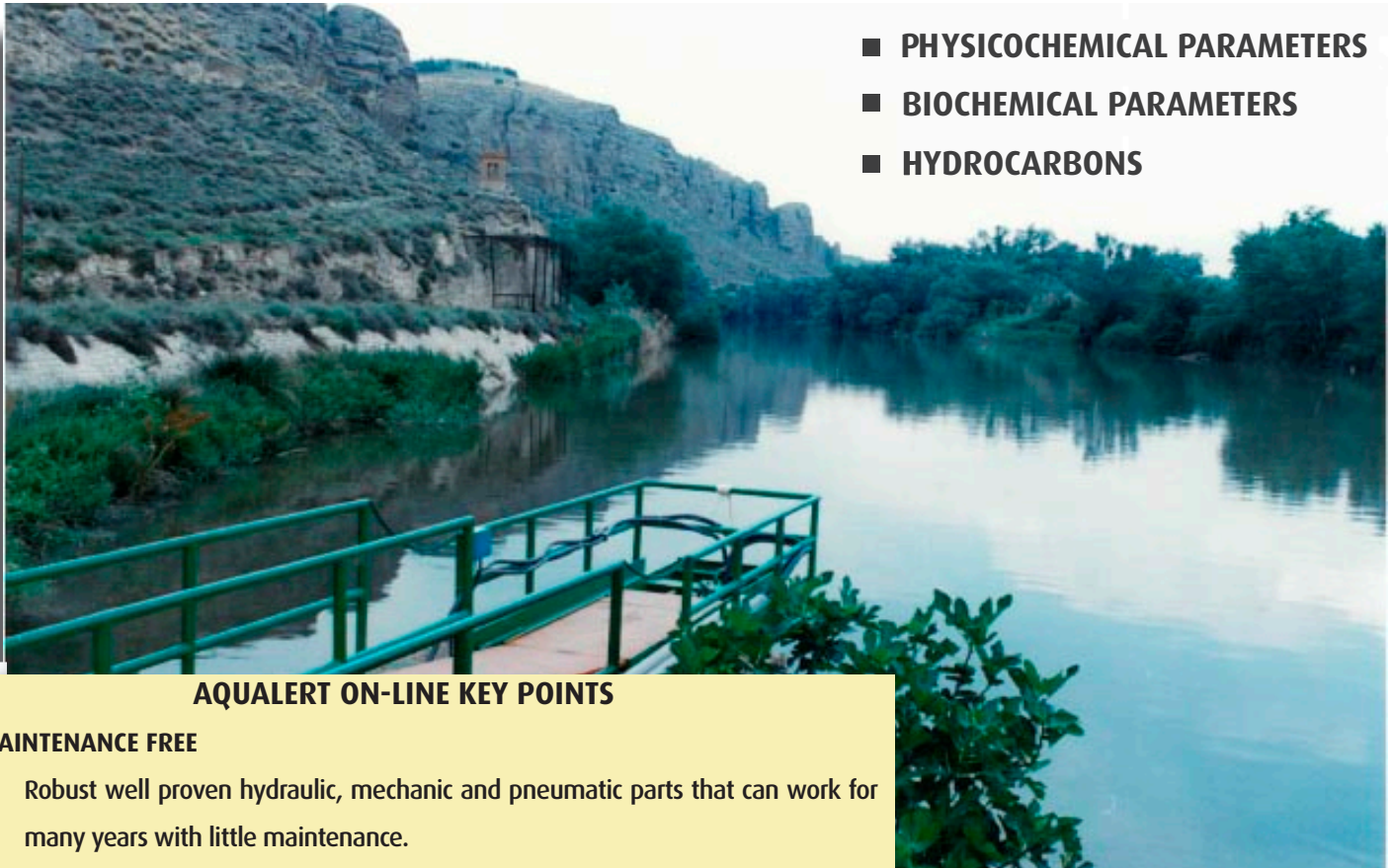


AQUALERT ON-LINE WATER QUALITY MONITORING SYSTEM

ENVIRONMENTAL MONITORING - DRINKING/WASTE WATER MONITORING - INDUSTRIAL APPLICATIONS



- **PHYSICOCHEMICAL PARAMETERS**
- **BIOCHEMICAL PARAMETERS**
- **HYDROCARBONS**

AQUALERT ON-LINE KEY POINTS

MAINTENANCE FREE

- Robust well proven hydraulic, mechanic and pneumatic parts that can work for many years with little maintenance.
- Automatic pre-programmed self-timed efficient cleaning.
- Managed cleaning processes that can be run remotely by means of the telemetry interface.

EXCELLENT VERSATILE DATA COLLECTION PLATFORM

- Geonica's HYDRODATA-3000¹ logger series
- Geonica Suite-4K desktop automatic communication and data retrieval Windows application suite.
- Webtrans Ubiquitas² for those customers that also want their data to be immediately posted on the Internet, as a plug & play Linux powerful Web application easy to customize and integrate into any existing Web platform.

FLEXIBLE AND CUSTOMIZABLE QUALITY MEASUREMENTS

- Flow-through measuring cell with optional 4, 6, 8 or more measurement sensors (under request).

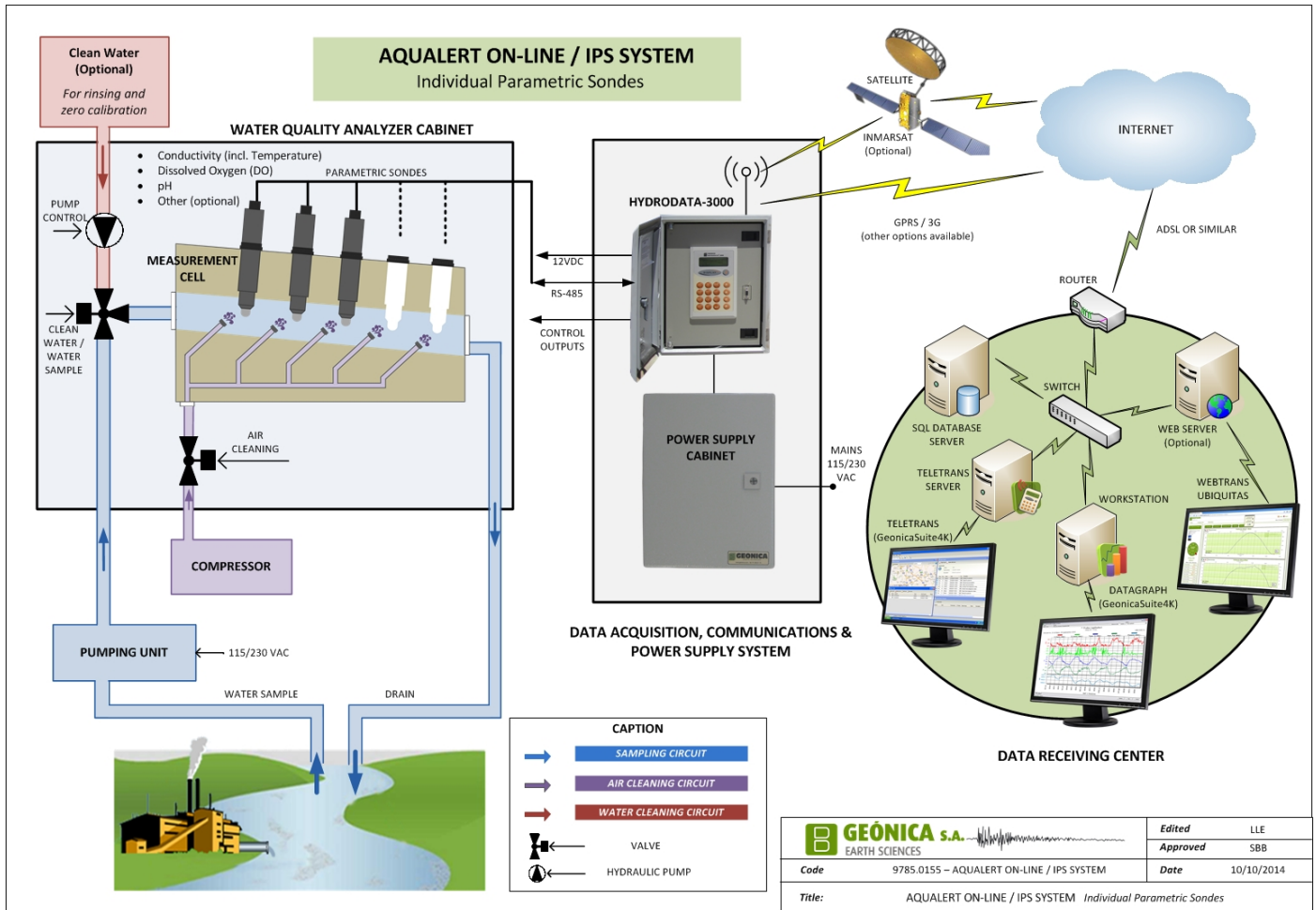
SELF-DIAGNOSIS ABOUT THE SYSTEM STATUS

- The optional clean water from the tank flowing through the measurement circuit provides a valuable information about the system status.

Geonica's AQUALERT ON-LINE has been designed counting on beating all traditional multi-probe systems disadvantages by means of Geonica's large expertise in remote automatic water quality data collection and transmission systems.

Geonica's AQUALERT ON-LINE CONTINUOUS WATER QUALITY MONITORING SYSTEM is a field proven water quality measurement system designed to work at unattended remote sites under critical conditions to measure a wide amount of different water quality parameters like BOD, COD, Total Suspended Solids, Water Temperature, pH, DO, Conductivity, Turbidity, etc.

AQUALERT ON-LINE WATER QUALITY MONITORING SYSTEM DIAGRAM



FUNCTIONAL DESCRIPTION

The HYDRODATA-3000¹ datalogger is connected to a PLC by means of a standard industrial Modbus RTU over RS485 communication protocol. The PLC has several tested programs with processes already stored into its nonvolatile flash memory. The HYDRODATA-3000 logger runs a control processing programs that tells the PLC what process to run and when to do it.

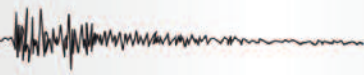
1. MEASURING MODE (DEFAULT)

- The HYDRODATA-3000¹ commands the PLC to pump the water sample from the river or industrial effluent to the analyzer hydraulic cabinet input.
- Once in the analyzer, the water sample is driven to the flow-through measuring cell where it is analyzed by a set of smart water quality probes.

- The water quality probes real time acquired data is retrieved by the HYDRODATA-3000 logger by means of a Modbus RTU over RS485 standard industrial communication protocol.
- The HYDRODATA-3000 logger re-processes the sensor data at regular intervals storing the statistics into its 32 MB non volatile flash memory.
- The statistics are requested and managed by the software at the Data Receiving Center (DRC). GeonicaSuite-4K polls the remote HYDRODATA-3000 station and downloads the processed data at user predefined intervals (i.e.: 10 minutes, 1 hour, etc.). The downloaded data is recorded into a SQL Server database for WEB posting or later off-line and on-line analysis by Datagraph-W4K or Webtrans Ubiquitas².

¹ For more information about HYDRODATA-3000, read carefully the document: '9722 0044 METEODATA/HYDRODATA'.

² For more information about Webtrans Ubiquitas read carefully the document: '9780 0030 Webtrans Ubiquitas'.



2. SAMPLE WATER CLEANING MODE

Once the system is working in 'Measuring Mode' the HYDRODATA-3000 logger can turn it to 'Sample Water Cleaning Mode' by running a self timed pre-programmed process or by a remote user starting a managed cleaning process through the telemetry interface.

- The water sample at the flow-through measuring cell is mixed with some detergent and/or biocide.
- Once the mixture is prepared the Programmable Logic Controller (PLC) establishes the re-circulating path and connects the re-circulation pump.
- For some time the mixture of sample water, biocide and detergent is flowing through the water quality probes cleaning them.
- Some time later the PLC sets the system back to 'Measuring Mode'.

All the related processes for the different modes can be specially tuned to local specific conditions by programming the system PLC unit.

3. CLEAN WATER CLEANING/RINSE MODE

The same as 'Sample Water Cleaning Mode' but using clean water instead of sample water. This option needs an external tank full of clean/tap water that is convenient at sites where the sample water may be considered inadequate for self-cleaning.

When the clean/tap water features are well known, this operation mode allows to compare the real water quality measurements with the expected values, providing valuable information about the system status (DIAGNOSIS).

4. AIR PRESSURE CLEANING MODE

For sites where an Air Pressure System is available, the PLC can run some processes that mix water and air or expels some high pressure air flow nearby the sensor sensitive parts that need regular cleaning.

TECHNICAL SPECIFICATIONS

HARDWARE

External components

- Data Logger (including Firmware) with communications and alphanumeric display with keypad.
- GPRS/3G modem and antenna for communications and data transmission
- GPS receiver (internal or external optional)
- Set of interconnecting cables for all sensors, data logger, Control Unit, etc
- Optional water sampling pump and hydraulic circuit with drain.
- Optional sample conditioning filtering unit (when required).
- Power Supply Unit with battery pack and charger/regulator for connection to the mains 110/220VAC.
- Outdoor/Indoor Protective Cabinet to house the internal AQUALERT ON-LINE components.
- Air compressor with pressure regulator.

Internal components

- Flow-through measuring cell.
- Automatic cleaning system for sensors, with a PLC Control Unit.
- All necessary valves, fittings, pipes and tubes for hydraulic circuit and automatic cleaning system.

- A set or limited combination of water quality sensors to choose from among the following parameters:
 - pH
 - ORP
 - Conductivity
 - Temperature
 - Dissolved Oxygen
 - Turbidity
 - Ammonium-N
 - Ammonia-N
 - Nitrate-N
 - Nitrite-N
 - BOD
 - COD
 - TOC
 - DOC
 - SAC 254
 - TSS
 - PAH (Polycyclic Aromatic Hydrocarbons)
 - BTX aromatic hydrocarbons (Benzene, Toluene and Xylenes)
 - Crude Oils
 - Refined Fuels
 - Blue-Green Algae
 - Chlorophyll
 - Rhodamine

DATA RECEIVING CENTER (DRC)

DRC Hardware

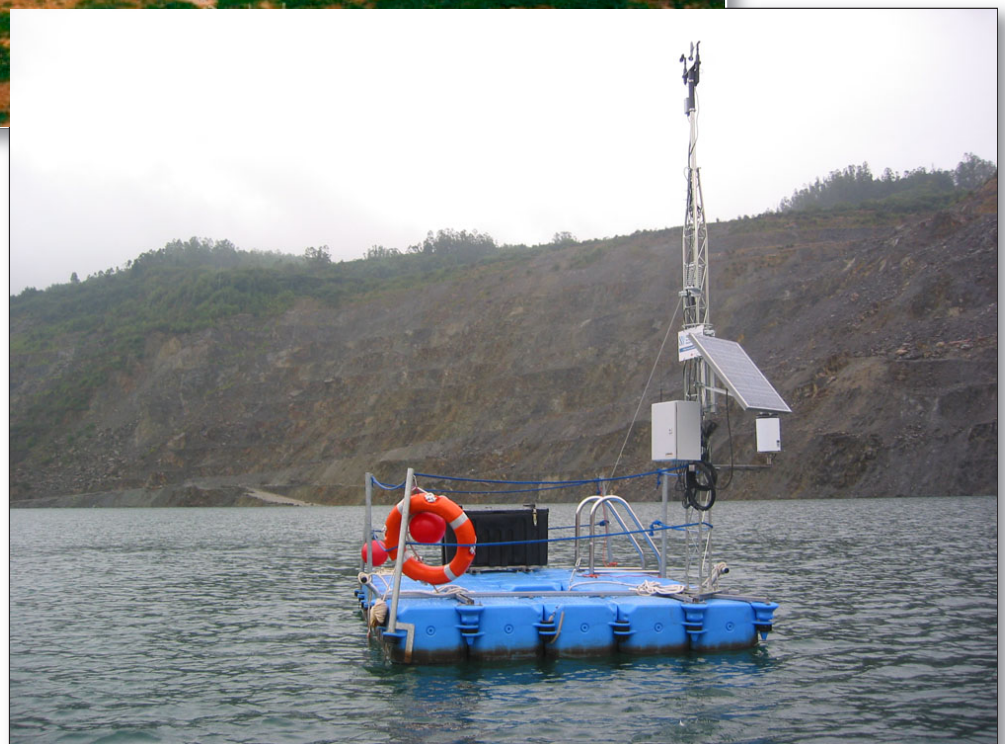
- Virtual or Physical Servers
- Server 1 (Communications and Management Server)
- Server 2 (Database Server, for AQUALERT/Network Database)
- Server 3 (Web Server, for WEB Platform and Virtual Machine)

DRC Software with GeonicaSuite-4K & Webtrans Ubiquitas

- Communications and Network Management
- Remote Programming & Control of the Data Logger
- Remote Programming & Control of the AQUALERT Cleaning System
- Automatic unattended data download
- Off-line graphical presentation and data analysis.
- WEB Posting Tool



Up: General view of a riverside analyzer's housing



Right: AQUALERT floating station