



CASE STUDY

INDUSTRIAL SHIELDS

ANIMAL FEEDING



This project is designed to make an animal feeding system for all kinds of use; cattle raising, farms, horse stables and many more. The feeding process will be automatized using a PLC which controls the feeders and would have a track of the food to settle up the periods, quantities and food kinds.

This application could be applied remotely using an Ethernet PLC if it is necessary and the information can be accessed wherever you want, through a VPN connected to our MQTT server. This database could be shown on a Panel PC based on Raspberry Pi3 that will monitor all the information.

SUMMARY

There will be some load cells sensors in the feeders. and they might send the food weight data to the Arduino based PLC, where the data will be processed and, considering this and the specific orders established by the animal carers (kind of food, temperature, etc.), the PLC may send the order to the feeding system which will dispense the correct amount of food. All this information can be monitorized through the panel, where you can control and configure all the system parameters.

In the Panel PC there will be also a broker server (MQTT) that is responsible for receiving and sending data between the PLC and the Panel PC.

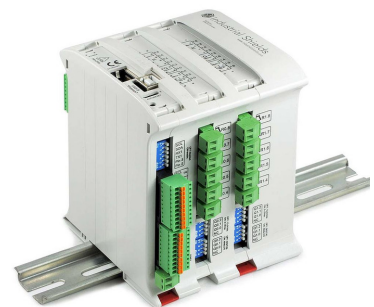
To monitor the data, Node-Red will be used.



OBJECTIVE

The main points to achieve are the following:

- Animal feeding.
- The food amounts monitorized 24/7.
- Measurement and control of food parameters easily managed through the panel.
- The distribution system will provide the right amount of food, even medicines if they are necessary.
- There will be an evacuation system to throw off the remaining food and a cleaning one to take care of the system.
- All the food, medicines and cleaning liquids may be stored in tanks and distributed through a gravity pipe system or a piston one.



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FINAL SOLUTION (HARDWARE)

Each feeder will have a load cell sensor which collects data and might send it to the PLC to control the food and state levels. Programming the PLC or directly managing it through the panel you could establish all the food parameters, as well as the water, medicines, cleaning liquids or whatever you want to distribute through the system.

When the parameters will be set, the distribution system will start; the tanks will provide the exact food amount through an automatized gate and it will be given to the animals through a pipe or piston system, depending on which will be the best option for the chosen kind of food (the fodder is easier to move with the pipe gravity system and the strow with the piston one).

The mechanism could be cleaned easily because it will include an evacuation section to throw off all the remaining food (using pipes or pistons too) and you can select the right cleaning products to be distributed for all over the place and evacuated through a drain.

All this options said in this post and many as you can think will be controlled and monitorized through the panel that could be fixed or remotely controlled using the Ethernet adaptation previously said (using a Mduino and a proper server). Remember that this is a case study and you can use it and change it as your thoughts.

