

INDUSTRIAL OUTFLOW MONITORING



APPLICATION BACKGROUND

Manufacturing plants, public utilities, power stations, oil & gas processing facilities and sewerage plants all have some form of industrial outflow which needs to be monitored and reported on.

Hydro Power companies need to measure the volume, temperature and quality of water passed back into the river after it has passed through the turbines.

Traditional coal or gas power stations have cooling water discharges which need to be monitored, to ensure the temperature being returned to a lake or reservoir is not above acceptable limits.

Sewerage plants must measure and record any effluent from sewer treatment plants which is being discharged back into the environment.

APPLICATION DETAIL

Typically measured parameters for industrial outflow are water temperature, flow, depth, acidity, alkalinity and salinity.

Monitoring instruments are generally deployed in outflow pipes or channels.

There are various methods to measure flow and depth. For example, water flow can be determined using mechanical flow measurement devices like piston flow meters, turbine flow meters, single or multiple jet flow meters. For measuring depth, hydrostatic depth probe or simple float and pulley system will give stable and accurate readings.

For this application Unidata offers all-in-one instrument Starflow 6526. Water velocity is measured by the ultrasonic Doppler principle which relies on suspended particles or small air bubbles in the water to reflect the ultrasonic detector signal. Water depth is gauged by a hydrostatic pressure sensor, referenced to atmospheric pressure through the vented power and signal cable. Starflow determines the actual flow mathematically based on the entered channel/pipe geometry and dimensions.



Starflow can be deployed in rivers and streams, open drainage channels and large pipes.

For measurement of other parameters, water temperature, water quality for example electro conductivity (EC), pH (PH), dissolved oxygen (DO) can be measured with separate instruments.

In some instances turbidity of the water / outflow may also be measured.

The 6526 Starflow instrument would typically be installed at the base of the outflow channel using a provided mounting bracket, the instrument cable would connect to a power source housed inside a small enclosure usually located at the side of the channel.

It is important to consider power requirements of the site. If primary power is available, only a small battery would be added to the system to act as a backup, in case primary power is disrupted. If primary power is not easily accessible, the system can be powered by a lithium battery pack or rechargeable solar power system.





Depending on the instruments chosen, a lithium battery pack (non-rechargeable) can provide independent power source for up to 2 years.

A solar power system consists of a rechargeable lead acid sealed battery, a solar panel and solar controller. The solar power system should be properly rated for the instruments used and as such will provide a long-term power solution.

Starflow and other instruments can be connected to a Neon Remote Logger via SDI 12, analog or digital inputs. Logger will scan / collect

readings from the sensors on regular, custom specified, intervals. It will check for any unusual out of limits readings and send data to a central Neon Server or an email or sms message to the appropriate people to take action following an out of limit condition.

Logged data or alarms are sent using a cell phone modem or satellite modem depending on network availability. Data is then displayed on a web browser to be viewed or could also be sent, perhaps once per minute, via web services or FTP to other processing systems.



TYPICAL CONFIGURATION

APPLICATION SPECIFIC INSTRUMENTS/INPUTS

Options	Unidata Part Number	Description
Ultrasonic Doppler Instrument - velocity, depth & flow	6526J-21	Starflow Ultrasonic Doppler Instrument 0-2m
Ultrasonic Doppler Instrument - velocity, depth & flow	6526J-51	Starflow Ultrasonic Doppler Instrument 0-5m
Ultrasonic Doppler SDI-12 Instrument - velocity & depth	6527A	Starflow QSD Ultrasonic Doppler SDI-12 Instrument

NEON TELEMETRY - NRL / RTU / FIELD UNITS

Options	Unidata Part Number	Description
Ethernet	3016A-000 / 3008A-000	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G	3016A-C00 / 3008A-C00	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G and LoRa	3016A-CL0 / 3008A-CL0	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat	3016A-00I / 3008A-00I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat & 3G/4G	3016A-C0I / 3008A-C0I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Low Earth Orbit Satellite - Globalstar	3016A-00G / 3008A-00G	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Satellite - Iridium Short Burst Data	3016A-00R / 3008A-00R	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Standalone RTU/NRL - Industrial	3004A-00 / 3004A-0L	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
Cellular RTU/NRL 3G/4G - Industrial	3004AC0 / 3004A-CL	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
M – Series Standalone RTU/NRL	3004A-M000 / 3004A-M0B0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Cellular RTU/NRL 3G/4G	3004A-MC00 / 3004A-MCB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series LoRa RTU/NRL	3004A-ML00 / 3004A-MLB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Ethernet RTU/NRL	3004A-MEBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Microsatellite RTU/NRL	3004A-MHBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Iridium Short Burst Data RTU/NRL	3004A-MIBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional

NEON APPLICATION SOFTWARE - CUSTOMER SERVER

Options	Unidata Part Number	Description
Neon Applications Software	2302A	Neon Server Software Licence Incl 5 NAL
Neon Applications Software	2302A-10	Additional 10 NRT Access Licence
Neon Applications Software	2302A-20	Additional 20 NRT Access Licence
Neon Applications Software	2302A-50	Additional 50 NRT Access Licence

NEON HOSTING SERVICE - UNIDATA SERVER

Options	Unidata Part Number	Description
Neon Hosting Service	2301A	Neon Data Initial Subscription Setup Fee
Neon Hosting Service	2301A-01	Neon Data Service Fee for 1-50 NRT
Neon Hosting Service	2301A-02	Neon Data Service Fee for 51-100 NRT
Neon Hosting Service	2301A-10	Neon Data Service Fee Metering

DATALOGGER MANAGEMENT SOFTWARE

Options	Unidata Part Number	Description
Starlog V4 Management Software	6308A-AUE	STARLOG V4 Full Licence Key