



# CASE STUDY

INDUSTRIAL SHIELDS



## CONTROL A CONVEYOR BELT USING AN INVERTER

In this project we describe a model to control an asynchronous motor using a frequency inverter in one of our PLCs based on Arduino.

It has been used an MDuino 42 I / Os PLUS and a frequency inverter.

An Industrial Shields Panel PC has also been used to manually monitor and control the speed of the conveyor belt and make it more intuitive.

## SUMMARY

We use the frequency inverter to completely control the induction electric motors by means of the control of the supplied power frequency.

It focuses on the control of engine speed by varying the frequency of the supply voltage.

The PLC contains a program made with Arduino IDE with the functions that will control, on one hand, the parameters of the frequency inverter, and on the other hand, the reading of the current that reaches the motor.

The frequency inverter controls the induction motor according to the commands it receives from the Arduino based PLC.

The Panel PC will have the main function of showing on screen the values in real time and the possibility of modifying them at any time, as well as, additional functions that are exposed below.



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## FINAL SOLUTION (HARDWARE)

The current sensor installed between the frequency inverter and the inductive AC motor allows the PLC to make decisions based on the current read and can indicate the desired values to the frequency inverter. In this way we have an autonomous system that regulates the speed depending on the desired parameters.

If a manual modification of the speed of the conveyor is required, the Panel PC connected to the Arduino-based PLC is used through the Ethernet port.

The Panel PC also fulfills other specific functions such as:

- Alarm if the limit speed is exceeded
- Real-time sampling of the AC motor speed.
- Emergency stop function
- Start function

