AQUACULTURE MONITORING

APPLICATION BACKGROUND

The aquaculture industry needs to monitor the water quality as well as other water and weather parameters for large fish farms, oyster beds, mussel farms and the like.

If ambient conditions are not ideal, if the water becomes too hot, too shallow or too salty, damage to the crop will result.

Fish farms may be in regions which are difficult to access, so a telemetry system to measure the conditions on the fish farm and report those conditions on a regular basis is important.

There may also be compliance issues, where the fish farm needs to report to the local authorities, that the water parameters remained within safe limits throughout the growth of the fish crop.

APPLICATION DETAIL

Fish farms can install pole mounted systems to measure the Electro Conductivity of the water, to make sure it remains within safe limits. If a measuring system is being set up, a hydrostatic depth gauge and a temperature gauge may also be added to the monitoring system.

Typical systems may have a measurement station every 250 meters, in a grid, throughout the farm and have these measurement stations mounted on a pole in the water or floating on a buoy. Appropriate size solar panel and battery should be added to provide power for the system. Choice of telemetry solution, cell phone, LoRa or satellite, will depend on coverage available.

A fish farm seawater crop expects seawater to be typically 50,000 micro siemens per centimeter. Rivers flowing close by may dilute the seawater to a fresh water environment, typically 1000 micro siemens per centimeter, which could damage or kill the fish crop.

The water parameters, particularly the electro conductivity would be measured every 5 minutes, and stored locally, before being sent up to a central server each hour.

A water depth and temperature sensor could be added so there is a regular check of level and temperature.

The Neon Server would be set up to check each reading coming in from the measurement stations and to generate an alarm if there was an out of limits condition.
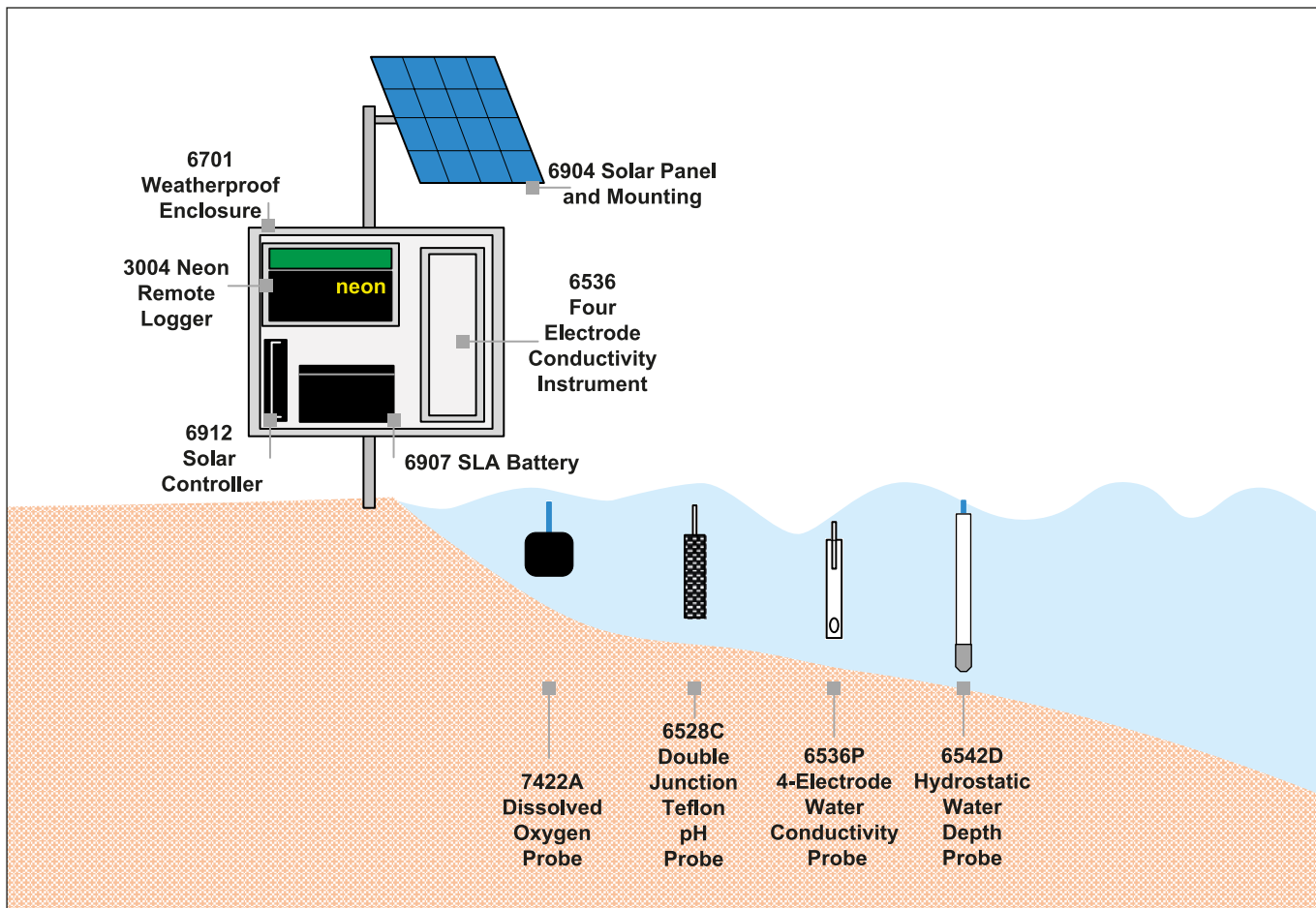
The alarm could be sent by text to the fish farm manager so remedial action could be taken.

Regular monthly reports of the parameters' levels could also be assembled and sent to compliance authorities to maintain licenses and the like.

Fish production / quantities could also be optimised based on long term data from the fish farm environment.

6701
Weatherproof
Enclosure

6904 Solar Panel
and Mounting

3004 Neon
Remote
Logger

neon

6536
Four
Electrode
Conductivity
Instrument

6912
Solar
Controller

6907 SLA Battery

7422A
Dissolved
Oxygen
Probe

6528C
Double
Junction
Teflon
pH
Probe

6536P
4-Electrode
Water
Conductivity
Probe

6542D
Hydrostatic
Water
Depth
Probe

TYPICAL CONFIGURATION

APPLICATION SPECIFIC INSTRUMENTS/INPUTS

Options	Unidata Part Number	Description
Water Electroconductivity Instrument	6536E	Water EC Instrument with Batt, 512K CMOS memory
Four Electrode water Conductivity Probe	6536P-2-10/20/30/50	4EL Water Conductivity Probe - 10m, 20m, 30m or 50m
Hydrostatic Water Depth Probes	6542D-A/B/C	PT12 Pressure/Temperature Sensor SDI-12 3.5m, 10m or 20m
4-20mA Pressure Transmitter	6548A-B/C	Submersible Pressure Transmitter 4-20mA 5m or 10m

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

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Aquaculture Monitoring 3318