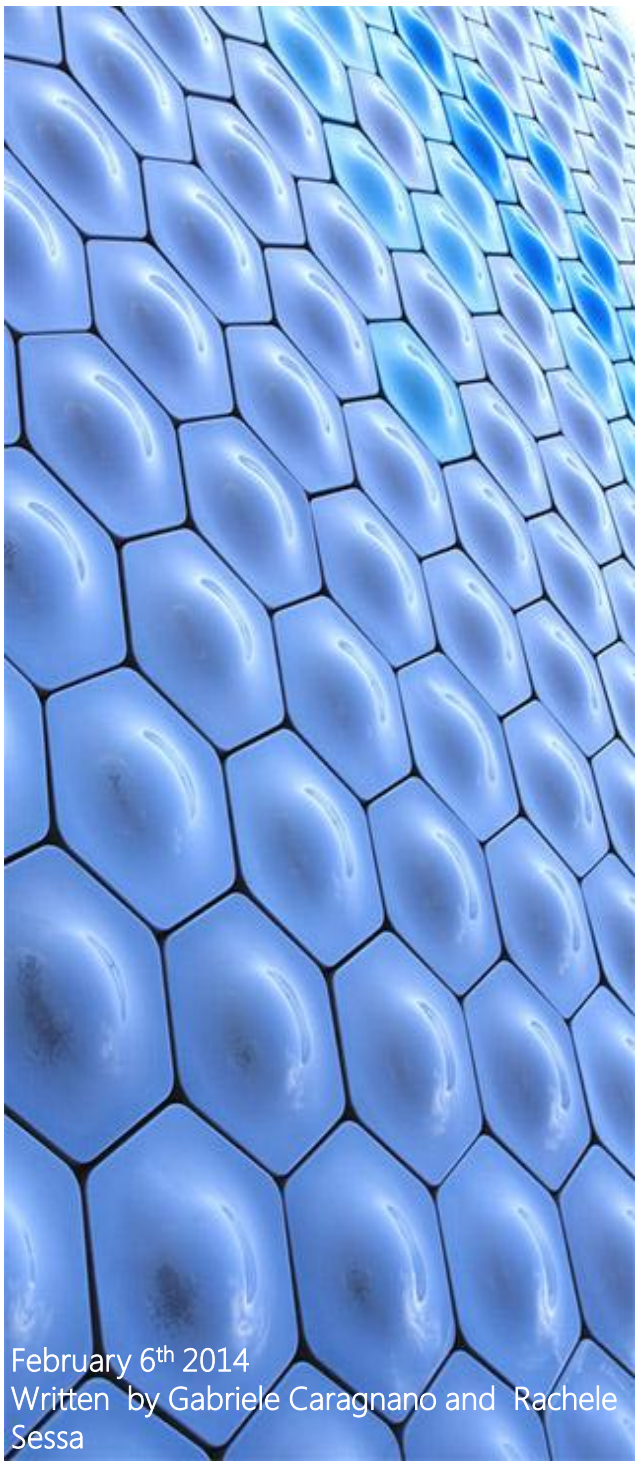
Household electrical appliances' sector

Italy with respect to European competitors

Centro Studi
Fondazione ERGO-MTM



February 6th 2014
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1. Introduction

A hands on strategy

In the last few years, Italian industry seems to have become a marginal player within international competition. Global economic crisis seems to have struck some sectors harder than others. In fact, the Household electrical appliances' sector, one of the hardest hit, has gone through an increasing-and apparently irreversible- Production relocation process towards Eastern European countries. Moreover, the most important players, i.e. Whirlpool, Indesit, and Electrolux, have announced the closure of some of the most important as well as historical Production plants in Italy, putting thousands of jobs at risk, not only from the plants themselves, but also from satellite companies.

Are we really facing an irreversible and inevitable process?

The household electrical appliances sector's analysis of the ERGO-MTM foundation benchmarks Italy with Germany, Spain, and Czech Republic. Data have been gathered during 2010-2012, involving 13 plants and around 11.000 workers

The analysis performed by the ERGO-MTM foundation aims at proposing the main players an alternative to abandoning Italy. Rather than just providing confidence and hope, some concrete and fundamental actions are suggested, in order to preserve thousands of jobs, and, at the same time, improve competitiveness of Italian plants.

1. A strategical sector fo the Italian economy

The Household electric appliances' industry is- and has historically been - fundamental for the Italian economy, number two after the Automotive, in terms of number of workers.

The high throughput, efficiency, quality of product, and investment in innovation, have made our country a leader in the market. Only Italy and Germany hold more than 50% of the European market, with four manufacturers having more than 60% of the EU market (Electrolux, Indesit, Whirlpool and Bosch-Siemens).
After the crisis of 2008, the difficulties arising from demand contraction have weakened Italy's market position, even threatening the survival of the sector. We shall provide some relevant data. Italy is in first place, in terms of number of workers (20% of the European market, Germany being second with 19,4%, and then Spain with 7,2%). The number of Italian companies (500) is twice as many as those of Germany and of those of Spain, and close to the 600 companies in Czech. Republic. However, Germany is first in terms of throughput, and around 9 billion Euros in terms of revenue.

Taking a closer look at the sector, it can be seen that the big Electric household appliances' division, with 5 billion in terms of revenue and over 20.000 workers, represents over one third of the business and of the employment of the entire Electric household appliances' sector.
After the year 2000, Italy-having been leader in the big appliances' division, went down to the third place among world's exporters (around 8% of the market share), after China and Germany.

2. Labor cost and Productivity? Let's clarify

Most of the times, when speaking about the issue of lack of competiveness of the Italian industry, the only aspect considered is the high Labor cost. Let's clarify this point.

Labor cost is a piece of data that has been subject of abuse by thousands of researches and articles about Competitiveness, which has been often expressed in terms of euro/hour. In the last few days, many newspapers, which have written about the difficulty of the Household electrical appliances' sector in Italy, have often used the figure of 24 euro/hour, in order to indicate the sector's Labor cost. This piece of data, which is key to benchmark Competitiveness, deserves to be further analyzed

In the ratio euro/hour, we have the company's Labor cost during a certain period(typically one year) in the numerator. This cost includes gross salary paid to the worker, tax, insurance and TFR burden (compensation given to a worker when dismissed), all in charge of the company. In the denominator, we have the total amount of presence hours during the period considered.

Taking the example of the typical gross salary of a worker in the Metal-Mechanical sector, we have:
Annual gross salary : 23.000 € ➔ Labor cost : around 33.000 €

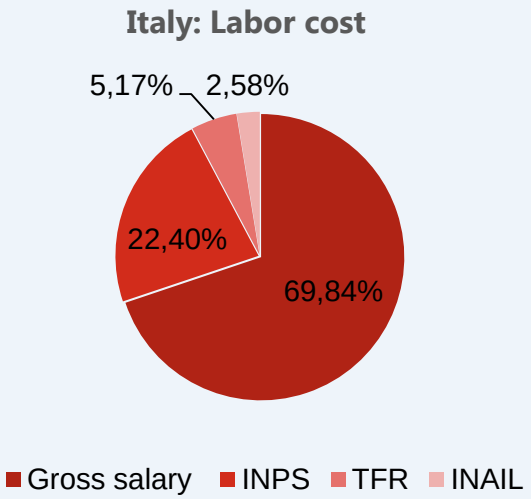

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Figure 1: Italy - Labor cost
Notes: INPS: Pension fund
TFR : Compensation in case of dismissal
INAIL: Insurance

Source: Eurostat-Istat
Figure 2: Annual average cost of a direct worker for the company

With respect to number of hours worked, this figure in Italy is about 1680 hours/year, a value that can vary slightly within year and industrial sector, depending on the type of National contract of the specific sector.

	Germany	Italy	Spain	Czech. Rep.
Hours defined by contract	1.658	1.679	1.731	1.710
Absenteeism (hours)	52,8	53,6	45,6	48
Net presence hours (year)	1605	1625	1685	1662

Source: Eurofound - Mercer

Table 1 – Net presence hours

In Table 2, the annual Labor cost of a worker in the industrial sector has been taken and then divided by the net presence hours (average amount of hours worked annually, as established by contract and reduced by the expected absenteeism), thus getting the hourly cost per direct worker.

It can be seen that the Italian hourly cost of the Household electrical appliances' sector is around 20 euro/hour, significantly different from the 24 euro/hour published by the National press. Moreover, the Italian figure is smaller than that of Spain (23 euro/hour) and that of Germany (34 euro/hour), whereas in Czech. Republic, the hourly cost figure is much smaller and around 9 euro/ hour.

A primary basic observation shows that the Labor cost in Italy is indeed competitive with respect to that of Central European countries, but much higher than that of Eastern European ones.

Hourly cost	
Germany	34,76
Italy	20,69
Spain	22,95
Czech. Rep.	9,34

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Table 2 – Hourly cost

Nevertheless, this datum cannot be sufficient to support a relocation decision.

It becomes necessary to open the doors of the plant and understand the operating mechanism and the industrial culture of plants.

We have to introduce the concept of efficiency and **cost per productive hour performed.**

3. Efficiency and European benchmark: who works more? And who works better?

In order to professionally address the issue of level of Competitiveness of a single plant, it is necessary to consider other variables. Those considered so far to determine hourly cost (Table2), can be defined as exogenous variables of the country. At this point, we shall introduce endogenous variables of the plant, quite similar among plants of the same sector, of the same country, and of plants that have similar production processes. Endogenous variables have impact on the amount of net presence hours considered in the Labor cost/Net presence hours ratio. What really matters is not the amount of presence hours at the workplace, but the number of standard hours that each worker is able to perform.

But what is a standard hour? The concept is not trivial, but for simplification purposes: the standard time is not a measure of time but of production.

Image a metronome that swings at a constant pace of 100 swings per minute (standard time per swing = 0,6 sec). So, the standard production per minute of work will be 100 swings, i.e. the 100 swings is the measured output of the standard time of one minute of production (0,6 sec x 100 = 60 sec standard).
If the metronome were stopped during the minute or obstructed for any reason, and the effective time to swing 100 times were 90 seconds, we could conclude that:

Production (output)= 100 swings → 60 sec. standard

Efficiency=standard time of production/effective time used= 60/90 = 67%

Efficiency loss = 30 seconds (33%)

Hence, efficiency is a ratio between output and input. Output is measured in standard time of production, and input is measured in amount of work needed(time paid to the worker). But how is standard time of production of a fridge determined?

The calculation of the standard time of production is complex, and requires Industrial Engineering competences. For assembling a fridge, about a thousand actions are required, all of which have to be identified and measured , in order to determine the standard time of assembly of that fridge. If two plants used different measuring systems of work, they would get different measures of standard assembly time for the same fridge, produced with the same production process. This fact would undermine any initiative of benchmarking two plants in terms of their efficiency. It would be like comparing two temperatures, one expressed in Celsius degrees and the other one in Fahrenheit: an absolute chaos!

The study carried out by the ERGO-MTM Italia foundation is based under an identical system of measuring work, thus rendering the benchmark possible - and fed with data of efficiency of the sample plants. This system (work metrics), together with the MTM system (Methods-Time Measurement), is the standard most commonly used worldwide.

Beyond the metrics used for work, other endogenous variables specific to the plant used in the study concern work organization-that is: net minutes worked during a shift (excluding breaks of all types), increase of time due to ergonomic factors applied to compensate effort, loss of efficiency (technical and organizational losses), Quality losses (rework) and losses due to non value added activities (movement of materials and coordination activities).

Figure 3 shows values of efficiency of the analyzed countries, measured under the same MTM metrics.

Having a common base (same metrics) is fundamental in order to compare Labor productivity with a professional approach. In fact, each measure of work productivity and efficiency is relative to the level of standard time used as reference. If, given a certain task, the standard time used to measure it, is artificially increased, the efficiency would increase as well.

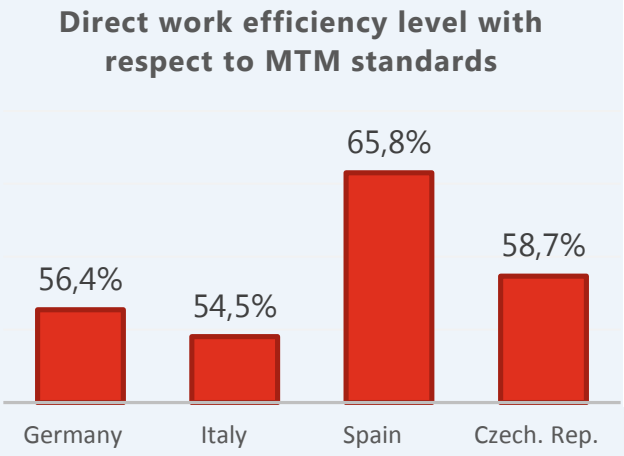

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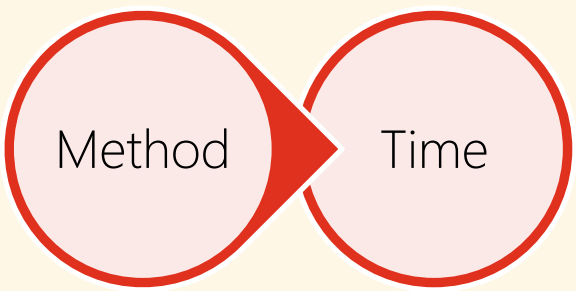
Figure 3 – Direct work efficiency level with respect to MTM standards

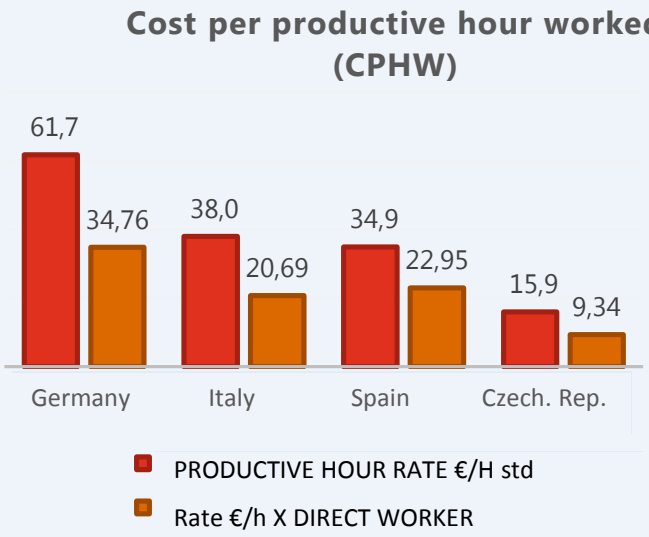
What is the MTM system?



MTM is an Engineering technique of design of manual work, which assigns each task, a fair and sustainable time, world wide recognized.
With MTM, given a certain task, it would be measured in the same way anywhere in the world, for the measure would be the sum of the elemental times of each single operation included in the task considered. The time is determined by the method.

The study allows to assess and compare the efficiency of different Production systems, all measured using the MTM technique. In Spain, the efficiency is the highest (65, 8%), which means working well and with a good organization, reducing the various losses to a minimum.
After Spain, comes Czech. Republic (58,7%), not only competitive due to cost level, but also due to a high level of efficiency.
Italy is in fourth place in this classification, and after Germany- which surprisingly does not excel for its efficiency (confirming the general slowness of the Household electric appliances' sector with respect to more evolved ones, such as the Automotive, in which German and Italian products represent the excellence).

Having calculated the efficiency of the productive systems of different countries, it is now possible to calculate the number of productive hours worked, obtained by multiplying the number of net presence hours, (see Table 1) by the percentage of efficiency of each plant (Figure 3). The Labor cost divided by the productive worked hours gives the **cost per productive hour worked (CPHW).** This indicator allows to make an overall comparison which takes in account both exogenous variables of the country, and the specific endogenous variables of the plant, and thus becomes an excellent tool to asses competitiveness derived from the productive work factor.



Elaboration ERGO-MTM foundation

Figure 4: Cost per productive worked hour

In this benchmark, Italy (38 euro/hour) loses its competitive advantage with Spain (35 euro/hour), due to the efficiency gap. Czech. Republic (16 euro/hour) increases its gap with Italy, thanks to Czech's higher efficiency and renders this country particularly attractive from the Labor cost's point of view.

4. A game to be played: the quality gap that the Household electric appliances' industry has to fill up

The improvement potential of Italy's efficiency is very consistent: +30% in three years, with respect to World class values, thus moving from 54,5% to the 70,5% World class value (+ 16 % points). The aspects to be improved , in order to increase efficiency, are represented in the following figure, together with their improvement potential. It is important to underline that the reference levels (benchmark) used for each parameter are indeed feasible and achievable, and roughly corresponds to the situation of Spanish plants.

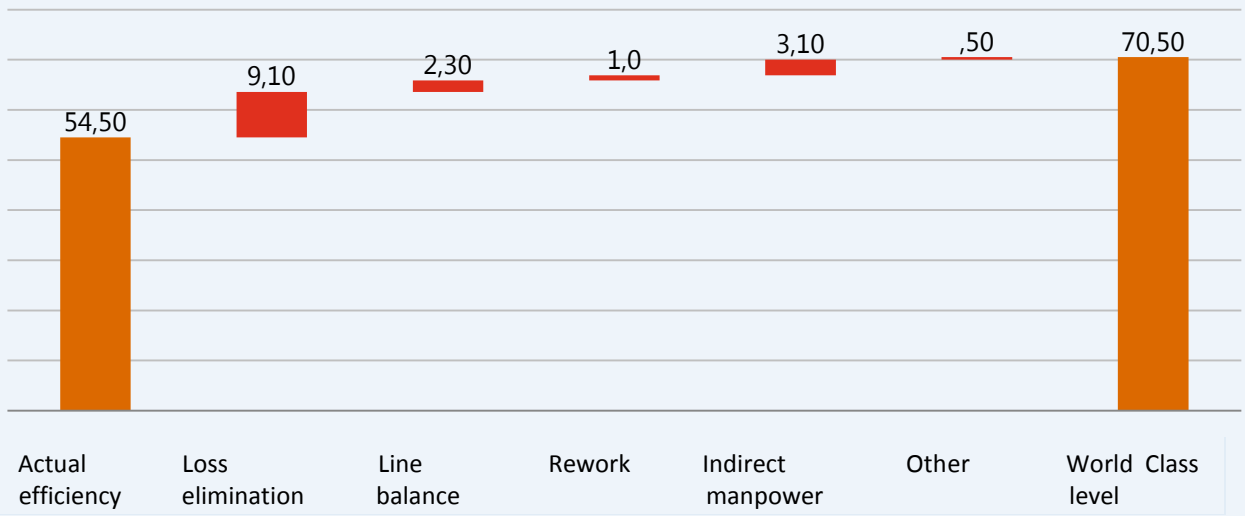


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Figure 5: Italian efficiency- Potential improvement by area

Glossary *Figure 5*

Losses*: Non productive time lost due to technical factors (plant stoppages, black outs, break downs, etc.) or organizational ones (lack of material, defective material, set ups, lack of personnel, etc.)*

Line balancing*: Time losses due to non perfect synchronization of sequenced work stations*

Re work*: Time spent to recuperate defective products*

Indirect manpower: *Time spent to move materials and coordinate resources*

With a World class level of efficiency, Italy could fill up the competitive gap with Spain (34,5 euro/hour), and position first, within Western European countries.

Making the assumption that macro-economic trend will tend to flatten Labor costs in Europe, it can be concluded that the competitive game will be played not on Labor cost, but on the capacity to reach excellent levels of efficiency.

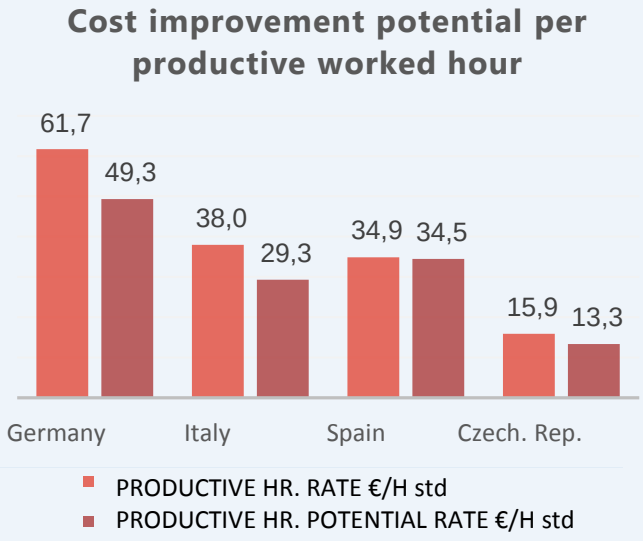

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Figura 6: Potential improvement of CPHW

5. What actions have to be taken to recover Labor efficiency in Italy?

The aim of this study is going beyond the concept of reducing tax burden over Labor cost, which is an important but not decisive element.
The message wants to be clear and straightforward to the Italian companies: from the introduction of the Euro onwards, it has not been completely understood the concept that continuous improvement of productivity (not only Labor) is a necessary but not sufficient condition for survival. The incentive of money devaluation has largely given the illusion that having a product was enough to sell it worldwide.

Today, beyond having a good product/service, **who isn't productive does not survive in the short-medium term.**

The actions that we want to recommend are initiatives that have effect on the Management operating system of work resources, and require knowledge, dedication, perseverance and much, much, much discipline.

1. Cost Deployment.
Construction of a system (model) in which figures of the Balance sheet are linked with the measures taken and with the Key Performance Indicators (KPI) of every single Operating process.
This step, **starting from the bottom,** requires the capacity of measuring every phenomenon (costs, time, losses, etc.) and, at the same time, **starting from the top**, requires to drive Accounting towards analytical variables, till actually link Accounting with the KPIs used in the Production departments. The objective is to focus improvement initiatives on the processes which have more impact on the Income Statement (with an integral approach: what to do, where to do it, how to do it , and when).

2. Integrated approach along the entire Supply Chain. Involvement of suppliers upstream and distributors downstream of the optimal management of physical flow of materials, as well as of the planning process. The objective is to stabilize the productive flow with several losses eliminated (not only from Labor efficiency, take for instance obsolescence costs) and to drastically reduce levels of stock along the entire production line.

3. First Time Right approach in the development of new products.
The process of developing new products is not an exclusive responsibility of the Design department. In World class companies, products are designed involving several areas: Design, Industrialization, Procurement, Quality, Cost, Production, Ergonomics, etc. In addition, fundamental concepts such as modular design, reduction of variants, reduction of management complexity, simplification of production and assembly processes, are taken into account. In this sense, it is worth to study the integrated approach of the FCA group in the development of the last models (Panda and specially the mini Jeep and the 500X) as well as Audi.

4. Development and use of an Operating system as the engine of the Continuous Improvement
This Operating system is often called in jargon Production System, a name coming from the USA and used to talk about systems like the Toyota Production System. The effective and efficient use of a Production System requires an accurate choice of tools and of the necessary concepts (the first step is certainly the construction of a solid cost deployment system), to be used by everyone on a daily basis. The last can only be achieved by Training, Involvement, Discipline and the alignment of objectives of all stakeholders (Workers, Managers, Shareholders, Suppliers, Clients, etc.) towards achieving common and measurable objectives.

6. Conclusions

By filling up the gap efficiency, Italy would position better with respect to Central-Western European countries. However, an important cost difference would still remain regarding Eastern European countries, although part of this difference would be gradually absorbed by higher inflation rates of these countries. But the last argument does not mean that everything is useless. In fact, it means that Italian plants need to structure programs aimed at recovering Competitiveness, involving all components of profitability (Industrial Plan).It is certainly necessary, for instance, to rethink about the Production and Distribution footprint, regarding the markets addressed: premium models can be produced with controlled logistic costs in countries with higher Labor cost, however, in countries close to destination markets (in this case, Italy would be the best choice if target efficiency values were achieved).

The four actions recommended in this study do not only impact on Labor cost, which by itself would never be able to change the choice of location to our benefit.

The indicated approach is an integral one, modifying the way of working and the worker's mentality.

Labor cost represents a marginal percentage in the overall cost of a home electric appliance. However, the way of working impacts on at least on 80% of the overall cost.

And the last is what makes you win the game.

La Fondazione ERGO-MTM Italia

The Ergo-MTM Italia foundation is the entity that brings together companies, syndicates, and universities into a Research project, as well as into Training and certification of Work measurement systems and Biomechanical loads. The foundation is an integration center, totally neutral with respect to the company-syndicate relations, and aimed at harmonizing productivity and security at work. Located at Varese, the Ergo-MTM Italia foundation was created in January of 2012, with Luigi Galante (VP Manufacturing EMEA, Fiat Group Automobiles SpA) as President, and Gabriele Caragnano as CEO.

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