). In addition, over 90% of all manufacturing firms with 250+ employees are certified under ISO 13485, ISO 9000 or other quality management standards. Below are just a few of the medical device firms currently growing in the world-class manufacturing city that is Tijuana:



Tijuana: the Future Outlook

The City of Tijuana offers a wide range of benefits for companies in the medical device manufacturing sector. Its well-trained, highly-bilingual workforce has not only attracted companies from California and the U.S., but also from around the world - including Germany, Singapore, Sweden, New Zealand, Iceland, and other locations in Asia and Europe. These globally-competitive companies have helped Tijuana grow the largest concentration of medical device manufacturing employment in North America - and in the process they have gained from the city's lower-cost production, strong IP protections, immediate proximity to U.S. customers and transportation hubs, and supplier networks.

Industry synergies have also led to a growing number of at least 14 medical device contract manufacturers, the formation of the 25+ member public-private *Medical Device Cluster of the Californias* (a trade group based in Tijuana), and other opportunities connecting life sciences firms and research institutions in the Cali-Baja Mega Region and throughout Southern California. As Tijuana becomes better known as North America's capital for the medical device manufacturing industry, it's not hard to imagine that the *Tijuana-San Diego Bio Border* will continue to evolve, and remain a prime location for life sciences-related manufacturing and development for decades to come.

Tijuana's industry is evolving. To learn more, come visit us at the first Gold LEED-certified building in Northwest Mexico - home to the Tijuana EDC.



For more information about this Analysis, or about investing in the City of Tijuana, contact the Tijuana Economic Development Corporation at 1-855-558-5332 from the US or Canada - or email us at gulloa@tijuanaedc.org

¹ US regional data derived from Crossborder Group analysis of 2010 NAICS-based employment data from U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages (<http://www.bls.gov/cew/data.htm>) accessed April 2012. County- and State-level data for NAICS codes 325413, 333314, 334510, 334516, 334517, 339112, 339113, 339114, and 339115 was aggregated to measure "medical device manufacturing" industry employment in each area in the US. Data from Tijuana based on Crossborder Group survey of 34 medical device firms in Tijuana, plus employment estimates for 7 firms; data for Chicago Metro region based on 2010 BLS CES data for NAICS codes 325413, 333314, 334510, 334516, 334517, and 3391.

² INEGI firm data for Industria manufacturera, maquiladora y de servicios de exportación (IMMEX) industry, accessed February 2013 (<http://ow.ly/buiEb>)

³ Research by Crossborder Group of FDA medical device database, interviews with company representatives, and Baja California's Medical Device Cluster trade group (<http://www.industriamedica.org/>).

⁴ Tijuana medical device industry survey of 41 firms (34 complete responses) performed by Crossborder Group (May-June 2012). Company representatives verified approximate average employment over previous 60 days (to avoid seasonal variations).

⁵ Quotation from Nov. 25, 2009, BIOCUM newsletter (http://www.biocom.org/bcq/archive/44/cover_story/).

⁶ "FDA Expands Presence Outside U.S. with Opening of Mexico City Post," FDA press release (Dec. 15, 2009).

⁷ "Competitive Alternatives: KPMG's Guide to International Business Location - 2012 Edition", p. 24-25 (<http://www.competitivealternatives.com/>).

⁸ Cost estimate based on average US and Tijuana manufacturing industry wages; source: the Tijuana EDC.

⁹ El Economista article, May 2012 (<http://eleconomista.com.mx/estados/2012/05/29/faltan-empresas-esterilizacion-baja-california>)

