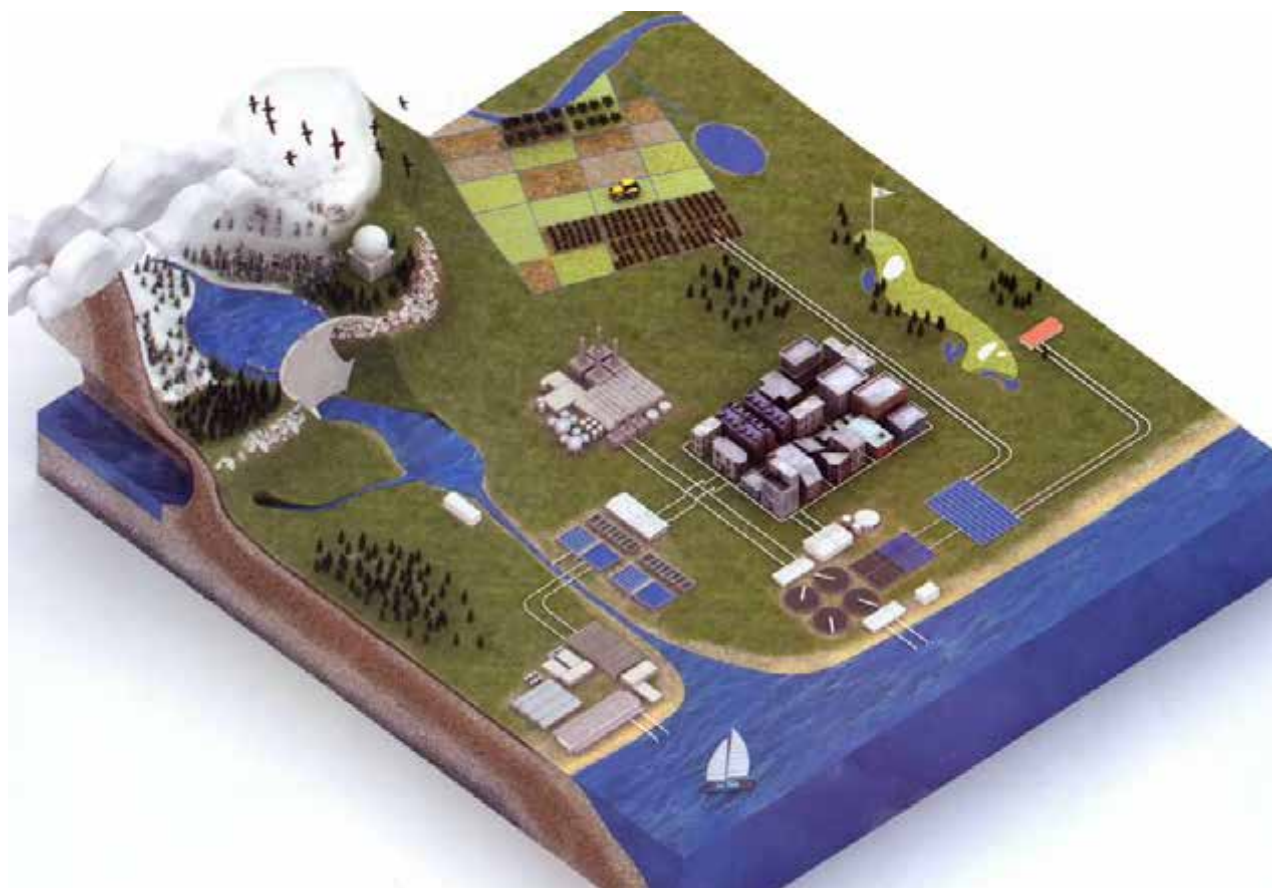




AGUAS DE MURCIA

SMART WATER



Murcia. Capital and most populous city of the Region de Murcia. Seventh largest city in Spain.

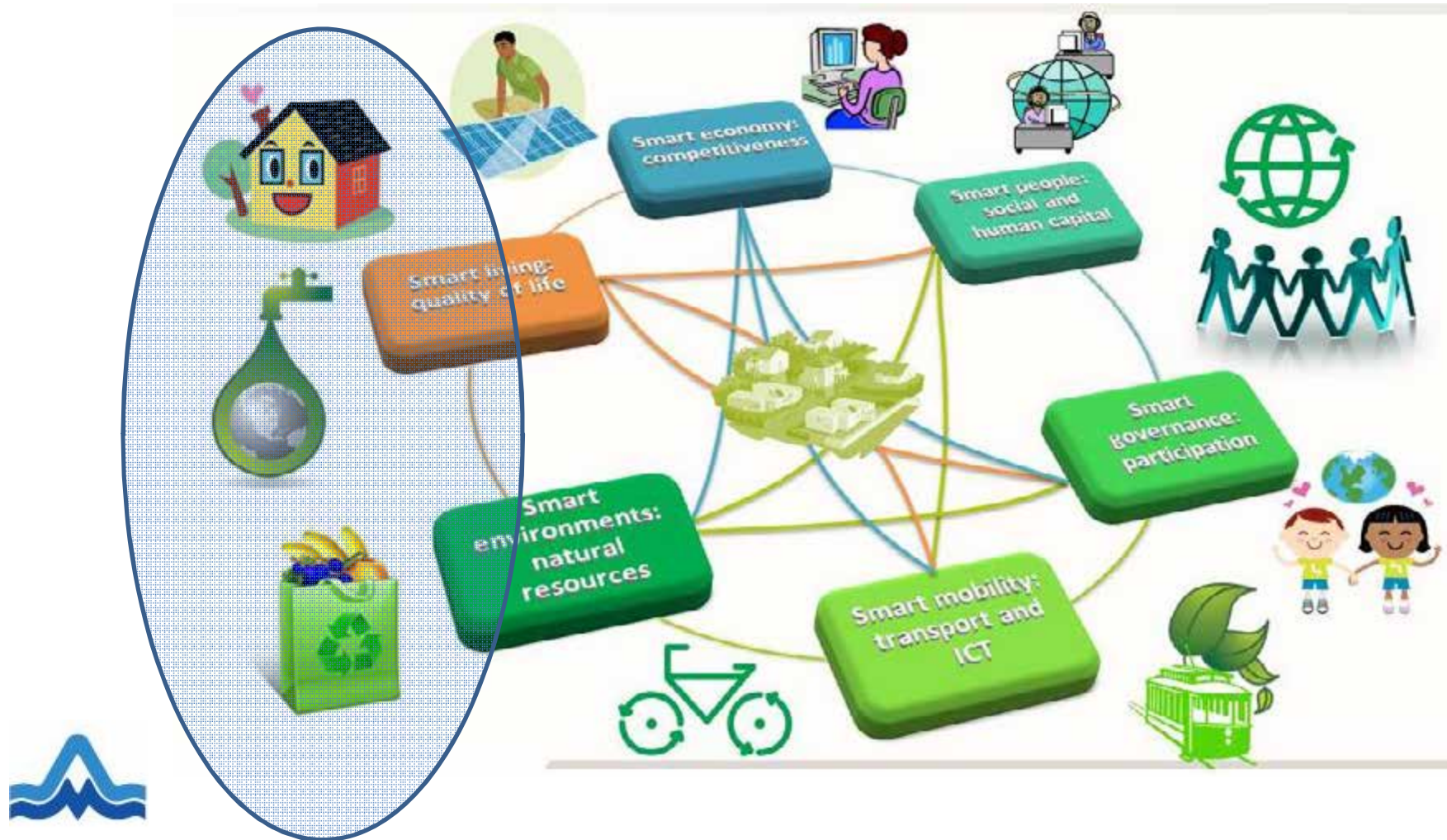
Population of the city: 450.000 inhabitants. (about one third of the total population of the Region).

Population of the metropolitan área: 700.000 inhabitants.

Climate: hot summers, mild winters, low precipitation.



SMART CITY



INDEX



1. SMART Real Time Water Management
2. Drinking Water Supply
3. Wastewater System Management
4. Waste Water Treatment
5. Water And Energy Sustainability



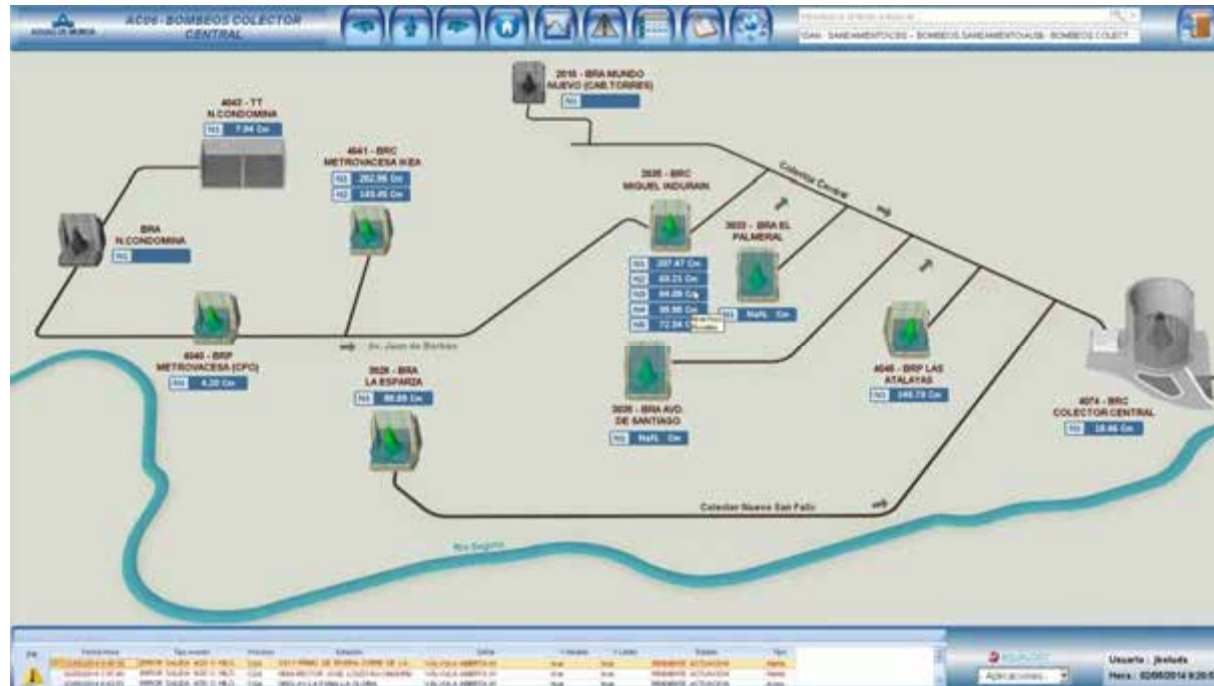
SMART Real Time Water Management

SMART Real Time Water Management



- Real Time Water Management Center
 - Efficient operational management
 - Real Time risk management.
 - Decision-making supporting tools :
 - SCADA: processing and prioritization of alarms, processing and storage of historical data
 - Wicast, Aemet: weather forecast
 - Hidromet: Wastewater network management.
 - SAED: monitoring and reporting

SMART Real Time Water Management

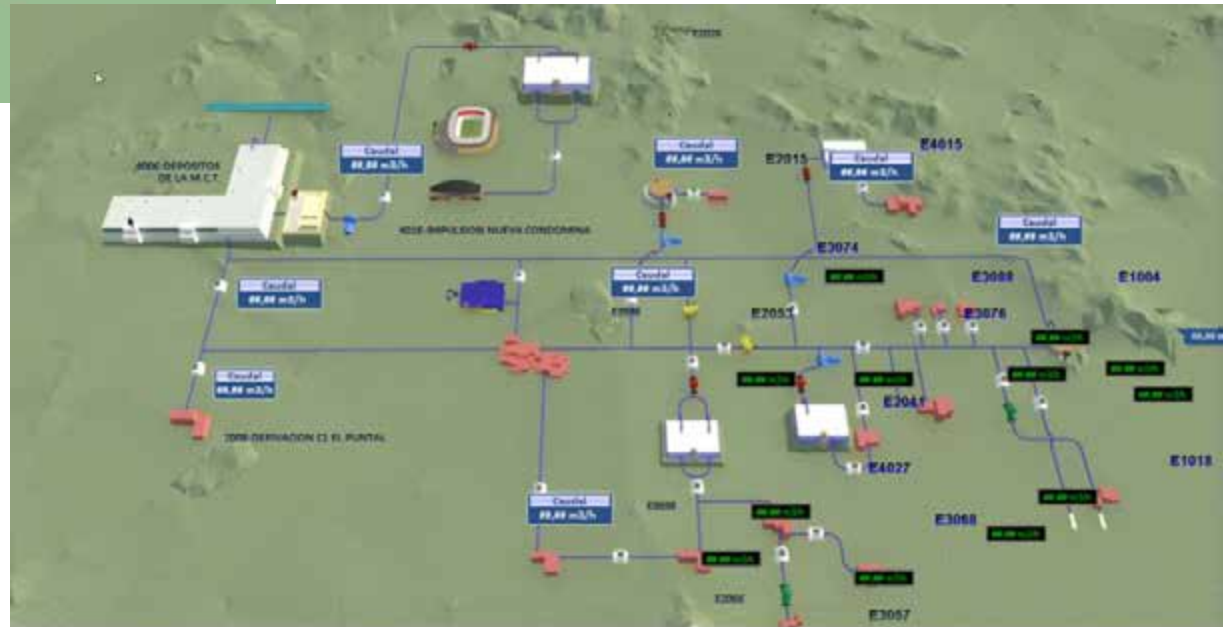


- Based on a navigation system monitoring, by means of:
 - Centralized graphical information systems.
 - Intelligent remote data acquisition stations.

Real Time Water Management

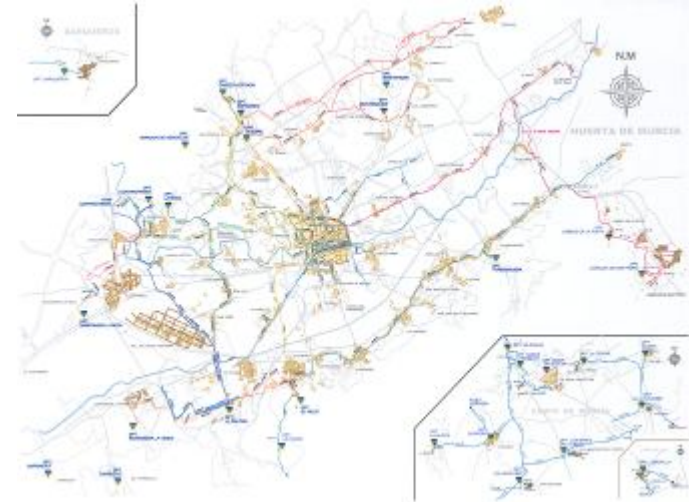
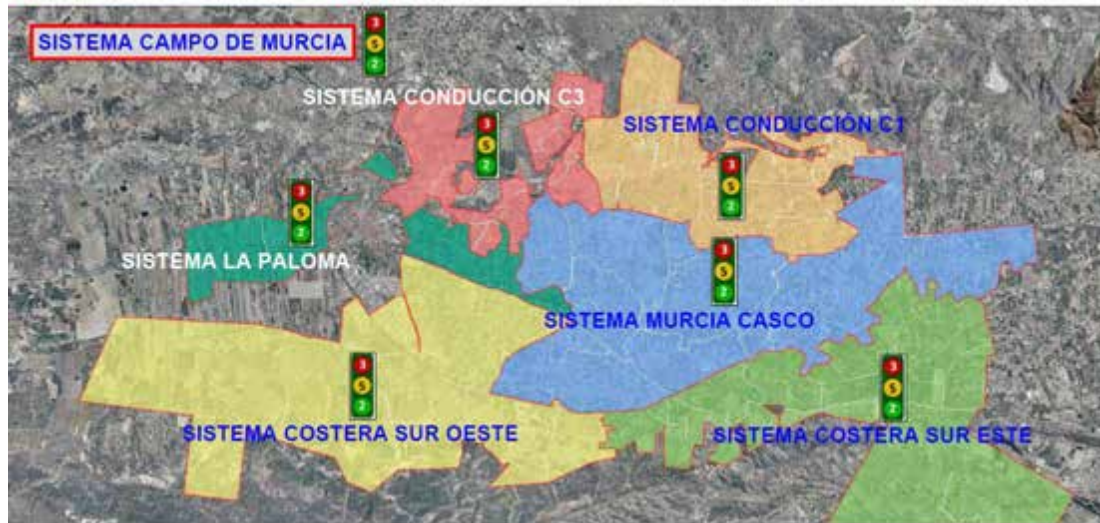


- Several queries levels
- Converts data on information
- Automatic graphics users interface management
- Smart search engine (geographical/process)
- Decisions support system for every process
- Shows custom scorecards and key values.
- Sort by process or geographical situation
- Private communications system, reliable, secure and redundant.



Drinking Water Supply

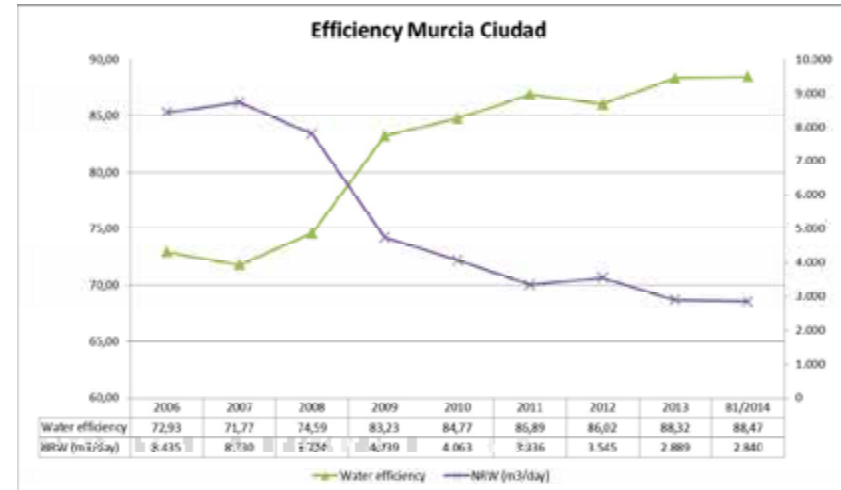
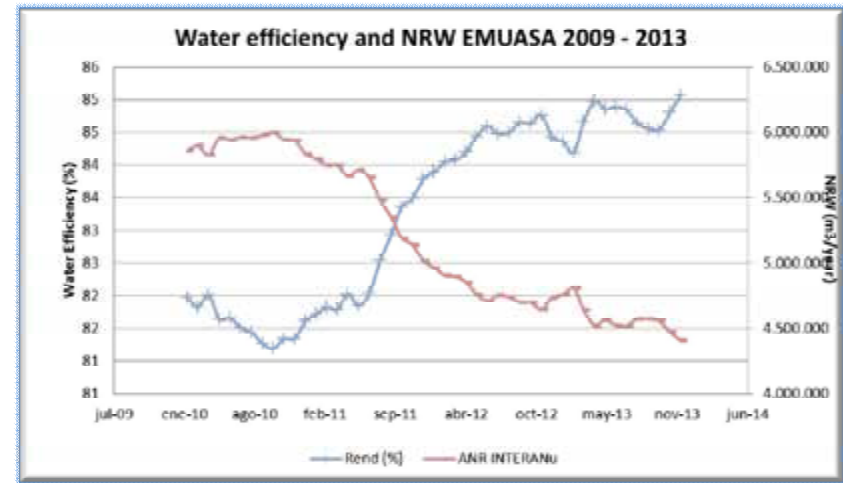
DRINKING WATER NETWORK



- Network is 2,187 km long. 164 km are main pipes of up to 1,000 mm diameter.
- 81,000 customer connections for 189,923 customers, of which 42% correspond to Murcia city.
- 21 years avg. since installation of pipes. There are 36 pumping stations. Pressures are kept between 40 (daytime) and 20 (night) m of water.
- 170 Remote Stations constantly (99.61% operability) sampling and monitoring 9,023 signals through SCADA:
 - Network flows
 - Water pressures
 - Quality parameters

NETWORK OPERATION

- Technical network performance: 85.07 %
- Total Bulk Production (2013):
 - MCT: 24,675,000 m³.
 - EPA: 790,000 m³.
 - ETAP La Contraparada: 6,941,000 m³.
- NRW in 2013: 4.4 Hm³, 5.5 m³/km/day
- 1.58 Bursts/100 km of network mains.
- Tools:
 - Supervisory Control and Data Acquisition (SCADA).
 - Geographic Information System (GIS).
 - Laboratory Information Management System (LIMS): SIVA.
 - Pressure Management.
 - Micro district metering.
 - Data Analysis and Exploitation System (SAED) and ABASGEST.



REAL DEVELOPMENTS

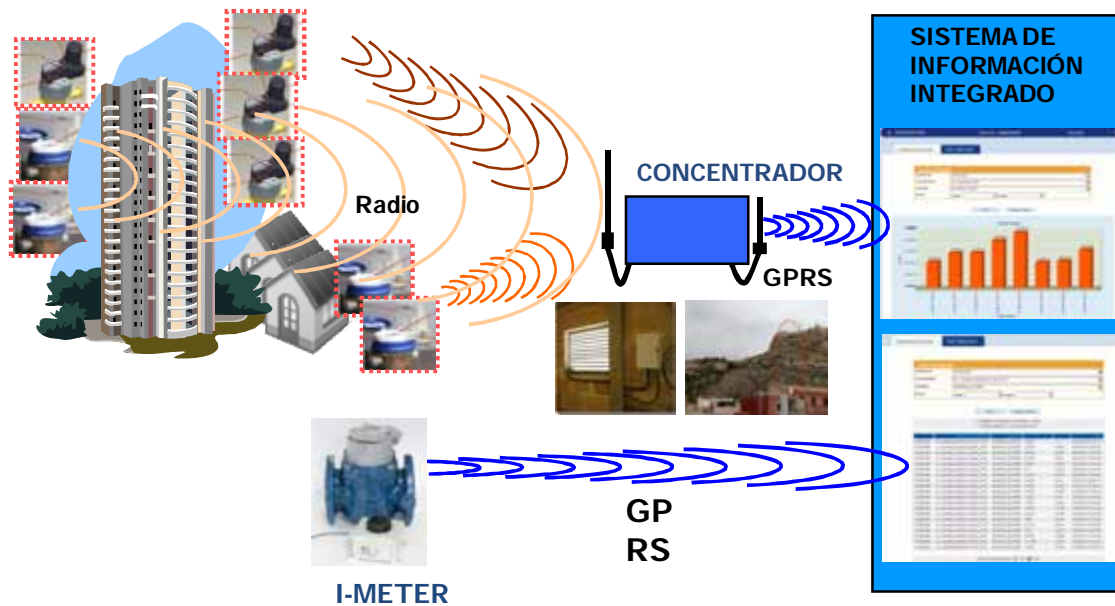
- Micro district metering to maximize water distribution efficiency.
- Monitoring flows to locate leaks in real time.
- Continuous performance control through SCADA, RENCON and AMR.
- Minimization of undermetering with statistical control of meters.
- Remote close and open valves.



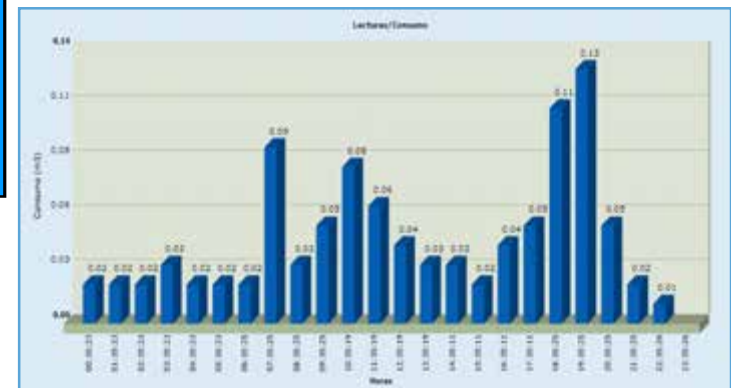
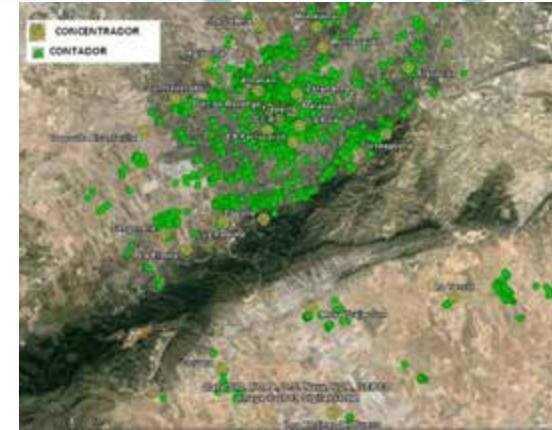
COMMERCIAL MANAGEMENT

SMART METTERING

- Customer manages water usage.
- Demand Management Tool
- Remote on time reading
- Leaks and over consumption alarms.



A leak in the
instalation or
an open tap?



innovating for a sustainable planet is the best job on earth



A comprehensive smart metering solution for sensors and water and energy meters

Real time monitoring of water and energy consumptions

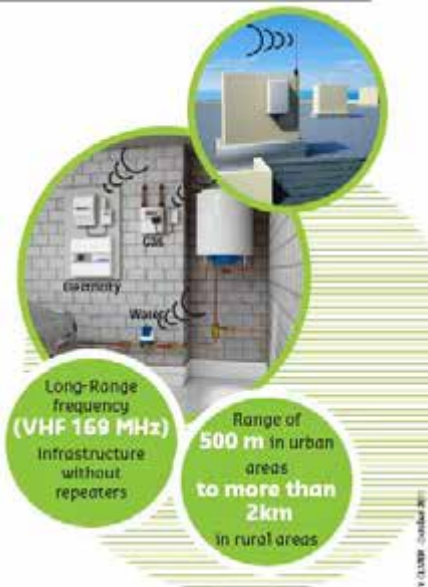
**PRODUIT**

INCREASE the reliability of market readings using scalable technology that is easy to deploy and share.

- **IMPROVE** the efficiency and quality of services for end users/operators, local authorities and their customers, real estate managers
- **PROTECT** natural resources and living environment
- The reliability of an automatic system removing any need for the end user to be present for this loading
- The possibility of sharing the infrastructure with other data collection systems
- Real time monitoring of consumptions
- Operational costs optimization (detection of malfunctions, leakage suppression due to lower discharges regarding customer consumption, etc.)
- Reduced environmental impact and increased environmental assets

SMART METERING INFRASTRUCTURE is based on a radio communication infrastructure combining a long-range VHF (140 MHz) & GSM/GPRS. It involves the collection and transmission of information from meters (Metering Data Collection) to a data management system (Metering Data Management).

- A Sensor reads meter index and automatically supplies it to the "Business" which sends it to a network of GPRS Collectors several times a day.
 - The Collectors, at high points or remote reading areas, collect all the index sent in an average radius of 100 km, then communicates them via a public tele-communications network to the management system SSTR (Système d'Information Télérelevé).
 - SSTR carries out data acquisition, processing and storage. It also allows supervision and maintenance of the infrastructure and communicates with the client's network customers.
- The services associated with the SMART METERING and INFRASTRUCTURE are provided by the company **TECHNOLOGIES SMART WATER METERING SERVICES - SMART METERING PRO**.



- Paris Left Bank - Lyonnaise des Eaux (France) - 2008
- Installation of smart metering systems on 28,000 main meters
- Installation of 240 receivers on rooftops to limit visual pollution

- Parts Left Bank - Lymnaisables Eaux (France) - 2008
 - Installation of smart metering systems on 25,000 main meters
 - Installation of 240 recusers on rooftops to limit visual pollution
- Malta - Ondeo Systems - 2010
 - Provision of an AMR system of 245,000 smart meters, rolled out over 3 years. In May 2011, approximately 16,000 meters were already fitted and 130 VHF collectors deployed.
- GrDF - Ondeo Systems (France) - 2010
 - Technology contributing in April of collectors, 5400 meters fitted for remote gas meter readings. Proven benefits of the solution: Straightforward and rapid deployment and more reliability compared to 3 other competing pilot projects in terms of stability and availability
- Alicante - Agbar (Spain) - 2011
 - Pilot project for 1000 meters with the Alicante Water Company, as an initial validation stage before launching the mass installation in 2012 (300,000 meters - 32 weeks)

SUEZ ENVIRONMENT: financial statements are not audited. Each year SUEZ ENVIRONMENT (Paris SAS) provides LEVI and its subsidiaries with the challenge to protect resources on a long-term basis by growing revenue (income before taxes) and to reduce the impact of SUEZ ENVIRONMENT's growing waste to 17 million tonnes by 2015 (waste-to-energy investment) and to provide for a limited people and to collect the waste produced by more than 10 million people. SUEZ ENVIRONMENT has 75,000 employees and, with its presence on five continents, it is the world's leader in water and waste management services. SUEZ ENVIRONMENT (PARIS SAS) is a 100% OCP SUEZ affiliate, reported under income of 11.75 billion euros at the end of 2014 (see page 2015).

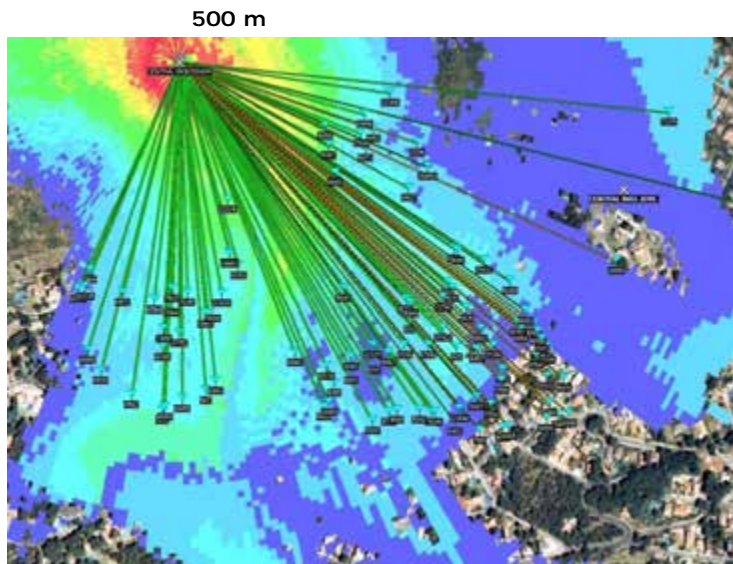
AGUAR SOLUTIONS
 Torre AGUAR
 Av. Dragón 211 - 08018 BARCELONA (SPAIN)
 TEL. (+34) 933 42 751
www.aguarsolutions.com

Contact:
Manu Chatur indresbhartha@gmail.com

ONDEO SYSTEMS
DR. PAUL DU PRÉSENT WILSON
71030 - LE PÉCQ
TEL: +33 (0)1 34 80 23 45
www.ondeo-systems.com

Contacts:
 Sales: Pierre SACAREAU (pierre.sacareau@ondacystars.com)
 Technique: Marc QUERLIN (Marc.Querlin@ondacystars.com)





► Why Use Smart Metering?

- Information to the Customer
- Web Portals
- Effectiveness
- Leak detection
- Identification of location and extent of a water main break.
- Monitor compliance with local water restrictions
- Remotely detect theft.
- Ensure that almost all bills are based on actual meter reads rather than on estimates
- Reduction of calls to the contact center and increase of customer satisfaction.

Customer Care



Self Service Terminals



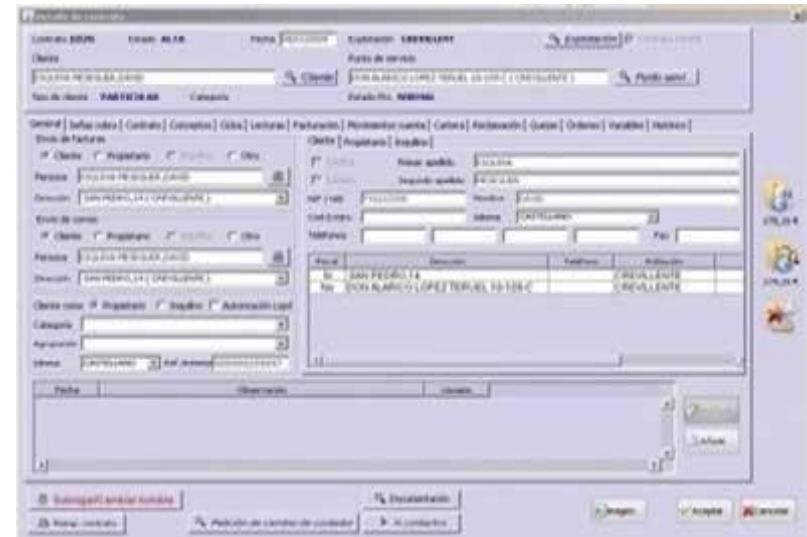
Social Media



Queue Control

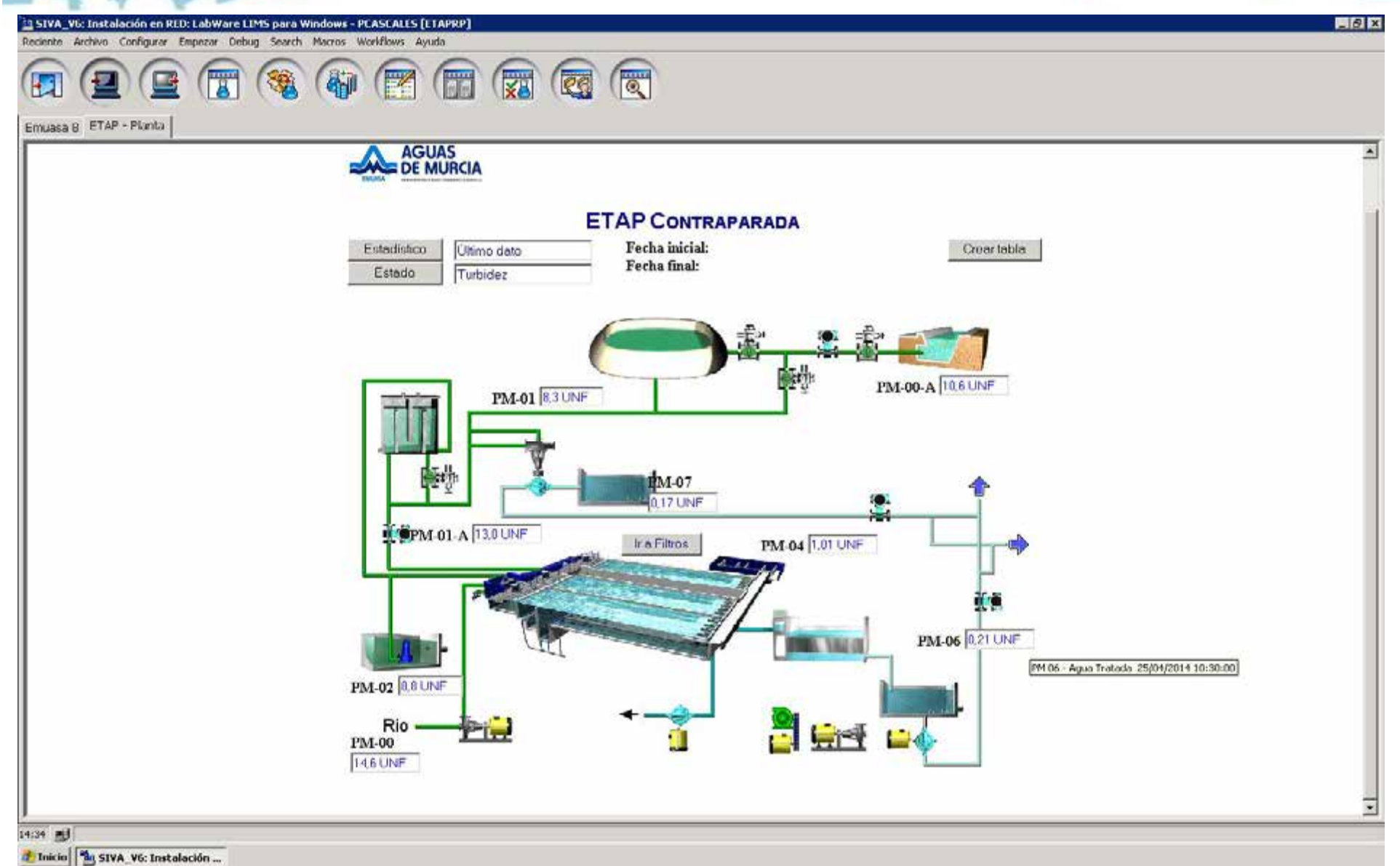


Appointments



WEB Virtual Office

WATER PRODUCTION



WATER PRODUCTION

11-01-13

12:53:41

CONFIGURACIÓN ALARMAS

MULTIPARAMÉTRICA

BOMBA TOMA MUESTRAS
(Campotejar)

ESTADO: MARCHA

TERMICO: OK

E+H

ESTADO OK

PASO AGUA

T: 14,31 °C

ALARMA

pH: 7,25

ALARMA

C: 1060,9 uS/cm

ALARMA

Tur: 2,7 NTU

ALARMA

O2: 113,92 %

ALARMA

COT: 10,90 mg/l

ALARMA

NH4: 0,55 mg/l

ALARMA

NO3: 0,82 mg/l

ALARMA

P: 2,24 mca

CAPTACION CAMPOTEJAR

E+H

ESTADO OK

PASO AGUA

T: 8,22 °C

OK

pH: 8,73

OK

C: 1083,6 uS/cm

OK

Tur: 5,0 NTU

OK

O2: 110,99 %

OK

COT: 0,00 mg/l

OK

NH4: 0,09 mg/l

OK

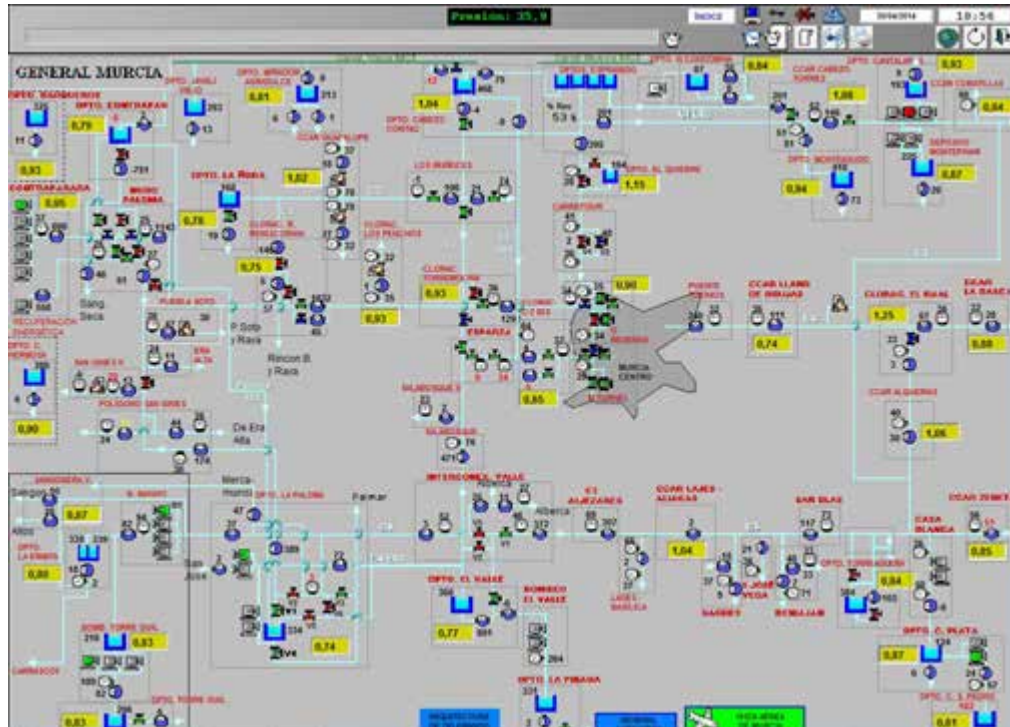
NO3: 1,27 mg/l

ALARMA

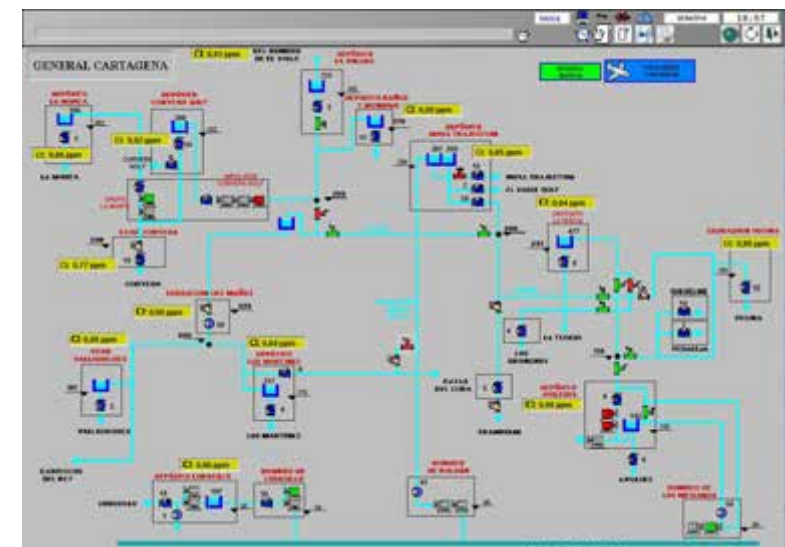
CAPTACION CONTRAPARADA

ETAP CPT CPT-R DCT FCA BAD RE AP-03 O3 CI Sosa Reac Aire PM's Fng MTP CAUDAL

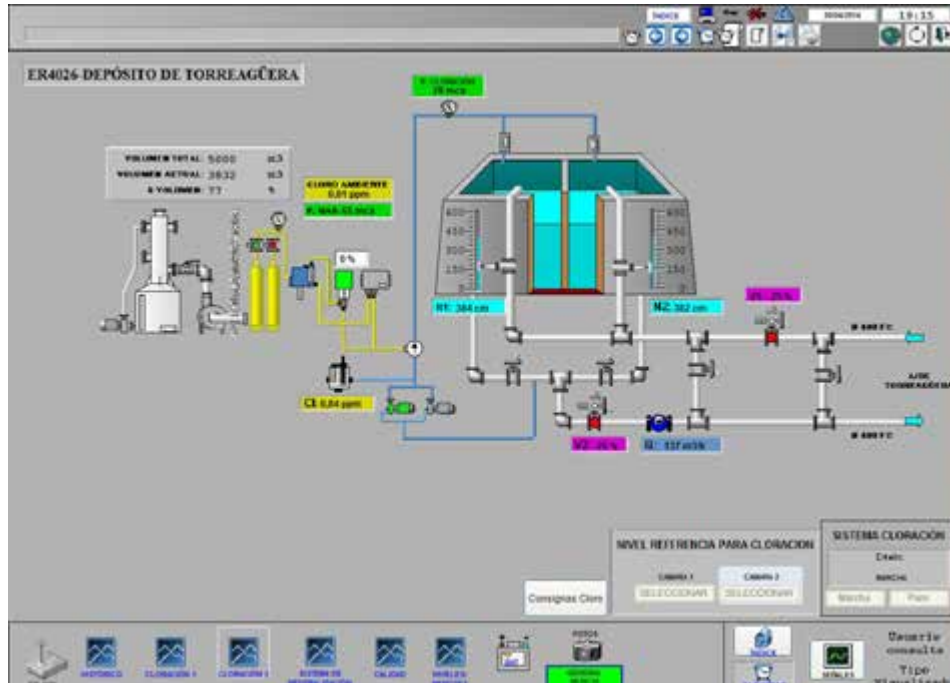
SMART QUALITY CONTROL OF DRINKING WATER



The drinking water network of Murcia has more than 80 sensors of quality parameters for on line analysis. These parameters are monitored 24 h a day and control the rechlorination system located on critical points of the network.



SMART QUALITY CONTROL OF DRINKING WATER



A chlorination system located
on a water tank

Automatic chlorine daily report. Fed
with data from scada and analyst's
PDA





Wastewater System Management

GEOGRAPHY OF MURCIA

- Combined sewers along the 98% of the 1,566 km long network, with 186 pumping stations.
- 1,515 km secondary network, circular pipes of 200-800 mm diameters.
- 50 km main sewers, of 800-2,800 mm diameters.
- 124 SCADA remote control stations, 4,055 signals, 93% operability.



WASTEWATER QUALITY

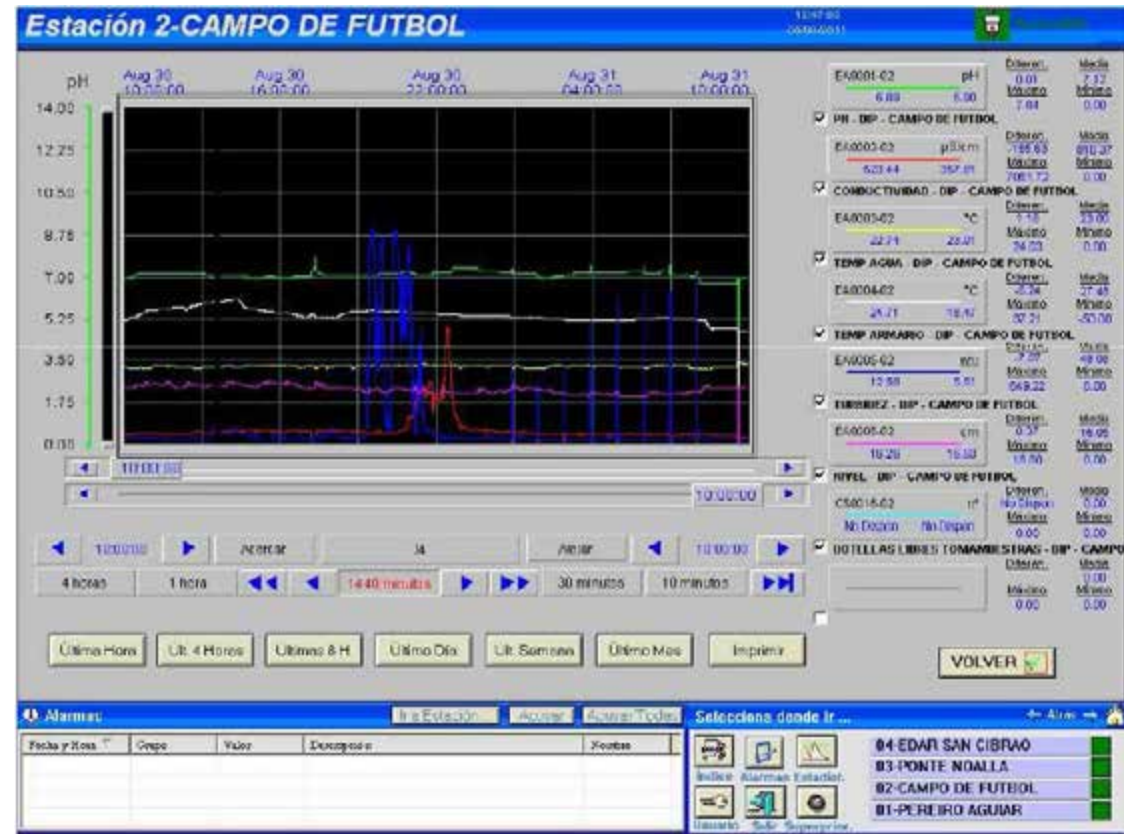
NEEDS:

- Fulfil legal regulations to quality wastewater
- Protect sewerage elements
- Provide process control in wastewater plants

SOLUTIONS:

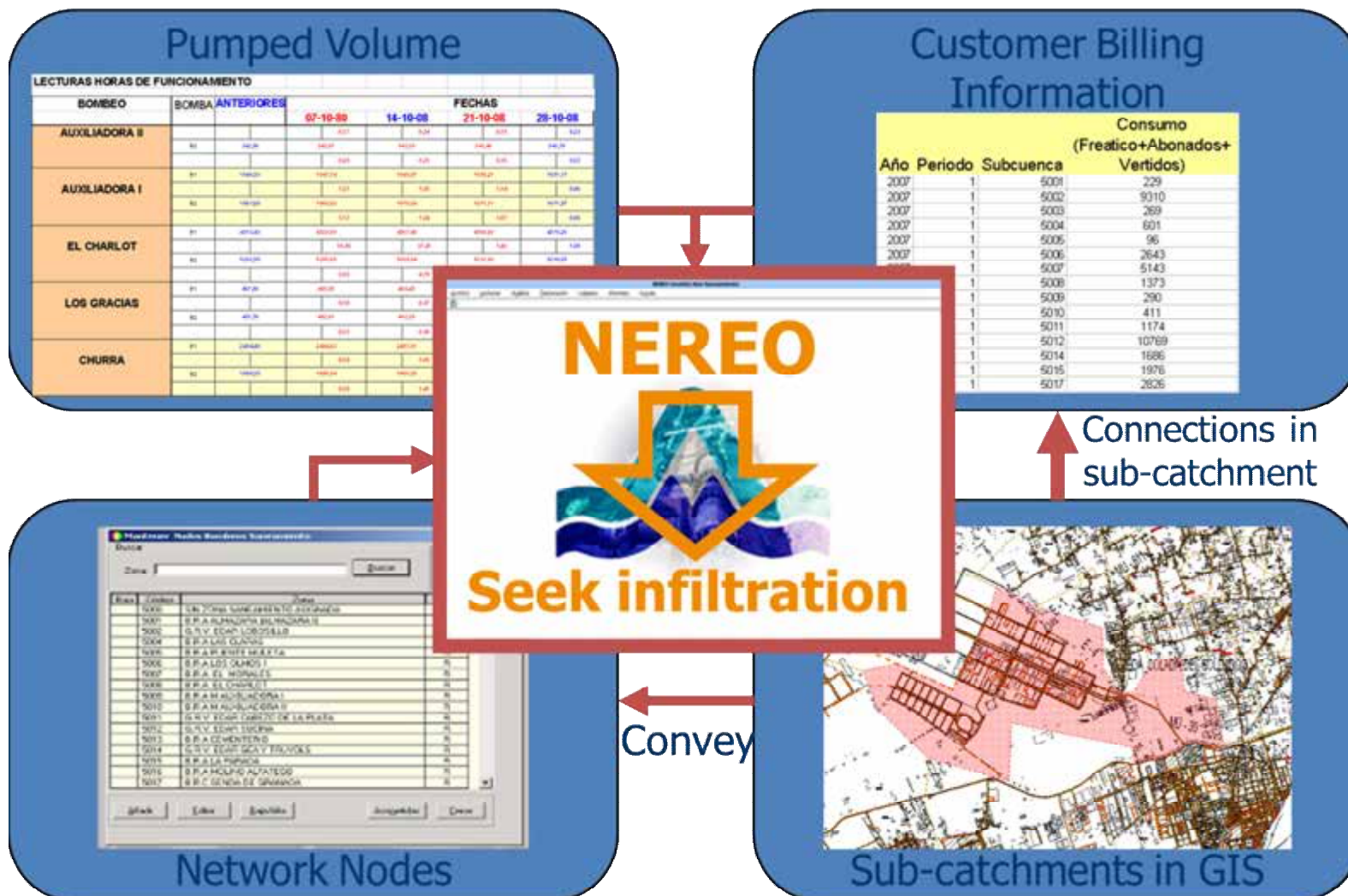
Sewerage control cabinets (19):

- Analyzers cabinets to general porpoise.
- Possibilities to many different parameters.
- With sample prepared circuit.
- Available whit automatic sampler.
- Connectable to different system communication net-work.



NEREO

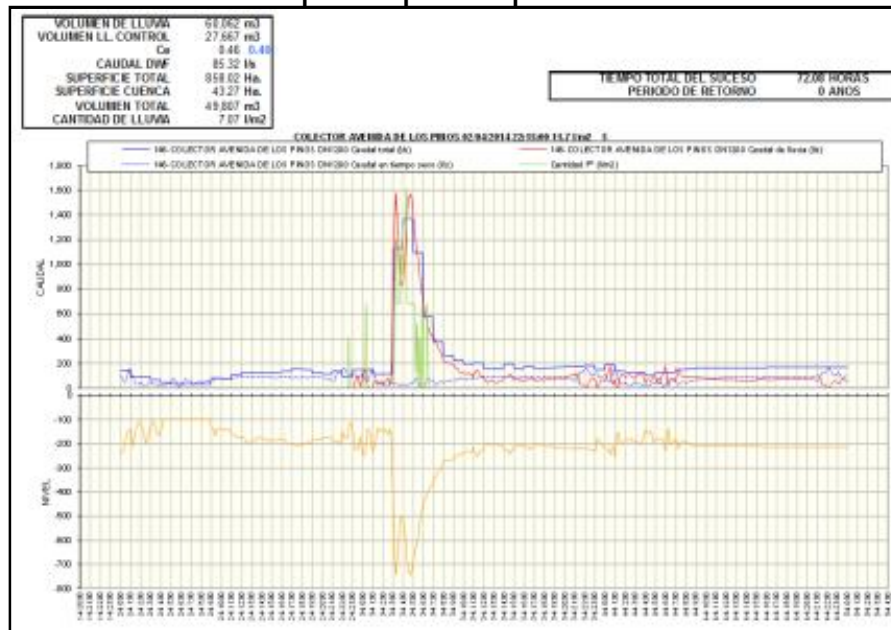
Wastewater Flow Monitoring tool



EMERGENCIES

INTENSE RAIN EPISODES

- Forecasting of intense rain episodes (up to 1 day before) and alerts about critical points in urban drainage network.
- Communication alarm states to responsible.
- Communication to associate companies and fields equipment.
- Preventive measures in the sewer network.
- Routes in field of review of gutters and critical zones of flood.
- Attention of external calls and follow-up of the episode of rain in the Center of Control.
- Follow-up incidents of the system of remote control.
- Production of reports post-episode.





Waste Water Treatment

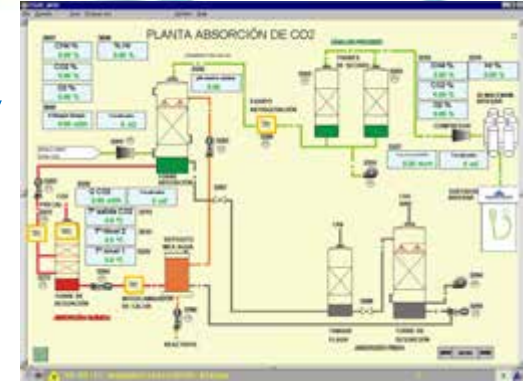
WWTP MANAGEMENT



TECHNICAL RESOURCES

WASTEWATER PROCESS CONTROL LABORATORY

The laboratory is equipped with an Analytical Values Information System (SIVA), that allows the automatic management of samplers and values

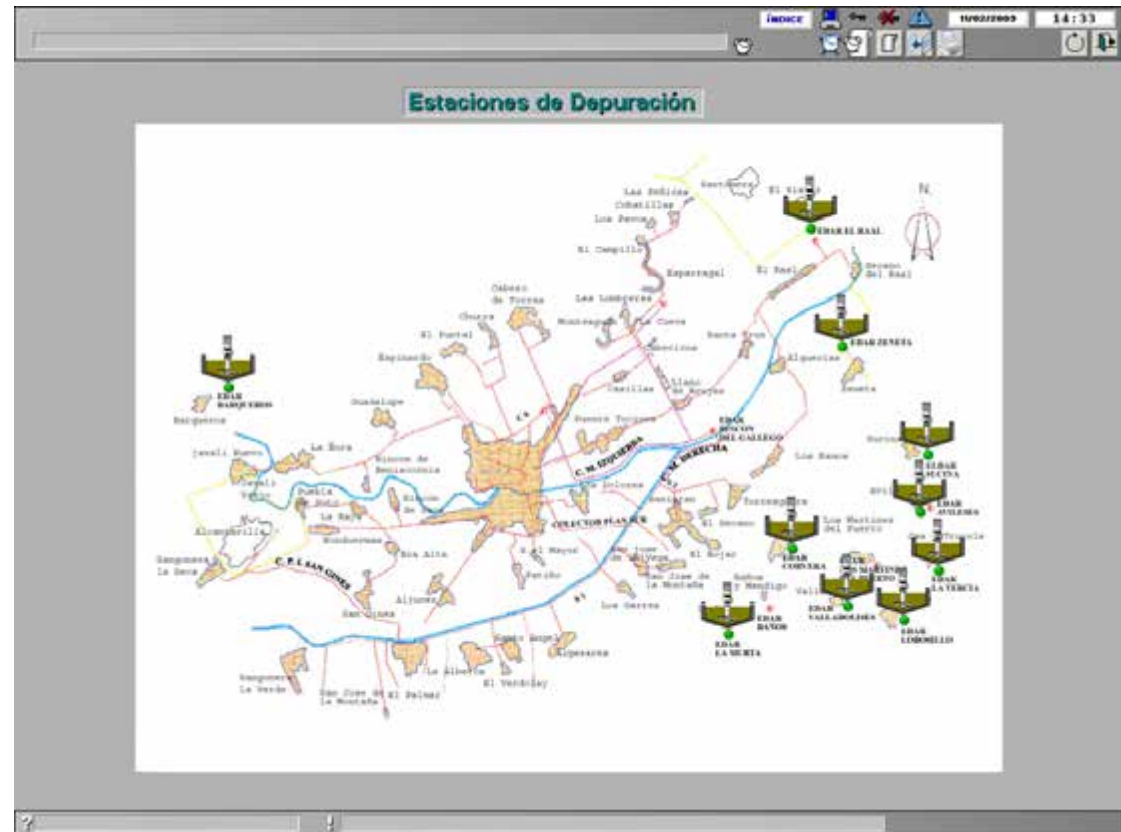



REMOTE CONTROL

All Aguas de Murcia WWTP have SCADA (Supervisory Control and Data Acquisition)

SCADA

A remote station complex net that collects data and sends all the information needed at the WWTP allows to know in real time the system state and so operate the plants in a immediate way.





Water and Energy Sustainability

RENEWABLE ENERGY

COGENERATION

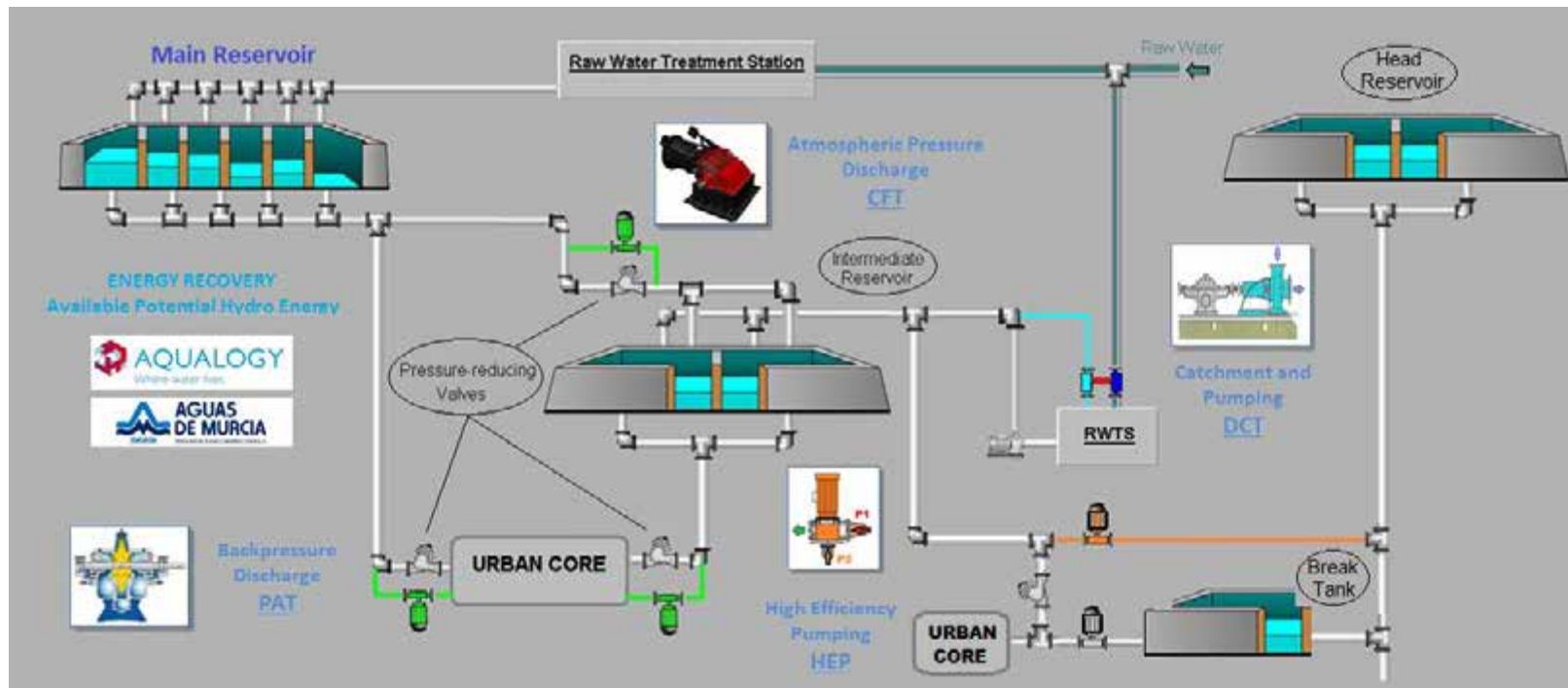
- Through cogeneration system, energy efficiency of the WWTP will be increased by the use of the biogas produced in the waste water treatment processes and ensures a large part of the energy consumption of the WWTP by a renewable energy source.
- The CHP plant is made up: pretreatment (THIOPAQ™, cooling and activated carbon column) and two gas engines (TCG2016C V12, 1MW), manufactured by MWM. 2,664 NHm³/year of biogas are burned avoiding the emission to atmosphere of more than 3,600 Ton CO₂ and 25 Ton SO₂.



RENEWABLE ENERGY

Production of photovoltaic solar energy in 2012: **1,797,242** kWh (479,86 tonCO₂/year).

By the hydraulic exploitation of the *Conducción de la Traída*, has been produced **87,676** kWh (from 1 january to 31 july 2013, 23.41 tonCO₂/year). It is estimated that at peak performance the production will be of **90,000** kWh/year (24.03 tonCO₂/year).

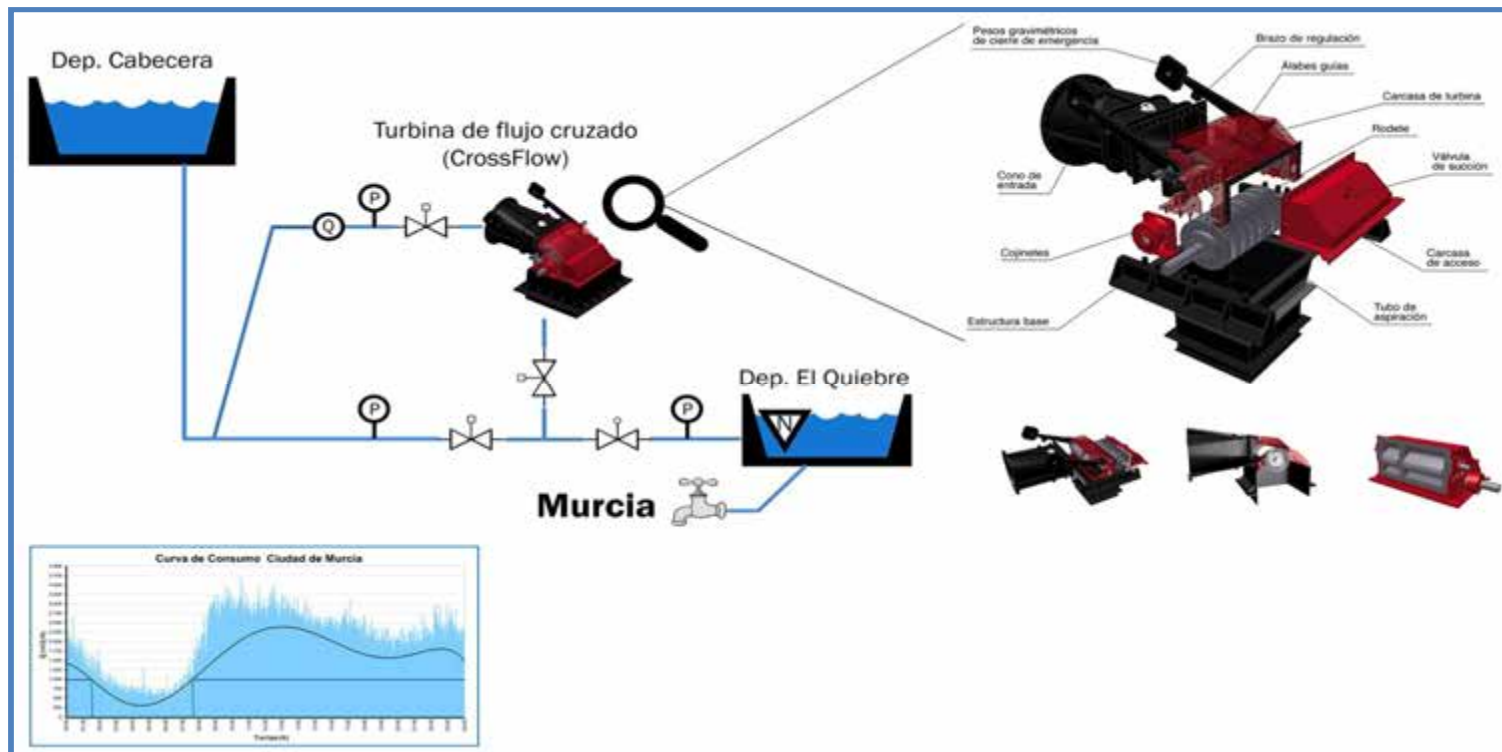


It has been identified a potential energy production through the use of microturbines of **1,011,050** million kWh/year (269.95 tonCO₂/year).

RENEWABLE ENERGY

Microturbines in mains

Microhydraulic Central QUIEBRE. 56 kW generated

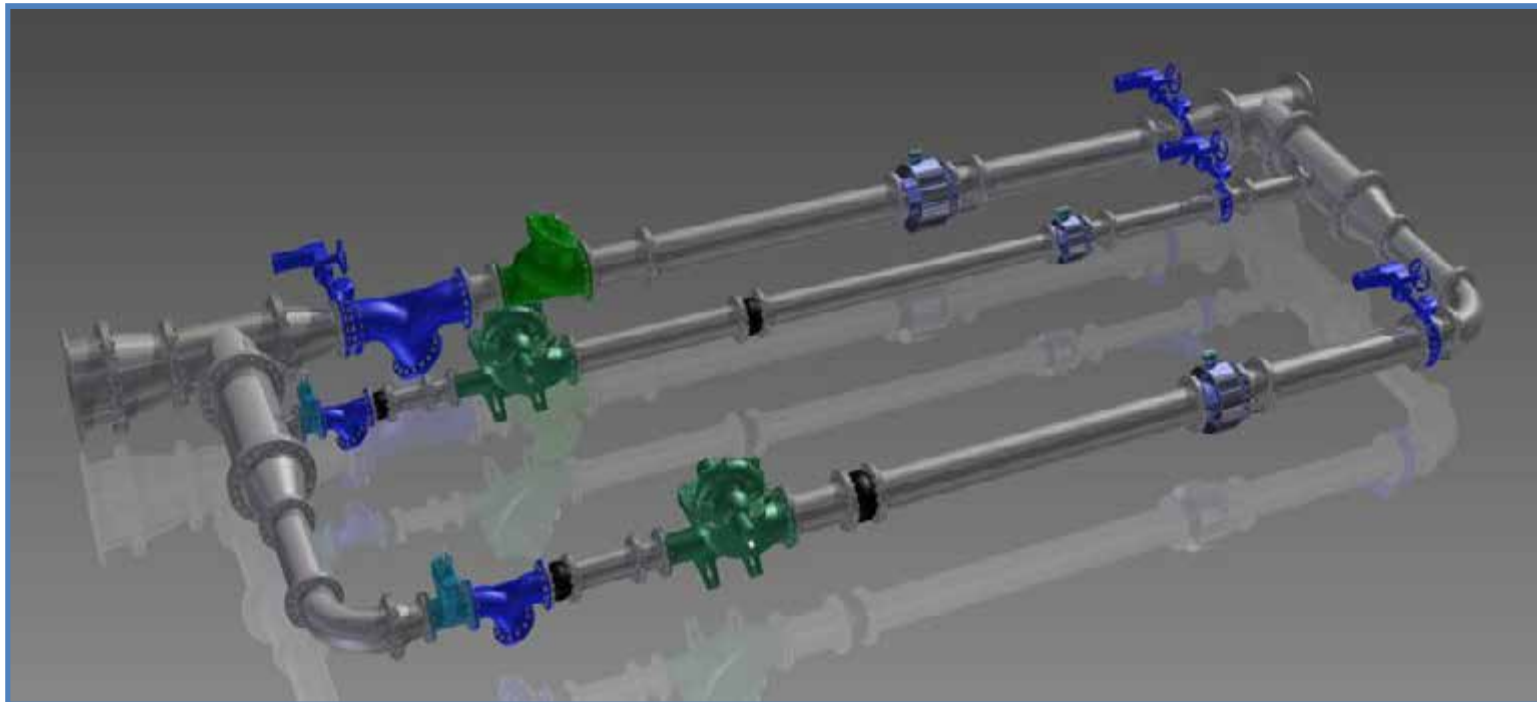


RENEWABLE ENERGY

Microturbines in mains

Microhydraulic Central C2BIS. **120 kW** generated

Aguas de Murcia has
occurred in 2013
7,716,648.06 kWh of green
energy.





Thank you

