

# Moisture scanning system for trucks - for Tozzi Green S.p.A.

## Background

Tozzi Green S.p.A. is operating a 20 MW straw driven power plant in the south of Italy. In connection with enlargement of the bale storage area, 2 additional straw reception points were to be constructed in 2017. For control of incoming straw bales, the reception points were to be equipped with a truck scale and a moisture measuring system that would allow measurements of bales directly on the trucks.

The vision of the plant was to automatize the straw reception process including moisture measurements.

## Case description

Tozzi Green S.p.A. contacted DSE with a request for a moisture measuring system that would enable measurements on truck loads with straw bales prior to unloading the bales.

The goals of implementing such a system were:

- Efficient quality control of incoming straw by means of automated and documentable moisture measurements.
- Calculation of payment for straw suppliers.
- Reduction of wet bales in stock and risk of self combustion.

After a close dialogue and clarification of Tozzi's requirements DSE was chosen as supplier of moisture sensors for 2 bridge systems for truck scanning. The scope of delivery included 24 sets of sensors for the 2 bridge systems, design of control software and Graphical user interface for the moisture measuring system. The mechanical setup and installation were supplied by a 3rd party supplier, organised by Tozzi.

## System description

The system is designed as a movable measuring bridge for scanning the incoming trucks while being on the truck scale. In total, 12 sets of sensors (each set containing a sender and a receiver) are mounted vertically on each bridge in order to ensure a good coverage of each pair of bales, measuring from one side to another.



Picture from the plant in Italy.

The system software is designed to handle several types of truck loads and bale sizes. A start/stop signal for measurement activation is coming from the bridge control system supplied by a 3rd party. Once activated, the bridge is moving along the truck, while making continuous moisture measurements 3 times/second—with the DSE sensors.

In order to filter out invalid measurements, bale separation is applied in-between the bales. All the measuring data is processed and displayed in a graphical layout, showing the average and the maximum moisture content in each pair of bales.



The bales exceeding the customer defined rejection limit are clearly displayed for easy overview. A measuring data report is generated and sent to Tozzi's administration system for payment calculation of straw suppliers.