

FORTAPS · TARRAGONA, SPAIN

Fortaps runs eight lines. **Four M-Duino PLCs** feed MySQL and the ERP.

Fortaps makes about 30 million plastic parts a year. M-Duino PLCs from Industrial Shields read the machines on its production lines, start and stop them, and write the data to a MySQL database. The ERP reads it for stock and orders.

[Read the interactive success story online ›](#)

Inside the cabinet at Fortaps: four M-Duino PLCs, each labelled for two lines (1-2, 3-4, 5-6, 7-8), each with its Ethernet cable.

8

production lines in the cabinet photo, two per PLC

4

M-Duino PLCs on the production LAN

~30 M

plastic parts made at Fortaps every year

24 h

a day, for more than two years, without issue

THE CHALLENGE

See every line, from the machine to the ERP.

The Fortaps plant is designed to optimise the whole flow: receiving goods, production, stock holding and shipment. In many plants, the link between the machines and the ERP is a count made by hand. At Fortaps, the data follows one path: from the encoders and sensors on the machines to the MySQL table that the ERP reads.

01

Machine status

Is the machine running, stopped or waiting? Encoders and sensors on each machine already have the answer. The PLC reads them.

02

Real counts

Pieces per hour come from the line itself. Other equipment that reads the production status is connected too.

03

Stock and orders

Production data goes to MySQL. The ERP uses it to control stock and orders.



Tarragona summers, 24 hours a day

Fortaps makes plastic parts, so in summer its production lines work at very high temperatures. The M-Duino PLCs have run 24 hours a day for more than two years without issue.

HOW IT WORKS

Two loops: from the machine to the table, and from the table to the order.

Loop 1 · Machine to table

Each machine becomes a row of data

Encoders and sensors tell the PLC if a machine runs, and how fast. The PLC counts the pieces, works out pieces per hour and sends the result over Ethernet to MySQL. One PLC can watch more than one line. At Fortaps, each M-Duino is labelled for two lines.

- Inputs: encoders and sensors on each machine
- State per line: run, micro stop, stop (example states)
- Count and pieces per hour

Loop 2 · Table to order

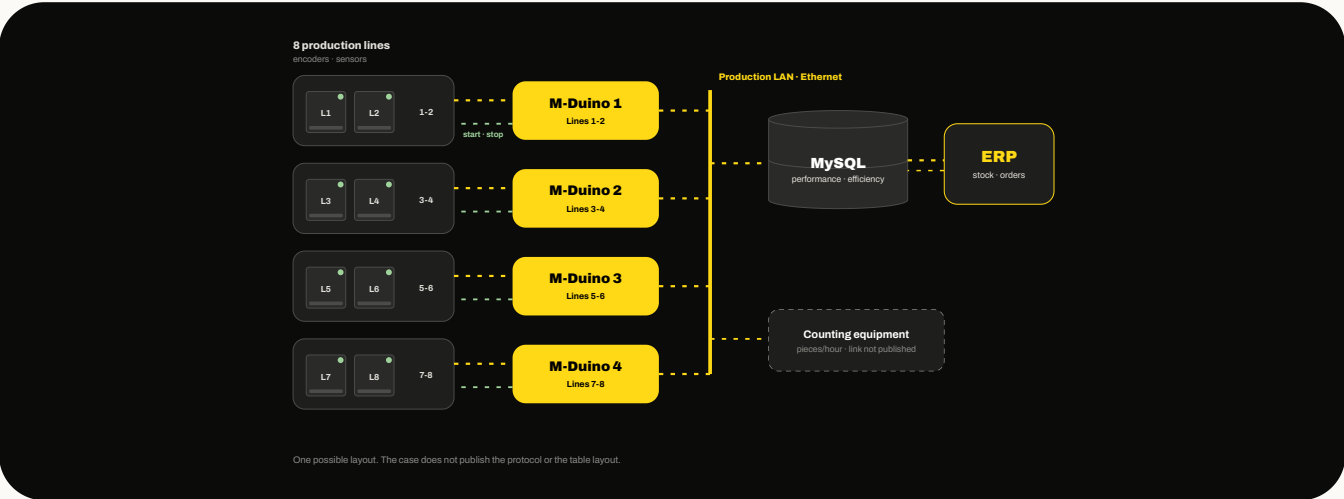
The ERP sees the lines. The lines follow the order.

MySQL keeps the history of every line, so you can check performance and efficiency. The ERP reads the same data for stock and orders. The PLC outputs close the loop: start and stop of machines and the production output, according to the user configuration. Here, an example rule stops a line when its order is complete.

- Availability per line from the MySQL history (example values)
- Stock and orders in the ERP
- Start and stop of machines from the PLC outputs

How do M-Duino PLCs send line data to MySQL and the ERP?

Each M-Duino reads the machines of two lines and controls their outputs. All of them are on the production LAN over Ethernet. Their data goes to MySQL, where it is analysed, and MySQL is connected to the ERP for stock and orders. The case does not publish the protocol or the table layout. The diagram shows one possible layout.



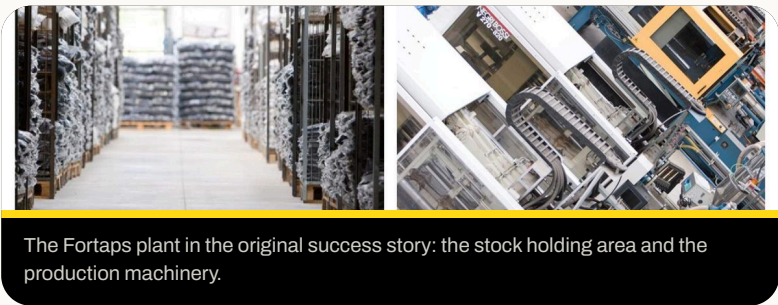
- Data over the production LAN (Ethernet)
- PLC outputs to the machines: start, stop, production output
- Example elements, not published by the case

Signals and data

Flow	Between	Type	Purpose
Machine status	Encoders and sensors → M-Duino	Inputs	Shows if each machine runs, and how fast
Production status	Counting equipment → M-Duino	Connection not published	Brings counts such as pieces per hour
Machine control	M-Duino → machines	Outputs	Start and stop of machines and production output, per user configuration
Production data	M-Duino → MySQL	Ethernet, production LAN	Stores the data to check performance and efficiency. Protocol not published
Stock and orders	MySQL ↔ ERP	Database link	The ERP controls stock and orders with the production data



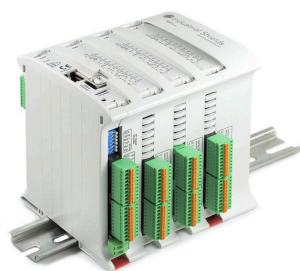
Plastic parts made by Fortaps. About 30 million units leave the plant every year.



The Fortaps plant in the original success story: the stock holding area and the production machinery.

HARDWARE USED

M-Duino PLCs with Ethernet, one for every two lines.



M-DUINO ETHERNET PLC ARDUINO 58

An Arduino Mega based PLC for DIN rail with 58 I/O, Ethernet, RS-485 and RS-232. It reads encoders and sensors, drives start and stop outputs and sends the data over the production LAN.

Inputs	36, of which 16 analog (0-10 V)
Outputs	22, of which 8 analog/PWM
Communications	Ethernet, RS-485, RS-232, TTL, I2C, SPI
Programming	Arduino IDE over USB or Ethernet
Inside	Arduino Mega 2560, RTC, microSD slot
Power and mounting	12 to 24 Vdc, DIN rail, IP20

The case does not publish the exact M-Duino model. The units in the photo are an earlier M-Duino generation. The image shows the M-DUINO ETHERNET PLC ARDUINO 58, a current M-Duino with Ethernet. Count the signals of your machines first, then choose the model of the family.

[See the M-Duino 58 >](#)

Fits the installation

The signal types of the M-Duino are configurable, so the PLC adapted easily to the existing installation and its data acquisition. The high performance of the controller was another key factor.

A program Fortaps can change

Fortaps programmed its application with the Arduino IDE, open source software. The plant upgrades it when its needs change.

Open source, end to end

Fortaps already used open source software in its manufacturing process. With open source hardware from Industrial Shields, its production lines follow the same approach, from the PLC to the database.

Source: the interview with Ramon Boncompte, Sales Director at Industrial Shields, in the original success story (2015).

SIMILAR PROJECT?

Tell us your lines and your machines. An engineer will answer.

Tell us how many lines and machines you have, which signals they give and where the data should go: MySQL, an ERP, an MES or a dashboard. We will tell you which controller fits and how to connect it.

READ IT ONLINE

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