

DEUTZ SPAIN ¹

“Do not repeat the tactics which have gained you one victory, but let your methods be regulated by the infinite variety of circumstances.”

Sun Tzu (544-496 B.C.)²

What made it possible for Deutz Spain to remain competitive when it was located in Zafra³, so far away from its main suppliers and customer? Indeed, the location of the factory was surprising. Raw materials traveled more than 3,000 km (1,900 miles) on average, and most finished products were shipped to Germany for the engines the group manufactured. As a result, transportation costs amounted to more than five million euros per year.

A 150-year history did not seem to be reason enough. Several years earlier, the company found itself between the rock of strong competition from Eastern Europe, India, and China and the hard place of a highly unionized plant with the highest wages in the region. The alternatives were to improve competitiveness dramatically (without worsening labor conditions) or prepare to close the plant down.

After an intense operational improvement process, Deutz Spain was a benchmark in the DEUTZ AG group in terms of quality and service, and Fernando Angulo⁴ had become responsible for the Machining Competence Center of the entire German group.

Eugenio Serrano, executive managing director of Deutz Spain, asked himself: *“Where is the limit of continuous improvement? Should it go beyond what customers demand and are willing to pay for?”* Others considered the risks of sharing the knowledge the Zafra factory had accumulated over the years to the entire German group.

¹ This is a case of the Research Division of San Telmo Business School, Spain. It has been written by Professors Enrique Garrido Martínez and Jorge Bernal González-Villegas, of San Telmo Business School, and is intended as a basis for class discussion only and not to illustrate any judgment on the effective or ineffective management of a specific situation.

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² Credited as the author of “The Art of War,” an influential work on military strategy.

³ Zafra is a town in the province of Badajoz (Autonomous Community of Extremadura), in the southwest of Spain. In 2019, it had a population of approximately 17,000 people.

⁴ Until recently, Angulo had been Production and Engineering General Director and spokesperson for Deutz Spain.

THE HISTORY OF DEUTZ SPAIN

The Díaz de Terán family arrived in Zafra in 1883 and established an iron foundry where they made horseshoes and window grills. Over the years, they expanded into manufacturing agricultural machinery.

Sixty-six years after founding the business, in 1949, they obtained the first patent to build a DITER engine (the brand name was an acronym formed with the first syllables of the founder's surnames, Díaz de Terán), giving birth to the first range of single-cylinder engines manufactured in Spain. New industrial requirements led to an agreement with Güldner, a German company involved in manufacturing diesel engines. The economic take-off of the sixties placed DITER in a market position of great brand prestige. By the mid-20th century, "the Diter," as it was colloquially known then and today, was a leading company and a benchmark in the southwest region.

M.W.M. (Motoren Werke Mannheim), one of the most prestigious German diesel engine manufacturing groups at the time, acquired a majority share in DITER. The seventies were boom years for MWM-Diter, with production and manufacturing peaking in 1975 at 32,000 engines.

By 1985, production had dropped to 12,000 engines due to the economic crisis and changes in the competitive environment. In August 1987, the company became part of the KHD Group (Kölckner Humboldt Deutz, now DEUTZ AG⁵), and Deutz Diter was born. In the 1990s, production expanded to include components for the DEUTZ plants in Cologne, Mannheim, and Ulm, while still manufacturing 5,500 engines per year.

In 1999, Deutz Diter became DEUTZ AG's sole supplier for cylinder heads and connecting rods, and the parent company was its only customer until 2003 when it started supplying products to customers that include SAME DEUTZ FAHR, BMW, RENAULT, THYSSEN KRUPP, MTU, REGE, MECACHROME, MWM, and GÖRTZ&SCHIELE among others.

In 2006, the group decided to stop manufacturing engines in Zafra and invest in machinery and a new 2,500 m² (27,000 sf²) plant in an effort to reach the necessary capacity to manufacture components for 300,000 engines. They also created sales departments in Madrid and Lisbon. On January 1st, 2013, Deutz Diter changed its name to Deutz Spain S.A. to strengthen customer identification of their products with DEUTZ AG standards. (See Exhibit 1 for the origins of "the Diter").

⁵ The origins of DEUTZ AG date back to 1864 when Nicolaus August Otto and Eugen Langen founded "N.A. Otto & Cie," the first engine factory in history, in Cologne. N.A. Otto was the inventor of the well-known engine bearing his name. Today, DEUTZ AG employs over 4,000 people and has offices in over 130 countries on all continents. In 2019, the Group reached sales of 1.84 billion EUR, with a net income of 52 million EUR.

CONTINUOUS IMPROVEMENT PROCESS

Deutz Production System (DPS)

In 2008, with a major international financial and consumer crisis looming, DEUTZ began to implement the Move Fast Program, which aimed to reduce costs, improve products, gain market share, and acquire new customers. Ignacio García Cornejo, Deutz Spain Head of Operations, recalled:

"Our Lean journey started, as it often happens, with small Kaizen⁶ events here and there. We used them to test some tools. In parallel, every two weeks, we organized workshops to teach people about 5S, Just-in-time, Jidoka, and so on⁷.

We decided to carry out a pilot project in the assembly area. It was a very intense year in which we introduced Kanban⁸ and Milk runs⁹, moved machines around, and overhauled the work done in the assembly lines. That's when we really began to understand what Lean was all about. The next step was to introduce the Deutz Production System – inspired by TPS, of course, and adjusted to meet our needs."

Deutz Spain continued its path to excellence in 2010 when it implemented the Lean Manufacturing method through the Deutz Production System (DPS) model. This was a fundamental tool to achieve excellence in product and service quality and shareholder profitability while putting employee safety above any other goal. The continuous improvement work done in the factory and the organization into Autonomous Production Units made it possible to improve productivity by more than 10%. In 2012, all Kaizen activities were reinforced to achieve Lean production. Exhibit 2 shows Deutz Spain's Lean management principles. Ignacio added:

"It was after the first steps that we really got into the idea of a Lean transformation and the need to involve the management and bring the change beyond the production area. We relied on a powerful consulting firm specializing in the automotive industry and began to analyze processes rather than departments critically, and even appointed value stream managers. "Flow" became a common word as we strived to get a global view of the process."

As an example of the results of using Lean tools in the manufacturing lines, the 5S led to achieving safety, ergonomics, quality, and workplace environment improvement goals. The "U" layout allowed for more efficient and productive processes as it freed up space and reduced trips. With the One Piece Flow (OPF), lines reduced waste such as excess final and intermediate inventories and others that directly impacted the processes.

⁶ Japanese term used to refer to the philosophy of continuous improvement.

⁷ 5S, Just in time, *Jidoka*, etc. are some terms and tools related to the continuous improvement philosophy about which one can find extensive and detailed literature on the Internet.

⁸ Kanban: visual signaling device with instructions about production or product movement, mainly

⁹ In logistics, a milk run is a round trip or fixed routes and schedules that facilitate either distribution or collection. The term comes from the old milk delivery services.