



29 April 2020

WEBINAR

#LAUMASKNOWHOW



PLC, FIELDBUS AND INDUSTRIAL ETHERNET



LAUMAS[®]
Innovation in Weighing

Introduction: what is a Fieldbus?

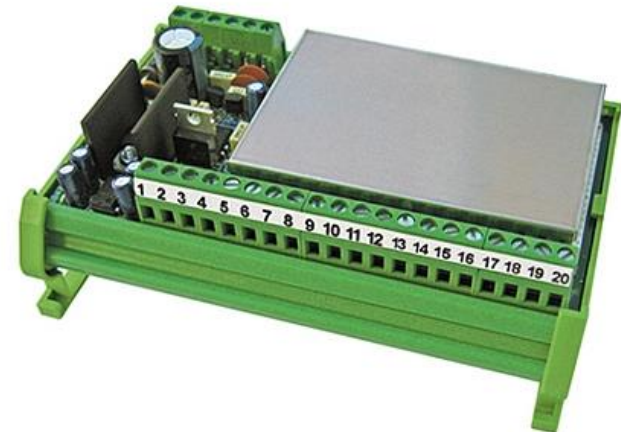
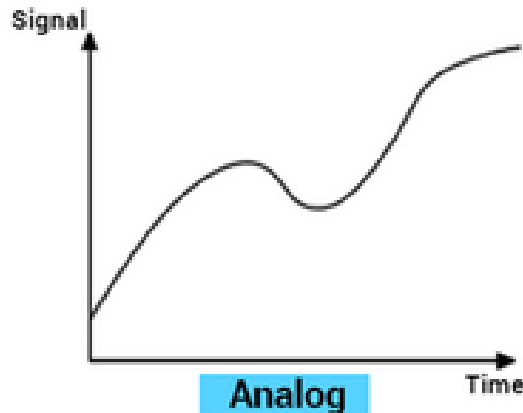
Fieldbus is the name of a family of industrial computer network protocols used for real-time distributed control.

A complex automated industrial system usually needs a distributed control system, an organized hierarchy of controller systems, to function. In this hierarchy, there is usually an HMI (Human Machine Interface) at the top, where an operator can monitor or operate the system. This is typically linked to a middle layer of PLC (programmable logic controllers) via a non-time-critical communications system. At the bottom of the control chain is the fieldbus that links the PLCs to the components that actually do the work.



Fieldbus: the past

In the **past** the main part of the connections between load cells and PLC were made via **analog signal**, amplifying the mV/V signal coming from a load cell to 0-10V or 4-20mA



Fieldbus: nowadays

All the biggest and most popular **PLC producers** developed their own **fieldbus communication protocols**.

Because of this, plant manufacturers and automation companies are «chained» to the PLC producer given that every component installed in the plant has to «speak» the same language as the PLC.

At the same time, if a complex automated industrial system is composed by hundreds of parts all «speaking» the same language, it will make things a lot easier both for the programmer and its whole management.

Fieldbus: LAUMAS solutions

Many PLC manufacturers produce specific weighing modules, compatible with their own PLCs, to handle the signal coming from the load cells.

LAUMAS, as specialist in process weighing, developed a wide range of **weighing electronics** compatible with all the fieldbuses, in order to be as versatile as possible and to offer to its customers the possibility to install LAUMAS products regardless of the PLC or fieldbus to be used.



Fieldbus: LAUMAS solutions

Our range of **weighing electronics** with integrated fieldbus is suitable for any installation method:

- Din rail
- Front panel
- Integrated with the load cell
- Hazardous area
- Wall mounting
- Column
- Desk



Fieldbus: solutions

Fieldbuses managed by LAUMAS:

PROFINET/IO



EtherNet/IP



EtherCAT



Ethernet/TCP/IP



Modbus/RTU



POWERLINK



SERCOS-III



PROFIBUS/DP



DeviceNet



Modbus/TCP/IP



Wi-Fi



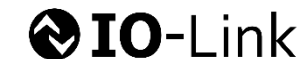
CANopen



CC-Link



IO-Link



Fieldbus & Industrial Ethernet

Fieldbuses can be divided in 2 main families:

Fieldbus:

the connection is usually done via wire to a connector or directly to the terminal board.

CANopen, PROFIBUS/DP, DeviceNet, CC-Link, Modbus/RTU, IO-Link are all fieldbuses.

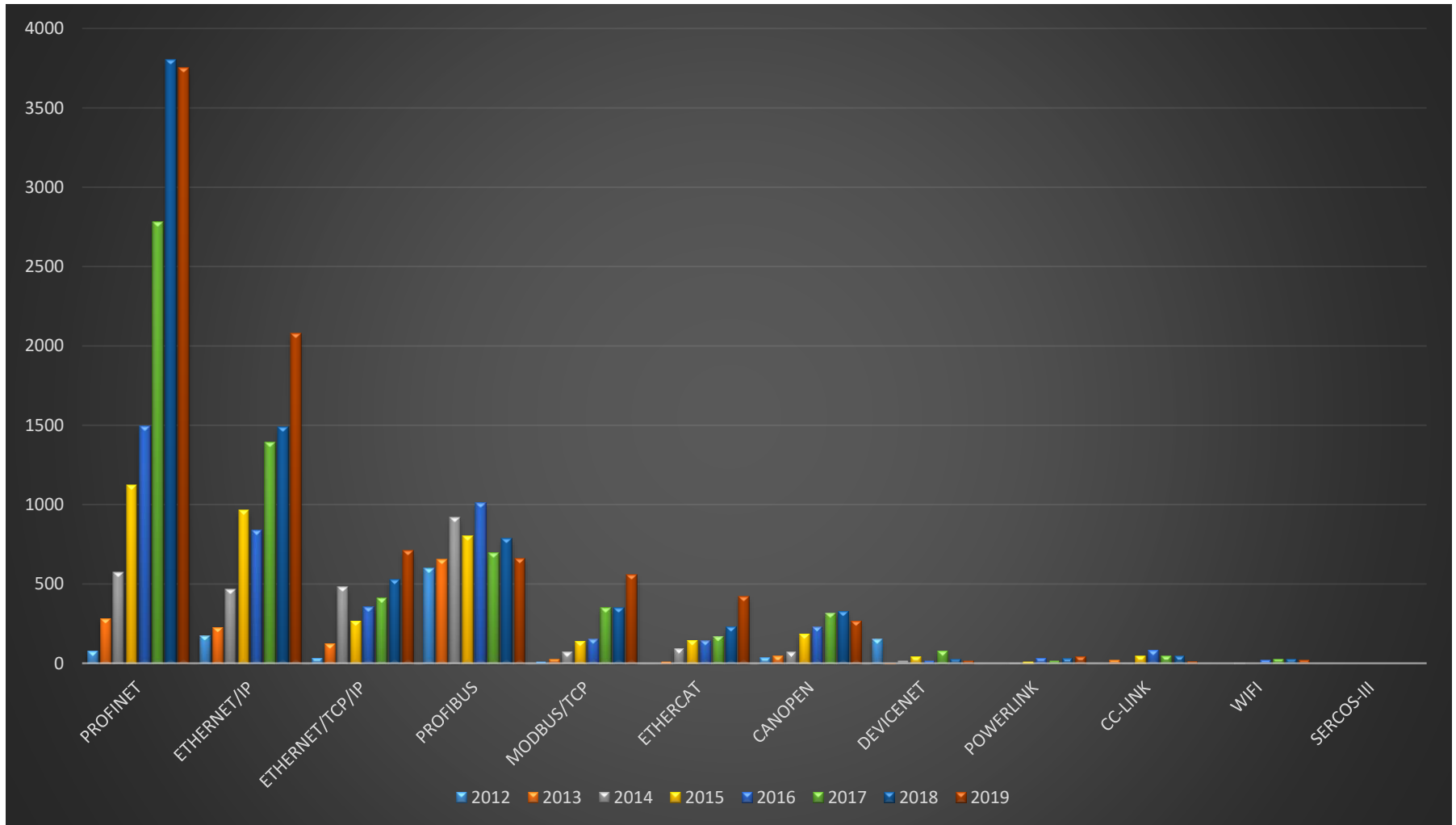
Industrial Ethernet:

the connection is done using a coaxial cable and RJ45 connectors.

PROFINET/IO, EtherNet/IP, Ethernet/TCP/IP, Modbus/TCP, EtherCAT, POWERLINK, SERCOS-III are all Industrial Ethernet.

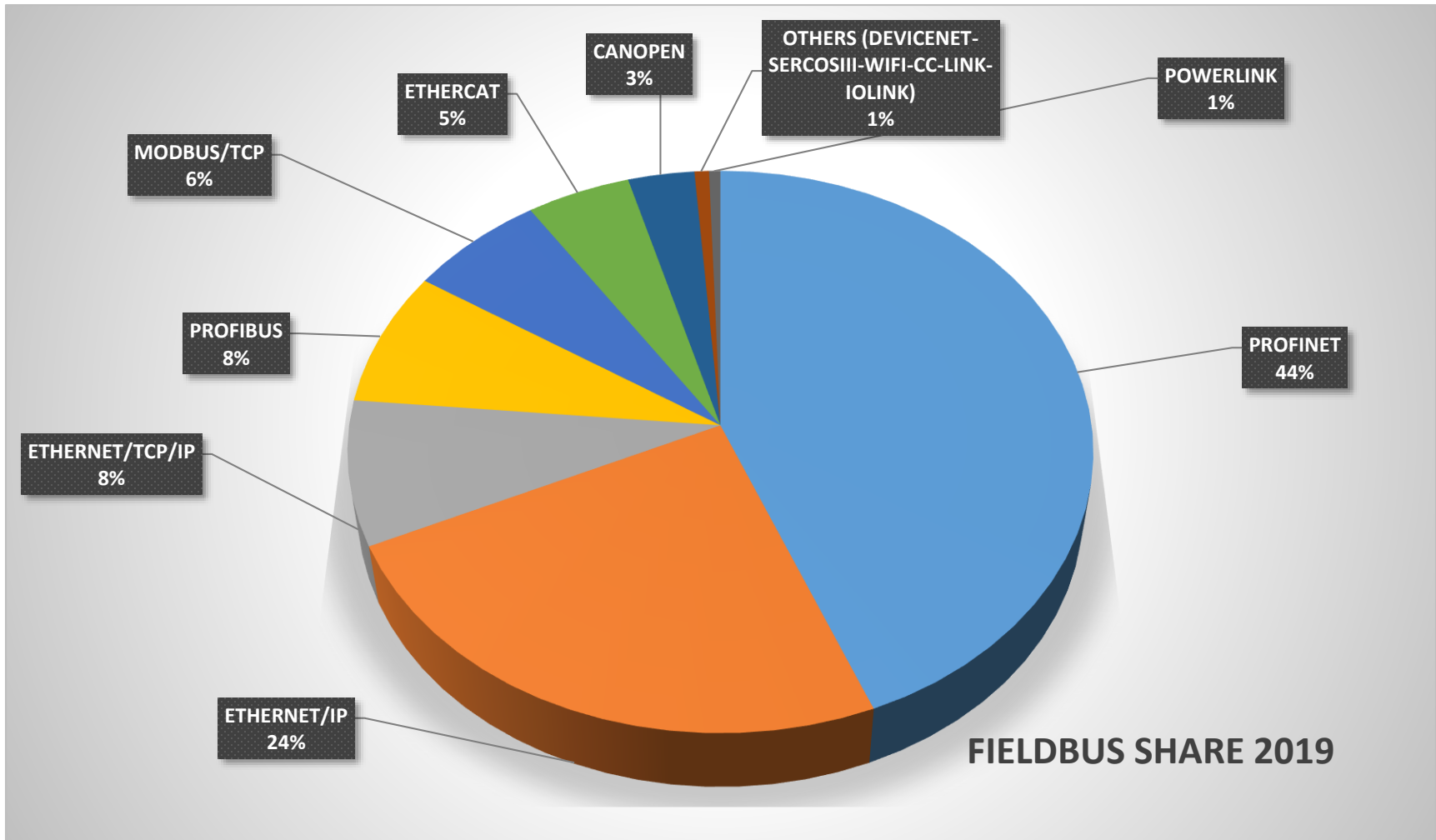


Fieldbus: LAUMAS trend 2012-2019

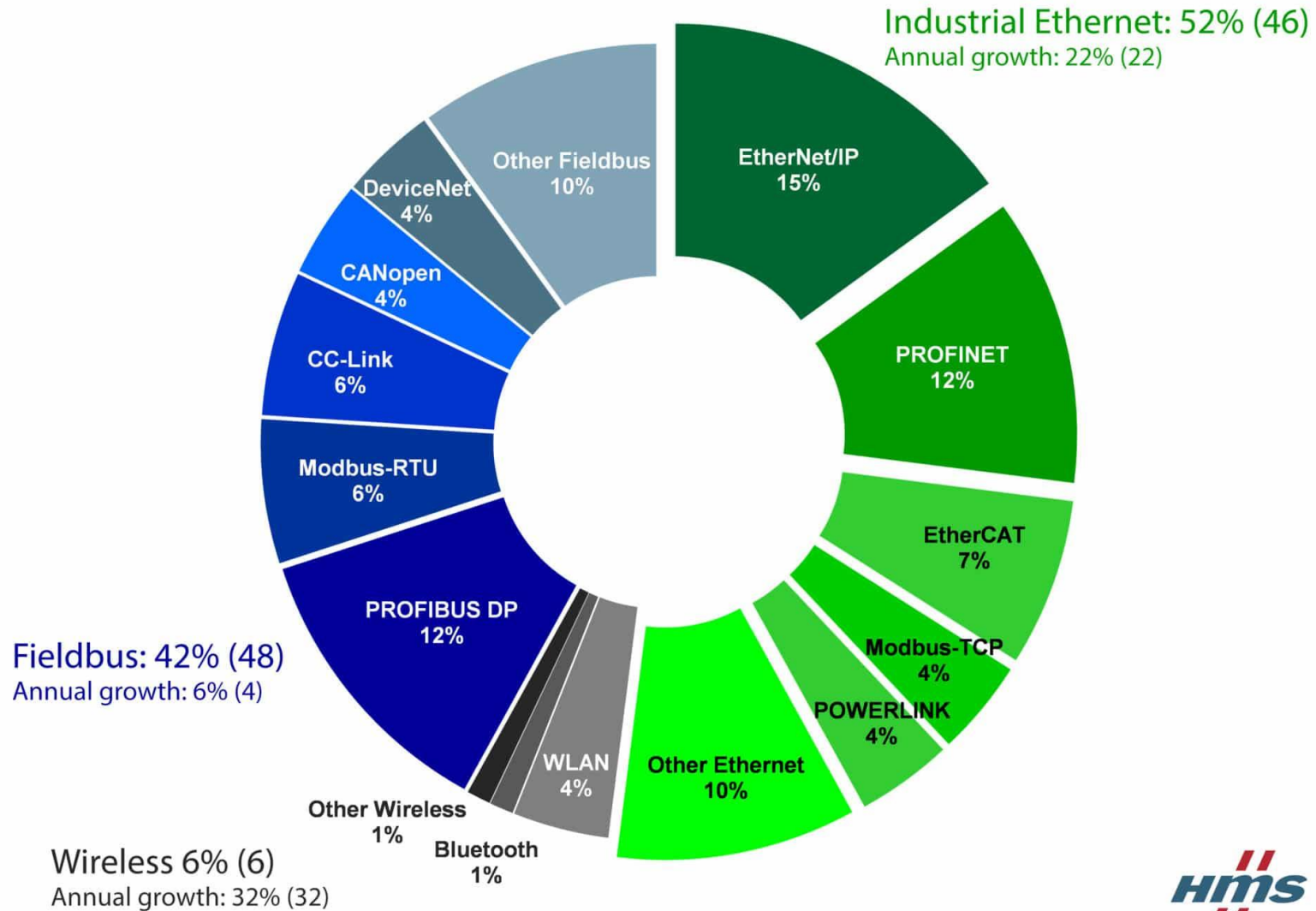


Serial ports RS485-RS232 with Modbus/RTU protocol are excluded from data

Fieldbus 2019: LAUMAS share in %



HMS 2019



PLC: brands and Fieldbus

Fieldbuses developed/associated to PLC manufacturers:

Siemens (DE) = PROFINET/IO & PROFIBUS/DP

Allen Bradley (US) = EtherNet/IP & DeviceNet

Omron (JP) = EtherCAT & EtherNet/IP

Schneider (FR) = Modbus/TCP/IP – EtherNet/IP – CANopen

B&R (AT) = POWERLINK

Beckhoff (DE) = EtherCAT

Mitsubishi (JP) = CC-Link

Bosch Rexroth (DE) = SERCOS-III

PLC: brands and Fieldbus

European leader:

- Siemens with Profinet/IO

North & South American leader:

- Allen Bradley with Ethernet/IP

Other leaders worldwide:

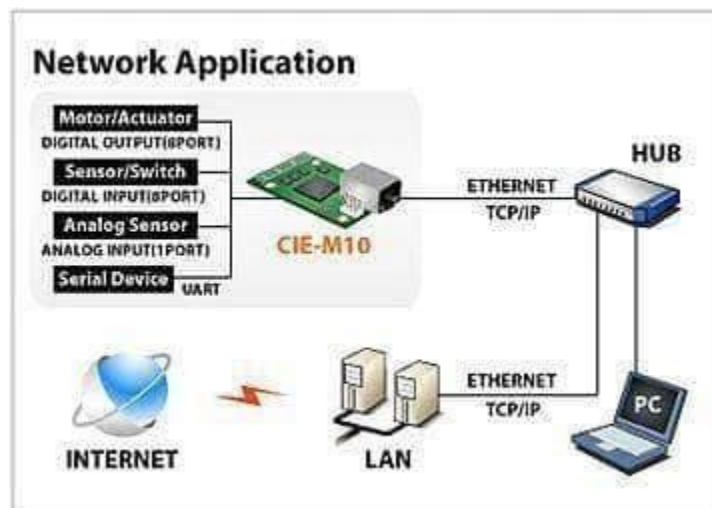
- Omron with EtherCat and EtherNet/IP
- Schneider Electric with Modbus/TCP and CANopen
- Mitsubishi with CC-Link

PC: Ethernet/TCP/IP

Connection to PC: Protocol Ethernet/TCP/IP

This kind of protocol is not associated to any PLC manufacturer.

It is mainly used to interface a device with a company network or a PC software.



PLC: fieldbus & configuration files

Every device and every fieldbus has its own **configuration file**.

The configuration files, always included with our electronics, must be uploaded onto the **PLC** and are necessary to allow the **PLC** to recognize and manage the devices within the communication network present in the automation system.

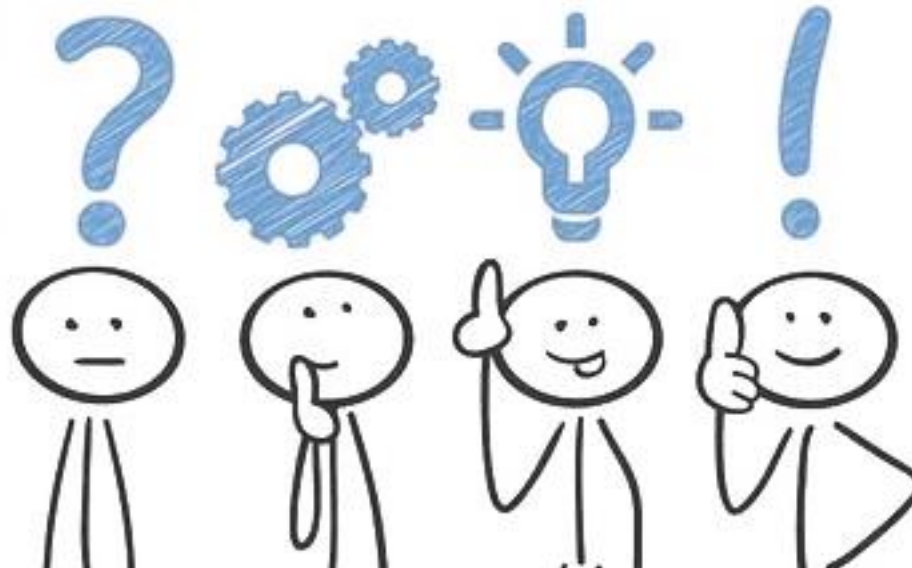
Configuration file names:

PROFINET/IO	→	GSDML
PROFIBUS/DP	→	GSD
EtherNet/IP	→	EDS
DeviceNet	→	EDS
EtherCAT	→	ESI
CANopen	→	EDS
POWERLINK	→	XDD
CC-Link	→	CSP
SERCOS-III	→	SDDML

PLC: how to select the right Fieldbus?

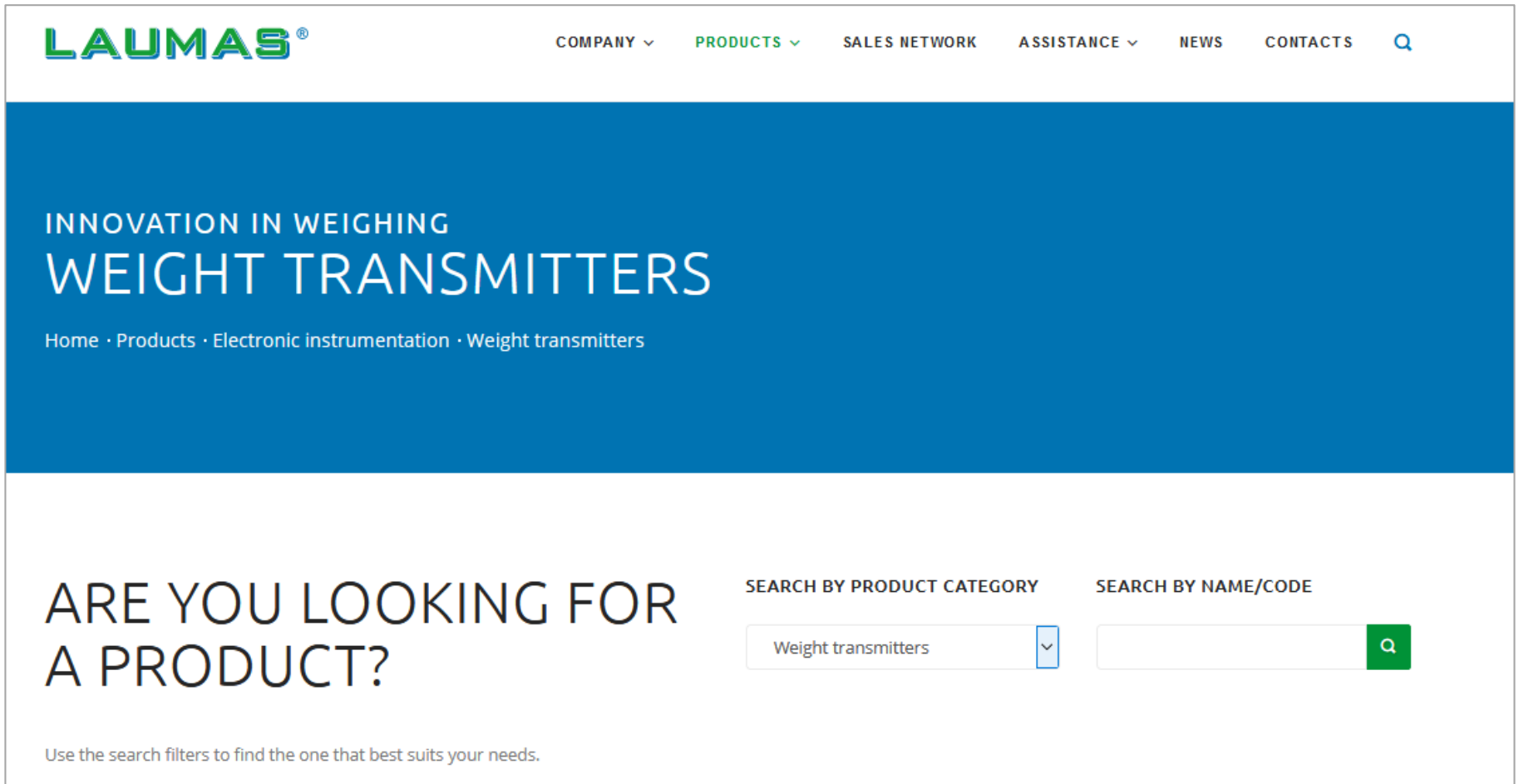
Questions for the customer:

- Which kind of PLC do you need to connect to?
- Who is the producer?
- Which kind of input ports are available as standard on the PLC?



Fieldbus: how to use filters on web site

www.laumas.com



The screenshot shows the LAUMAS website interface. At the top left is the LAUMAS logo with the tagline "Innovation in Weighing". To the right is a navigation menu with links for COMPANY, PRODUCTS, SALES NETWORK, ASSISTANCE, NEWS, and CONTACTS, along with a search icon. Below the navigation is a large blue banner with the text "INNOVATION IN WEIGHING" and "WEIGHT TRANSMITTERS" in large white letters. Underneath the banner is a breadcrumb trail: "Home · Products · Electronic Instrumentation · Weight transmitters". The main content area features a large heading "ARE YOU LOOKING FOR A PRODUCT?" followed by two search filters: "SEARCH BY PRODUCT CATEGORY" with a dropdown menu showing "Weight transmitters", and "SEARCH BY NAME/CODE" with an empty search box and a green search button.

LAUMAS[®] COMPANY ▾ PRODUCTS ▾ SALES NETWORK ASSISTANCE ▾ NEWS CONTACTS 🔍

INNOVATION IN WEIGHING
WEIGHT TRANSMITTERS

Home · Products · Electronic Instrumentation · Weight transmitters

ARE YOU LOOKING FOR A PRODUCT?

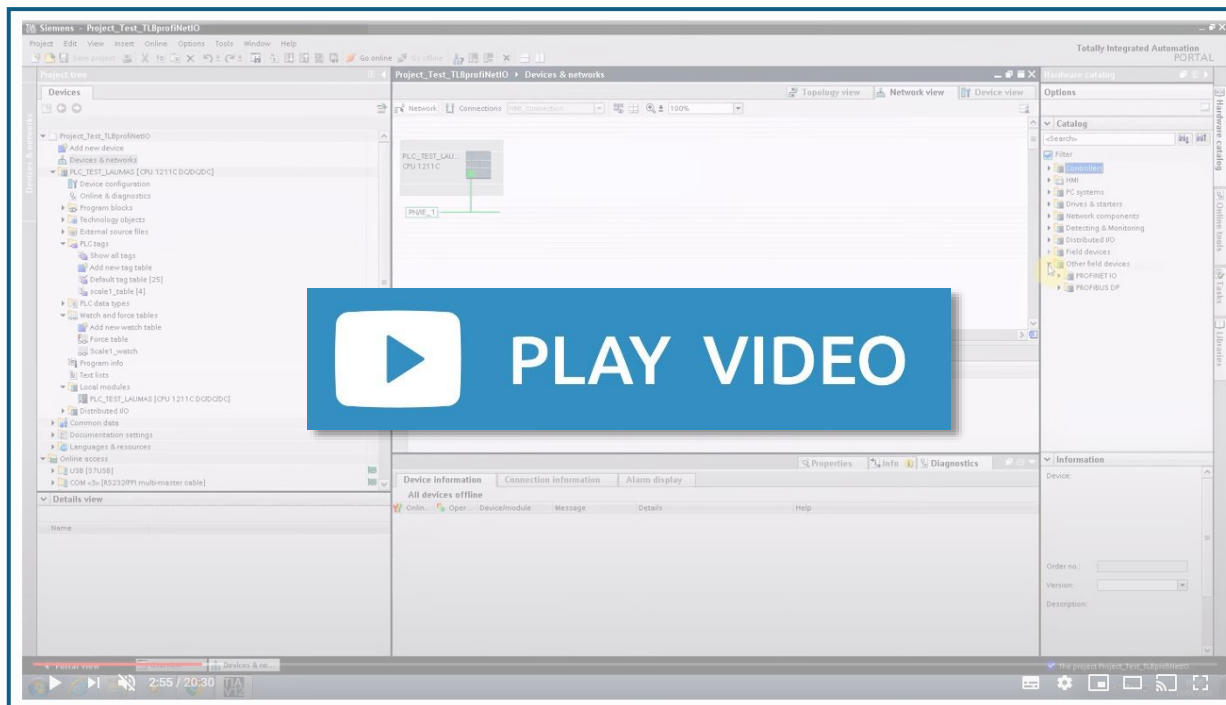
SEARCH BY PRODUCT CATEGORY SEARCH BY NAME/CODE

Weight transmitters ▾ 🔍

Use the search filters to find the one that best suits your needs.

Integration of a PROFINET Weight Transmitter in the TiA Portal

How to integrate a LAUMAS PROFINET IO Weight Transmitter in an automation system based on SIEMENS PLC.





sales@laumas.it

Send us an e-mail to request the **participation certificate** or further information



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Thanks for your attention!