DATA TRANSMISSION AND M2M COMMUNICATIONS

QUALITY THROUGH INNOVATION AND DESIGN

March 2017

Energy, Water, Environment.
Global Sustainable Solutions.

20 Data Transmission and M2M Communications

Hardware manufacturers are embedding wireless capability into a wide variety of devices. Wireless-enabled data transmission have never been more important to Industry and Environmental Monitoring sectors for numerous business and consumer applications to connect increasing numbers of networked devices.

M2M communications are similar in some ways to cellular or Internet services. However, instead of phones and PDAs making calls, sending emails or texts, or surfing the "net," M2M intelligent "black box" devices (as our Data loggers), are equipped with cellular radio-based modules that collect information from remote locations and transmit it to a central location. This is similar to how remote PCs and laptops connect to the servers in a company's IT department. M2M communications are conducted via broadband/wireless connections in order to access and process the gathered data.

The essential difference with M2M is that on their own, with no human intervention, compactly packaged remote devices "sense" changes in location as wind speed, temperature, precipitation, solar radiation, water level, and the like, then issue an alert and transmit important data about environmental conditions or specific events.

ENEA Grupo® markets advanced solutions for data transmission and M2M communications in the sector of the Earth Sciences including the Meteorology, Hydrology, Oceanography and for Environmental Monitoring in general.

The use of M2M technology in these areas and in environmental monitoring has begun to significantly expand as wireless technology applied to increasingly more monitoring applications as those included in our portfolio:

- Meteorological and Hydrological Networks
- Rainfall and Heavy Rains Networks
- Early Flood Management and Alerts
- Solar and Wind Energy Resource Assessment
- Water Quality in rivers and wastewater treatment plants
- Water Management in rivers and lakes
- Air Quality Monitoring
- Gas and pollutant levels in landfills
- Environmental Noise in urban areas, roadside and airports
- Road Weather Information
- Road Traffic Management
- Etc.

For all these applications, ENEA Grupo® offers M2M wireless networking to communicate in real-time remote measuring stations with SCADAs and Central Receiving Stations. Analog and smart digital measuring sensors are integrated with our data loggers in such a way that all the information is transmitted to a Central Receiving Station in which is installed our Software Package, allowing bidirectional communications, remote programming, Network Management and database generation.

For such purpose we use the following single or mixed M2M communications ways:

- GPRS/3G Cellular Networks
- INMARSAT BGAN bidirectional with global coverage
- Physical Interconnections as fiber optic cables
- Wi-Fi
- Point–to-Point (PTP) Radio-Links
- THURAYA Satellite Network (GmPRS)
- INSAT Satellite Network (unidirectional)
- GOES Satellite Network (unidirectional)
- IRIDIUM Satellite Network

As per our technical opinion, we have a clear recommendation on priorities for the use of the different M2M communication ways available: first we recommend GPRS/3G modem whenever there is coverage in remote location. Second we recommend INMARSAT BGAN satellite communications where there is no GPRS/3G coverage, or when the system criticality merits data communication redundantly, for instance, GPRS/3G and INMARSAT simultaneously or alternately.

The professional team of ENEA Grupo® has over 40 years of experience in remote control systems. Our design and engineering are constantly evolving, providing maximum satisfaction to clients. Our equipment is installed in remote and isolated areas; therefore, reliability, minimum maintenance and low power consumption are the strengths of ENEA Grupo®'s designs. Actually, ENEA Grupo® provides full compatibility to a wide variety of communication networks in order to entirely adapt to each system's requirements.