



Software used
✓OPERA MES

EUROSTAMPI: INDUSTRY 4.0 AND MANAGEMENT CONTROL

How the SME from Vicenza implemented Opera MES to thrive in a highly competitive market



Figure 1: The Eurostampi production plant in Sarcedo (VI).

The adoption of 4.0 technologies is not the prerogative of large companies: this is well demonstrated by the case of [Eurostampi Srl](#), a SME from Sarcedo (VI) which decided to meet the challenge and implement an MES (Manufacturing Execution System) to:

- manage production efficiently;
- calculate costs accurately;
- guarantee margins to orders.

Specializing in the design and production of die casting and plastics moulds, as well as in plastic injection moulding, the company has decided to rely on advanced production management systems to maintain competitiveness in a complex and competitive market. Moulding, in fact, is a sector dense with competitors that fight hard to offer the best price.

This is why, in this context, efficient production becomes essential to avoid waste and guarantee customers receive a quality product.

PRODUCTION EFFICIENCY IS WRITTEN IN THE COMPANY'S DNA

The desire to pursue maximum efficiency has been part of Eurostampi's philosophy since it was founded in 1988. The owner Valentino Dall'Igna, in fact, has always managed to collect production data relating to the working hours of the machines and personnel.

Data collection took place initially through paper forms but, when technology made it possible, the activity was carried out on a PC using specific software.

It was, in any case, an inefficient solution: the data was manually transcribed by the operators who, at the end of the day, dedicated at least half an hour each to data entry. This means that the workshop remained stationary, while operators crowded the data collection terminals.

Moreover, the data entered was not precise because it was entrusted to the memory of the staff who, at the end of the shift, had to remember all the orders on which they had worked, the times and the corresponding machines.

THE ADVENT OF INDUSTRY 4.0: THE TRANSITION TO THE MES SYSTEM FOR DATA COLLECTION

In 2019, the company had the opportunity to renew its systems: it therefore decided to change ERP and connect the machines through an MES system. It selected the Opera MES software for this second activity and relied on Link Management for the project management.

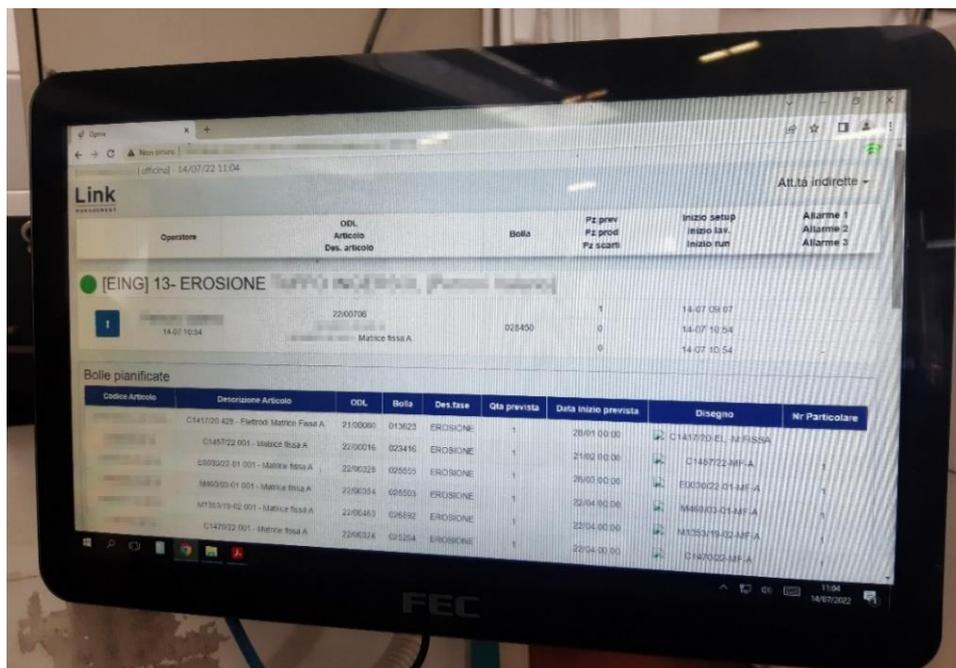


The departments involved in this 4.0 transition are:

- plastic moulding, where presses, dehumidifiers and two stations for manual finishing of moulded parts are located;
- the mechanical workshop, with machine tools (milling machines, lathes, erosion) and, included in this department are two workbenches.

In all, 21 machines were connected, initially the 8 newest and later also the oldest, using different communication protocols.

Figure 2-3: Integrated devices of Industry 4.0 installed on board the machine for hour detection with Opera MES.



The two workbenches are also equipped with a declaration terminal for manual data entry by an operator. In this way, assembly and processing activities are also monitored for improved calculation of production times and costs.

"Since I began working as an entrepreneur, I have always spent a lot of time verifying the working hours of machines and staff, cross-referencing the various data I had available, so as to have certain costs for each individual order.

Since we adopted the data collection system through MES we have a daily report of the times of the individual activities. In addition, thanks to Opera's interconnection with our management system, we have an automatic cost balance for each activity, each machine and each person.

This enables us in real time to know the progress of the work, adhere to delivery times and, above all, to monitor the company's performance from an economic point of view. It is, in fact, essential on the one hand to guarantee the security of a fair remuneration to our employees and, on the other, to demonstrate to customers and suppliers our reliability and solidity.

Valentino Dall'Igna (Eurostampi Srl) - Owner

SUPPORT FOR QUALITY CONTROL

Eurostampi implemented a department dedicated to plastic moulding, and thus also needed an intuitive and punctual system to carry out quality control.

With Opera MES, the operator can now carry out the checks required by the test plans for the various pieces through a simple screen: the operator can therefore declare whether the verification has been successful or not.

Consequently, the customer is certain to receive qualitatively compliant parts, because they are meticulously checked. The company, for its part, collects statistical data to monitor the maintenance of the quality level and intervene in the event of variations.

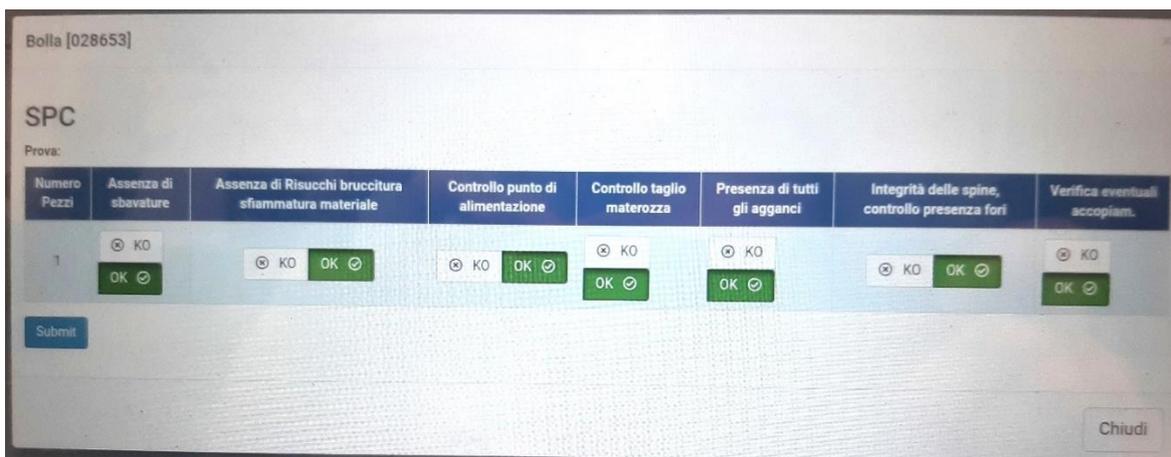


Figure 4: screen shot of a test with the checks to be carried out and the related findings.

THE EFFECTIVE MANAGEMENT OF ORDERS WITH OPERA MES

In addition to collecting data, upon adopting Opera MES, Eurostampi is now able to effectively manage orders thanks to direct communication between its offices and the factory.

The order, in fact, becomes the reference point for each phase, from design to shipment:

- first of all, times and costs are established from the beginning, while taking into account the estimation and design phases of the mould;
- the design of the single mould is divided into macro-parts on the basis of which, production is planned;
- the technical office then sends the drawing of the piece directly to the terminal on the machine of the operator, who also receives the work order;
- here, processing begins and the Opera MES system records the data by associating it with the specific order.

Once the mould is completed, the order is closed and the MES returns a detailed table of the machines used and the costs incurred. This expenditure is calculated, for example, by taking into account the cost of personnel, machines, energy used, etc. The full cost of the order is obtained by adding this data to the data relating to the initial office work.

Stato ODL

Filtri

Data fine da: 15/02/2021 Data fine a: 15/02/2021

Articolo: % ODL: % ODL chiuso: Escludi

Sel. colonne Esporta

ODL	Stato	Qta	Articolo	Descr articolo	Qta	Data inizio prv	Data fine prv	Fasi tot	Fasi iniziate	Fasi chiuse	Reparto fase attuale	CDL fase attuale
21/	Lavorabile	10000			10000	2021-02-09 00:00:00	2021-02-16 00:00:00	10	0	0		
21/	Lavorabile	10000			10000	2021-02-09 00:00:00	2021-02-16 00:00:00	10	0	0		
21/	In lavorazione	600			600	2021-02-11 00:00:00	2021-02-16 00:00:00	12	1	1	STAMP	P150
21/	Lavorabile	1			1	2021-02-12 00:00:00	2021-02-15 00:00:00	1	0	0		
21/	In lavorazione	1000			1000	2021-02-12 00:00:00	2021-02-15 00:00:00	9	1	0	STAMP	P250
21/	In lavorazione	1000			1000	2021-02-12 00:00:00	2021-02-15 00:00:00	9	1	0	STAMP	P250

Figure 5: Work orders in real-time.

Sel. colonne Esporta

Ordine	Stampo	Articolo	Des.Articolo	Fase	Lunedì 15 feb 2021	Martedì 16 feb 2021	Mercoledì 17 feb 2021	OGGI	Venerdì 19 feb 2021	Sabato 20 feb 2021
21/				UFF. TEMPI METODI / QUALITA' - TMSHT						
21/				UFF. TEMPI METODI / QUALITA' - TMSHT						
21/				UFF. TEMPI METODI / QUALITA' - TMSHT						
21/				UFF. TEMPI METODI / QUALITA' - TMSHT						
20/				UFF. TEMPI METODI / QUALITA' - TMSHT						
20/				UFF. TEMPI METODI / QUALITA' - TMSHT						
4.00	20/			UFF. TEMPI METODI / QUALITA' - TMSHT	4.00	4.00	4.00	4.00	4.00	
2.00	20/			UFF. TEMPI METODI / QUALITA' - TMSHT	2.00	2.00	2.00	2.00	2.00	
	20/			UFF. TEMPI METODI / QUALITA' - TMSHT						

Vista da 1 a 19 di 19 elementi

Visualizza 50 elementi

Sel. colonne Esporta

Carica

Giorno	Ore Versate
Lunedì 15 feb 2021	
Martedì 16 feb 2021	
Mercoledì 17 feb 2021	
OGGI	
Venerdì 19 feb 2021	
Sabato 20 feb 2021	

Figure 6: Statement of hours worked divided by each work order.

MONITORING THE WORK PROGRESS

In addition to a post-data analysis, the MES system allows to monitor the work of the machines in real time. This is why Link Management created LFC, an intuitive synoptic that can be consulted from any device to see the progress of work at any moment.

For each machine and/or station one can monitor the percentage of completion of the order, as well as the punctuality of the expected times. The colour also indicates the status of the machine (in operation, in tooling, downtime) to detect any critical issues at a glance.

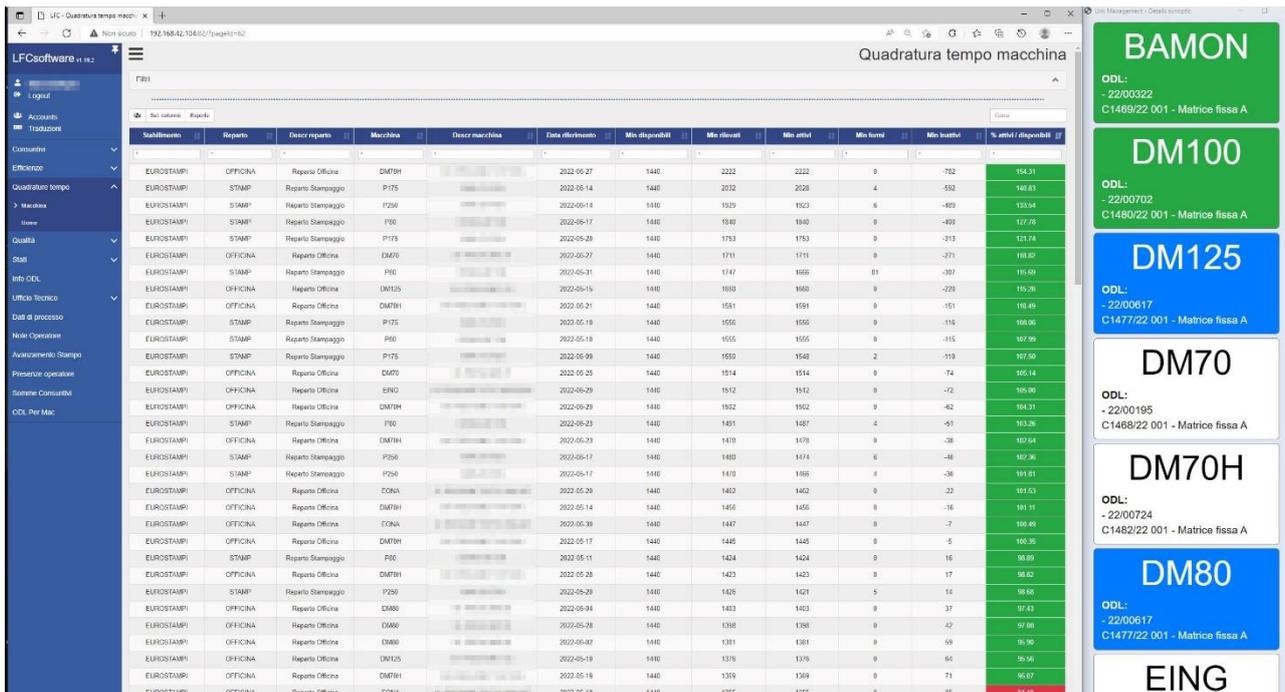


Figure 7: On the right, a production synoptic used on an office desktop.

ACCURATE COST CONTROL

Greater production efficiency aims not only to optimize time and use of resources, but also to contain costs. And, in order to verify the achievement of the objective, Eurostampi cross-references the data from both Opera MES and the management system.

In order to obtain precise order costs, it is necessary to:

- on the one hand, retrieve data through Opera relating to direct production times, material and energy consumption, and the use of machines and tools associated with individual processes;
- on the other hand, extract the costs of personnel, materials used in production and machine costs from management information.

Stemming from this basis, we can determine the amount of margin obtained and establish whether we have worked with profit or loss on each order. The result is summarized in a final report created, indeed, by cross-referencing the MES and ERP data.

In order to never lose sight of the status of the work, a daily overview sheet is also created: all the data on the activities of the machines and the costs incurred for purchases and processing is reported daily. In this way, we consistently have control over production performance and it is easier to intervene promptly in case of anomalies or unforeseen events.

CONCLUSIONS

Eurostampi stands as a company at the forefront in its sector: it has embraced the idea of Industry 4.0 and has found in Link Management the right partner to start the transition.

The challenge to fully become an Industry 4.0, implementing new systems and procedures, was not simple: the process involved all departments (offices, workshop, moulding), each with its own specific nature, and for which the relevant tools were configured.

However, success eventually did come, thanks to the combination of dynamism, preparation and experience of the company staff, on the one hand, and Link Management consultants on the other.

On the technological front, the MES project has brought innovative tools to the company, helping to modernise a method that was already present but that had been implemented manually. This demonstrates how 4.0 technologies can be integrated into a company, even a small one, without necessarily distorting its production methods.

Once the method is established, the precision and speed of the technology come into play, which enable to optimize, save and manage production efficiently.

The image shows two screenshots of a software interface. The top screenshot is titled 'Avanzamento Stampo' and displays a table with columns: Codice Articolo, Codice Ordine, Nr Particolare, Percentuale Avanzamento, Qta Prevista, Qta Versata, Macchina, Ore Macchina Versate, Ore Macchina Previste, Ore Attrezzaggio + Ore uomo Previste, and Ore Attrezzaggio + Ore uomo. The bottom screenshot is titled 'Somme Consumivi' and displays a table with columns: Cod. macchina, ODL, Inizio, Fine, Tempo setup effettivo (min), Tempo uomo effettivo (min), and Tempo macchina effettivo (min).

Codice Articolo	Codice Ordine	Nr Particolare	Percentuale Avanzamento	Qta Prevista	Qta Versata	Macchina	Ore Macchina Versate	Ore Macchina Previste	Ore Attrezzaggio + Ore uomo Previste	Ore Attrezzaggio + Ore uomo
C1	21		0.000000	1.00000	0.00000	ENG	11.04332	1.00	1.00	7.59000
C1	21		0.000000	1.00000	0.00000	ECNA	0.00000	1.00	1.00	0.00000
C1	21		0.000000	1.00000	0.00000	ERFF	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	CAD	0.00000	1.00	1.00	18.50000
C	21		0.000000	1.00000	0.00000	CAM	0.00000	1.00	1.00	1.00000
C	21		0.000000	1.00000	0.00000	SEGR	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	UTMQ	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	ENG	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	ECNA	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	ERFF	0.00000	1.00	1.00	0.00000
C	21		0.000000	1.00000	0.00000	BAKON	0.00000	0.17	0.17	0.00000

Cod. macchina	ODL	Inizio	Fine	Tempo setup effettivo (min)	Tempo uomo effettivo (min)	Tempo macchina effettivo (min)
DM704	21	15-02 08:17:02	15-02 08:29:39	65	224	1384
DM80	21	15-02 14:00:50	15-02 17:32:49	212	212	212
DM80	21	15-02 08:06:01	15-02 14:00:19	45	265	281
ENG	21	15-02 09:51:07	15-02 11:49:12	32	39	60
ECNA	21	15-02 08:08:54	15-02 08:29:39	17	203	1341
P150	21	15-02 11:23:57	15-02 17:29:42	48	45	134
P150	21	15-02 11:23:57	15-02 17:29:42	48	45	134
P175	21	15-02 15:37:38	15-02 17:01:07	26	26	26

Figure 8: Tables for monitoring the progress of orders and for the final balance of processing times.