Molasses Storage Tank - Temperature monitoring

Industry: **Sugar**
Products: **YTA510 (Temperature Transmitter)**
YFGW710 (Field Wireless Integrated Gateway)

ISA100 WIRELESS

Introduction

Temperature plays a key role in storage of Molasses to maintain the chemical properties of molasses. When temperature rises over 40.5 degree C, destruction of structure in sugar occurs, which results in losing the feeding property of molasses. There is also a safety concern that a rise in temperature can lead to a rise in storage tank pressure leading to an explosion of the tank.

The Boston molasses disaster (The Great Molasses Flood) which occurred on 15th Jan 1919 was due to increase in the storage tank temperature above 40 degree C which led to explosion of the tank.

Benefits

- Improved operation efficiency and plant safety, wireless measurement is easy to achieve continuous monitoring of storage temperature
- Minimized plant startup time and downtime (NO wires, NO routing problems, NO maintenance issue)
- Reduced maintenance effort, low power consumption devices with proven battery life of 10 years with 30sec updates and non-proprietary battery cells
- Enabled easy integration with existing host system, industry proven Modbus platform enables easy and seamless integration with a wide range of host systems available in the industry

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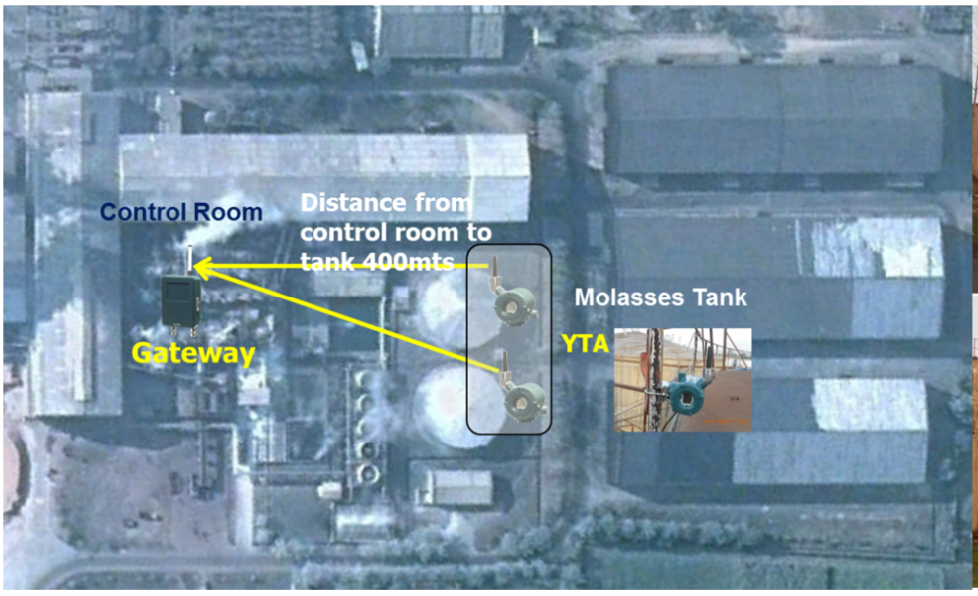
Requirements

- Offline measurement shall not provide continuous measurement which leads to unnoticed variation in temperature effect on molasses property.
- Minimize cables installation and maintenance.
- Improve measurement accuracy.
- Avoid human error which leads to loss of chemical property of Molasses.

Solution

Molasses tanks are located approximately 400m away from the control room. Two YTA510 wireless temperature transmitters with standard antennas (driving capability is 600m) were installed without repeater. Robust and reliable direct communications were established from the gateway.



Modbus to Ethernet IP protocol converter was installed to establish the connection between the gateway and a host system, Allen Bradley PLC. These were located in the control room and antenna for the gateway was mounted outside using remote antenna cable to improve wireless quality.

Conclusion

- ISA100 wireless solution enabled continuous monitoring of molasses temperature and increased plant and personnel safety.
- Low power consumption devices enabled savings in OPEX with reduced battery consumption with a proven battery life of 3.6 years with every second update of PV. As additional feature ISA100 devices supports configuration of device roles as per the application requirement.
- Wider coverage driving capability reduced installation time and expenses involved, reflecting as direct savings to project expenses.

Yokogawa has a proven track record of delivering reliable, scalable and open technologies for a century. ISA100 wireless solutions address the specific challenges of the industrial automation industry while lowering cost of ownership for our end users and maximizing their return on investment.

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