

Software 4.0 for the Interconnection of Machinery

C.T.B.

Challenge

- Interconnection of completely different machinery
- Automation of data collection
- To trace downtimes
- To know the cost associated with each batch
- Compliance with the requirements of the Italian State Business Plan 4.0

Solution

- Based on a system consisting of iDaq, Digital Factory 4.0 and Liliun communicating with the company's machinery and MES

Resources

- iDaq
- Digital Factory 4.0 Lite
- Liliun

Challenge

C.T.B. deals with national and international printed circuit boards for mono-bi-multi-layer electronics. The goal of C.T.B. is to **interconnect machinery** and become **Industry 4.0, to be more efficient, competitive** and respond to the challenges of the ever-changing market.

The challenge is to interconnect machines of very different types (drilling machines, surface processing machinery, galvanic plant) with the management system and the company MES. The goal is to **automate data collection, to track downtimes** and to **know the cost associated with each batch**.

We also want to take advantage of the opportunity offered by the Italian Business Plan 4.0, which offers State incentives to promote the technological innovation of the country: further objective to be achieved is, therefore, compliance with the requirements of the legislature in this regard.



Above, a printed circuit by CTB

Solution



C.T.B. is a leading company in the production of printed circuits for mono-bi-multi-layer electronics.

Founded in 1981, it has always been characterized by a great propensity for fast and reliable execution of medium and small series.

Owner of a site of over 1000 meters, located in the industrial area of Flero (BS), carries out its activity from there on both national and international markets.

www.ctb-cs.com

C.T.B. CIRCUITI STAMPATI S.N.C.

Via Manzoni, 22 - 25020 Flero (Bs) Italy

To meet the needs of C.T.B., we used our software for Industry 4.0: iDaq, Digital Factory 4.0 and Liliium, achieving the objectives with a complete and scalable solution in a short time.

iDaq is used to communicate directly with the machines (drilling machines, surface processing machinery, galvanic plant) through Ethernet/IP protocol and through other dedicated protocols.

iDaq collects the main production data, such as:

- Temperatures
- Alarms
- Machine states
- Number of pieces produced

Digital Factory 4.0 provides a global view of the plant and forwards the parameters of the batch to be performed on the machine on the basis of what the operator has chosen from the MES.

Liliium deals with the transfer of data to the company database, from which the MES extrapolates the information for viewing and archiving, and the transfer of data from the database to Digital Factory 4.0 and iDaq.

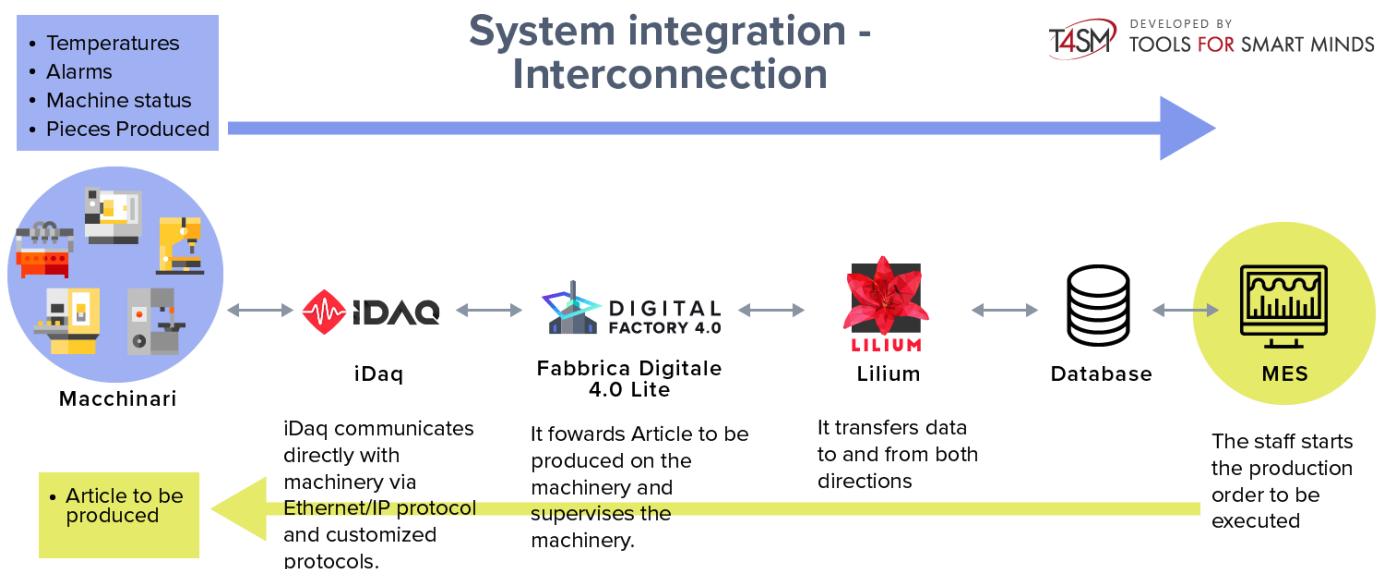


Diagram of interconnection of machinery and MES



TOOLS for SMART MINDS (T4SM) is a system integrator that develops software solutions for manufacturing companies.

T4SM is Alliance Partner of National Instruments and the development team consists of Certified LabVIEW Architects (CLA) who have long experience in LV Real-Time Programming and LV-FPGA.

T4SM designs from scratch to high-quality solutions easily integrable with third-party products, which help customers to shorten time-to-market of their systems.

T4SM uses the AGILE methodology for the development of software projects and the co-design of applications with immediate benefits for customers, helping them to gain a competitive advantage over competitors.

For technical support and product information:

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Benefits and Results

All the pre-set objectives have been achieved, allowing C.T.B. to obtain significant benefits:

- **Time-saving:** the items to be produced by order initiated by the MES are sent directly to the specific machine involved.
- **Cost determination:** with all the automatically collected production data it is possible to have an accurate cost report.
- **Reduction of human errors:** data acquisition is automatic, reducing errors due to manual operations.
- **Traceability:** all the data of the production cycle are tracked and there is a production history committed per batch.
- **Company interconnection:** the requirement for company interconnection between machinery and management has been respected in order to have access to tax benefits.
- **Italian State Incentives of the Business Plan 4.0:** all the requirements by the legislature have been respected.

Client Comment

"T4SM was a great partner. We have professionally dealt with the completion of the Industry 4.0 procedure. Mr. Vivante and his staff have followed the relationships with our suppliers in an excellent way, allowing us to quickly reach the objectives set.

Definitely a valuable supplier-collaborator!"

Tonini Dr. Roberta
Administrator
C.T.B.