Application Notes

Subject: Bioethanol process from Pannonia Ethanol in Hungary monitored by MaxiMet

Reference AN0041

Introduction

Pannonia Ethanol, Hungary

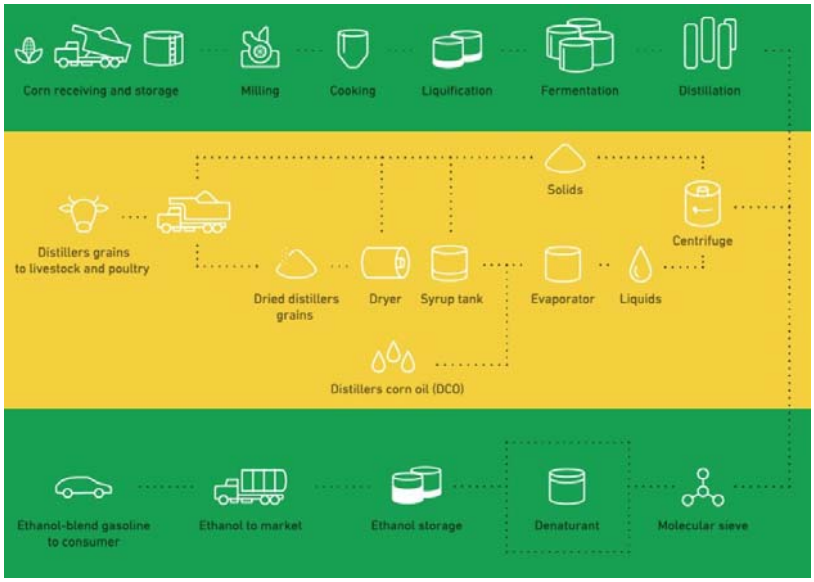
(http://www.pannoniaethanol.com/en/)



Pannonia Ethanol produces fuel ethanol and animal feed. The company is part of Ethanol Europe Renewables Limited and is located in Dunaföldvár, Tolna County, Hungary.
The facility currently utilizes more than 1,000,000 tons of corn annually to produce 450 million litres of renewable ethanol 325,000 tons of Dried Distillers Grains with Solubles (DDGS), a high protein animal feed, and 10,000 tons of corn oil, a great animal feed ingredient. Pannonia Ethanol produces as much animal feed as renewable ethanol.

What is Bioethanol?

Bioethanol or ethanol (EtOH) is a renewable fuel produced from sustainably grown feedstock. It is a volatile, flammable, colourless liquid. The starch content of feed corn is converted to sugars. These in turn are fermented and, through distillation, ethanol is produced. Pannonia Ethanol's technology is one the most efficient processes in converting sustainable biomass into fuel, animal feed and other products.



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Pannonia Ethanol produces some of the most environmentally friendly ethanol in Europe. The pathway Pannonia Ethanol use achieves 65% reduction in greenhouse gas reductions compared to fossil fuels, well beyond the minimum GHG reduction threshold applicable for biofuels set out in the Renewable Energy Directive of the EU. Currently, bioethanol is the only economic alternative to petrol.

Expansion of the Facility 2015/16

Expansion of the facility by Ouncel Ltd (Republic of Ireland - http://www.ouncel.com/) has brought about the requirement to use weather data (temperature, humidity, dew point, wind speed and direction) measured directly on site for advanced control on some key process / utility equipment.

This includes:

- Cooling Towers.
- Dried Distillers Grain Coolers (air cooled).
- Site wide heat tracing systems.

Gill MaxiMet was installed approximately 20m above the ground on the steel structure of the plant to provide the weather data:



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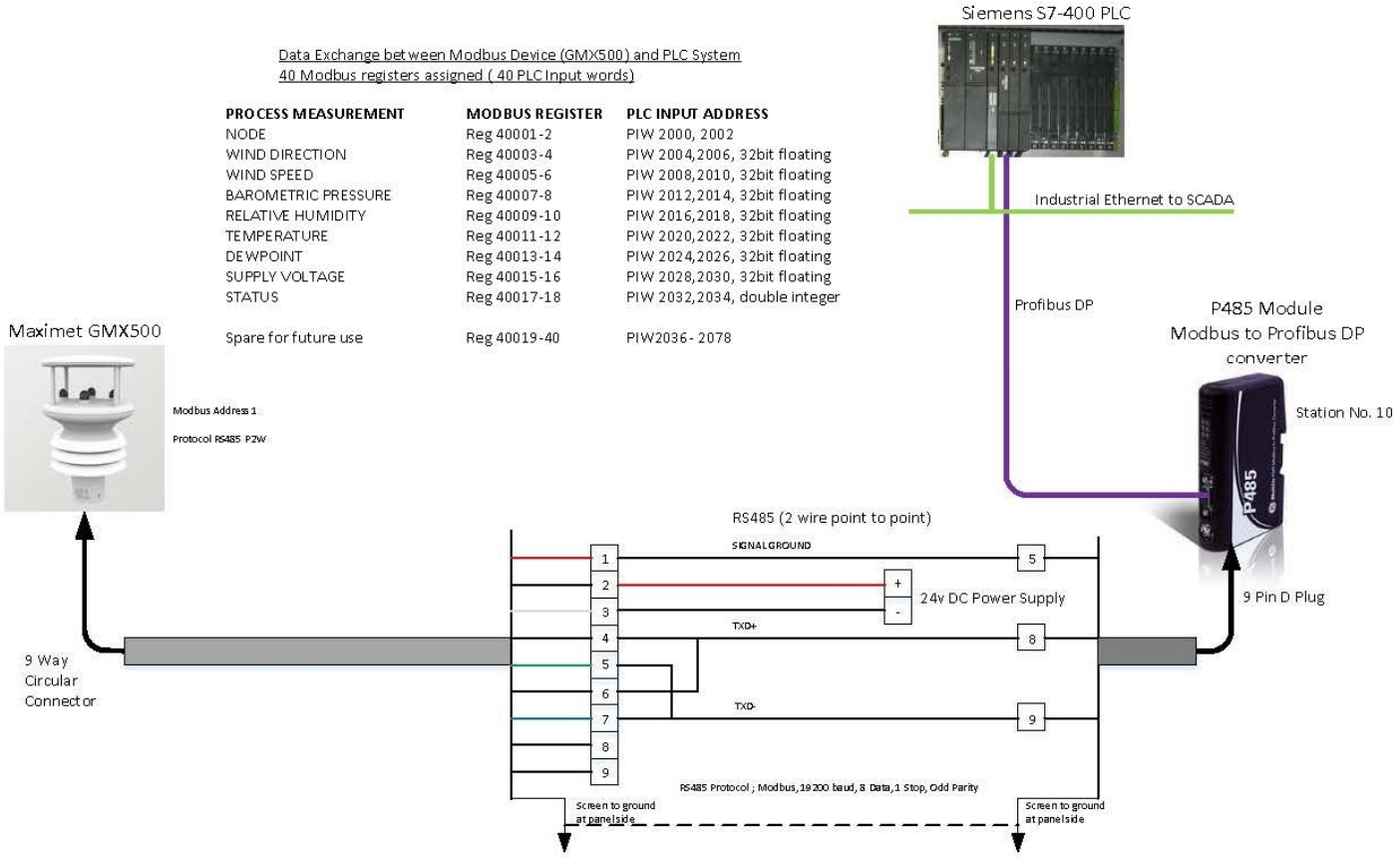
Below you will see the system set-up to the Siemens PLC S7 using MODBUS via Profibus converter:

GMX500 Weather Station for interface with Siemens PLC S7

Profibus DP to Modbus Interface

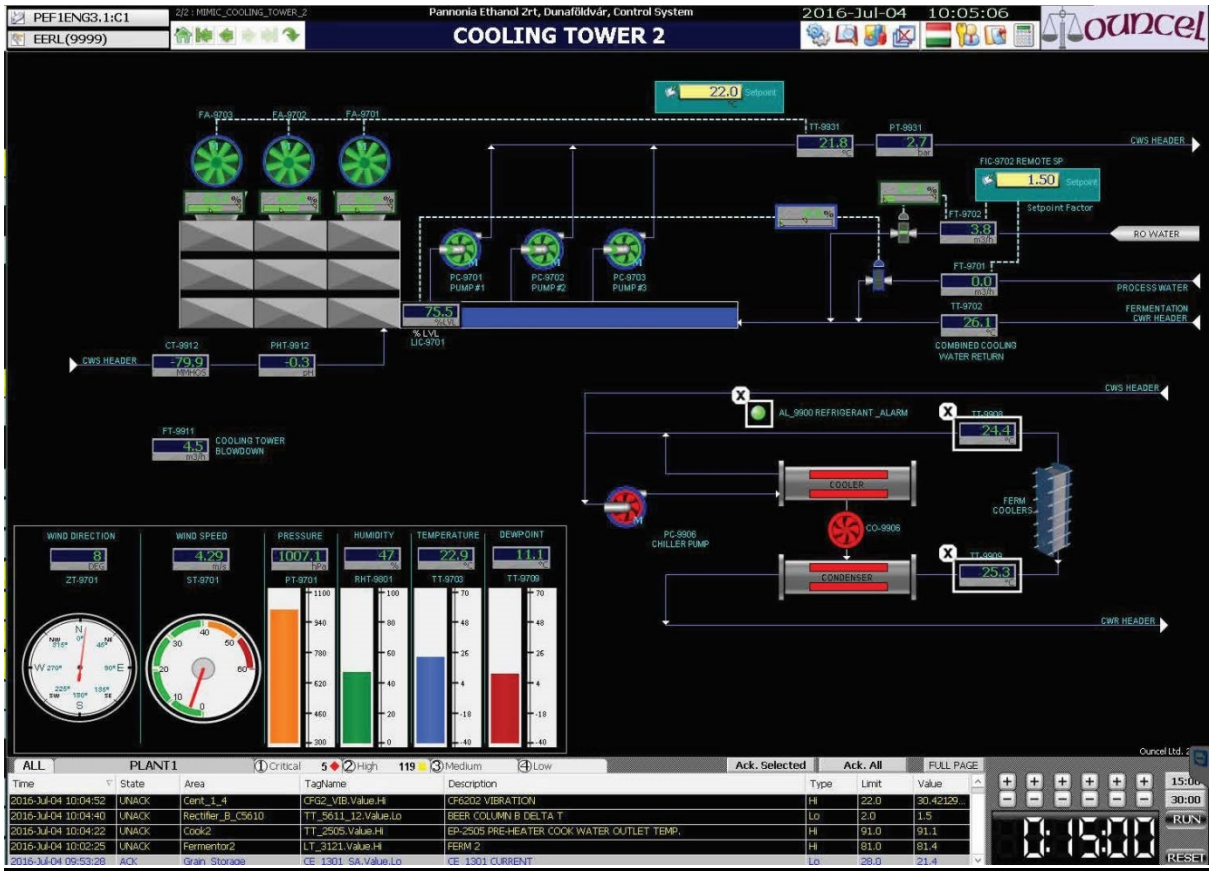
Data Exchange between Modbus Device (GMX500) and PLC System
40 Modbus registers assigned (40 PLC Input words)

PROCESS MEASUREMENT	MODBUS REGISTER	PLC INPUT ADDRESS
NODE	Reg 40001-2	PIW 2000, 2002
WIND DIRECTION	Reg 40003-4	PIW 2004,2006, 32bit floating
WIND SPEED	Reg 40005-6	PIW 2008,2010, 32bit floating
BAROMETRIC PRESSURE	Reg 40007-8	PIW 2012,2014, 32bit floating
RELATIVE HUMIDITY	Reg 40009-10	PIW 2016,2018, 32bit floating
TEMPERATURE	Reg 40011-12	PIW 2020,2022, 32bit floating
DEWPOINT	Reg 40013-14	PIW 2024,2026, 32bit floating
SUPPLY VOLTAGE	Reg 40015-16	PIW 2028,2030, 32bit floating
STATUS	Reg 40017-18	PIW 2032,2034, double integer
Spare for future use	Reg 40019-40	PIW2036 - 2078



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The weather data from the MaxiMet is fed into the control system for the plant and displayed on the Cooling Tower #2 process screen:



Why MaxiMet?

MaxiMet provides the ability to measure multiple parameters in a compact, single mounted unit (temperature, humidity, dew point, wind speed and wind direction), all combined into a single output string that can be communicated into control systems by using industry standard interfaces including MODBUS.