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## Clever Time



*Armando Quazzo - Business Development Manager*

*Turin, 5<sup>th</sup> June 2018*

## About SMAT

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- **100% PUBLIC OWNED COMPANY**
- **JOINT-STOCK COMPANY - CORPORATION**



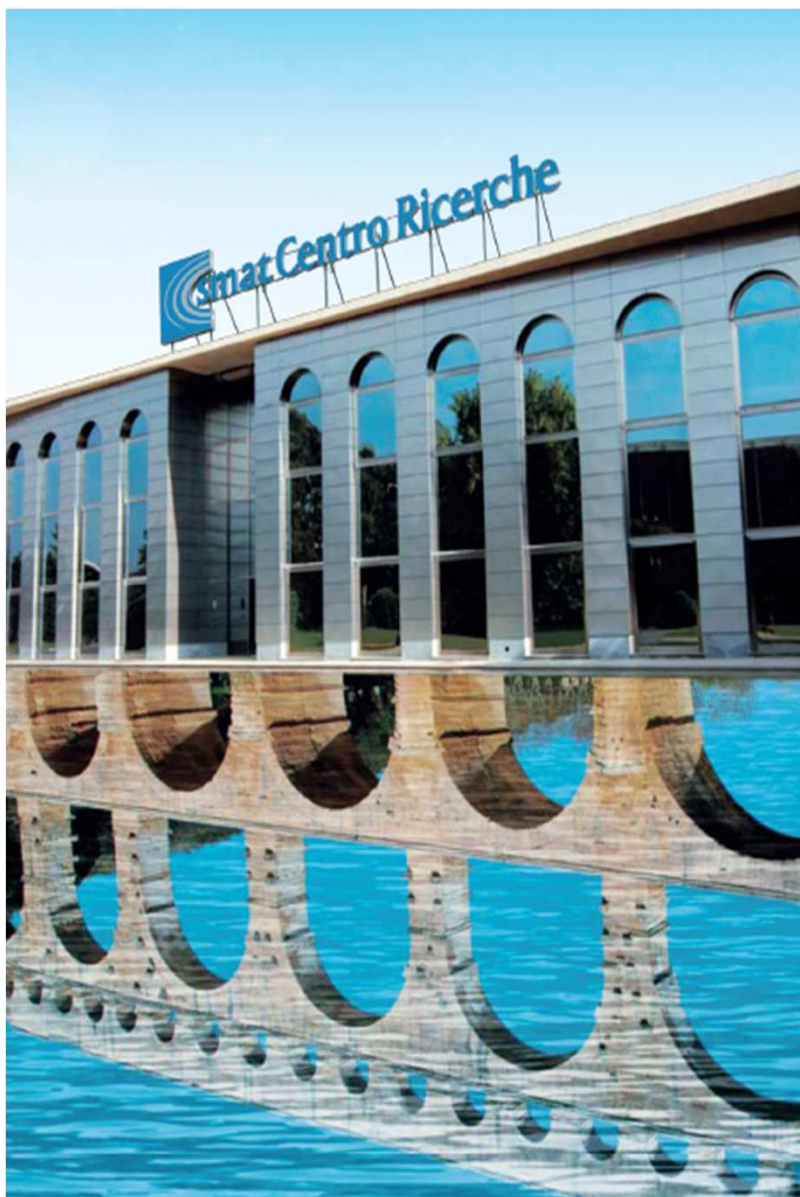
## About SMAT

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- Group of Companies
- About 1,000 employees  
(SMAT plus Parent Companies)
- Total revenues: € 413,7 mio/€\*
- EBITDA 147,6 mio/€\*
- Operating income 2016: 61,5 mio/€

***\*2016 Balance Sheet***





## SMAT Research Center

- Starting 2008, November 28
- More than 2,200 square meters
- Instrumentation: more than 4 millions €
- Research annual costs: 1,2 millions €
- Projects closed in 2017: 21
- Projects ongoing in 2017: 43 (3 Horizon 2020)
- Partnership with Universities, Polytechnics and Research Centers (Turin, Florence, Pavia, Rome, Lyon, Seattle, London, etc.): 15
- Collaboration with industry partners (Hera, Iren, a2a, Thales Alenia Space, Convion, TIM, etc.)
- Scientific publications: 13
- People involved: 140
- Research profitability: 160%



# Research activities

FEBRUARY 2018



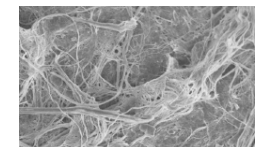
Conferito a .....  
 migliori utility nella performance legata al patrimonio tecnologico,  
 alla ricerca e all'innovazione.

Milano, 23 febbraio 2018



## Water Quality

COMPLETED RESEARCH ACTIVITIES	PROJECTS IN PIPELINE	PROJECTS UNDER EVALUATION
<b>Radioactivity (1A)</b> Radioactivity in water	<b>Haloacetic Acids and Biochar (1B)</b> Determination and removal of haloacetic acids in treated water using alternative materials	<b>Effects of Emerging Pollutants</b> Development of effect-based assays for the study of emerging pollutants in the integrated water service.
<b>EDC Suisse (2A)</b> Effect-based and chemical analytical monitoring for steroidal estrogens	<b>Analysis of emerging pollutants (2B)</b> Investigating the presence of emerging pollutants (EPs) in drinking water	<b>Chromium Membranes II</b> Evaluation of a possible follow-up of project Membranes for Chromium VI Removal
<b>Hydrodynamic Cavitation (3A)</b> Innovative methods for water disinfection	<b>On Line Micro (3B)</b> Real-time alert systems for microbial contamination in drinking water	<b>Photocatalysis</b> Evaluation of a possible follow-up of project Water Treatment through Photocatalysis and Solar Energy
<b>Chromium Membranes (4A)</b> Membranes for Chromium VI removal	<b>Aquality (4B)</b> Studying advanced oxidation processes for emerging pollutants	<b>Early Warning System for Distributed Water Quality</b> Development of an early warning system based on real-time sensors supported by distribution network modelling
<b>Asbestos (5A)</b> Evaluating the presence of asbestos fibers in drinking water	<b>Water Cavitation (5B)</b> Application of cavitation-based disinfection	
<b>Photocatalysis (6A)</b> Water treatment through photocatalysis and solar energy	<b>Chromium VI Treatment Plants (6B)</b> Evaluation of ion exchange resins and other alternative methods	
	<b>Techniques for Bacterial DNA (7B)</b> Evaluation of techniques for the concentration, extraction and purification of bacterial DNA and selection of a PCR method for DNA amplification from viable cells	



## Innovative network management technologies


COMPLETED RESEARCH ACTIVITIES	PROJECTS IN PIPELINE	PROJECTS UNDER EVALUATION
<b>Smart Disinfection (1C)</b> Smart disinfection applied to drinking water distribution systems	<b>Pipe Cleaning (5D)</b> Innovative technologies for water pipe cleaning	<b>LP-Wan Transmission</b> Integration of an existing repeater unit with LP_WAN for remote long range meter reading
<b>On Line (2C)</b> Data management from on-line analyzers and laboratory management software	<b>Pipe Breaks (6D)</b> Development of a forecasting model to define priorities in water main replacement	<b>Optical Fiber in Sewage Pipe</b> Setup of a preliminary pilot test
<b>Water Loss Management (3C)</b> An innovative and integrated approach in water loss management (testing three different approaches of mitigation)	<b>Turin Model II</b> Extension of the mathematical model of the Turin water distribution system to the connected I Municipalities and use of the model for finalized applications	
<b>The behavior of a sewage system in the event of heavy rainfall (4C)</b> Understanding the behavior of a "storm sewage system"	<b>Districtualization for Water Loss Management</b> Planning and implementation of SCADA-controlled districts within the Turin water distribution system	
<b>Turin Modelling (5C)</b> Mathematical model of the Turin water distribution system	<b>Octopus Platform</b> Development of a platform for distribution network data management and analysis (TO BE STARTED)	





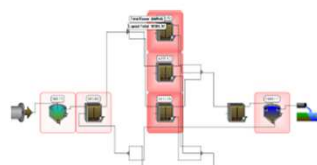
## Climate change mitigation



PROJECT IN PIPELINE	PROJECT UNDER EVALUATION
<p><b>Impacts of climate change on groundwater resources (1E)</b></p> <p>The main goals of this research are the estimation of the vulnerability of groundwater resources which will be explored both in quantitative (water availability) and qualitative (maintaining of physical and chemical characteristics) terms and the forecast of the trend of this vulnerability on a time scale of ten to twenty years.</p>	<p><b>Climate impact and biofilm</b></p> <p>Impact of climate change on water distribution systems: an integrated approach to evaluate how temperature increase may affect water quality along the network.</p> 



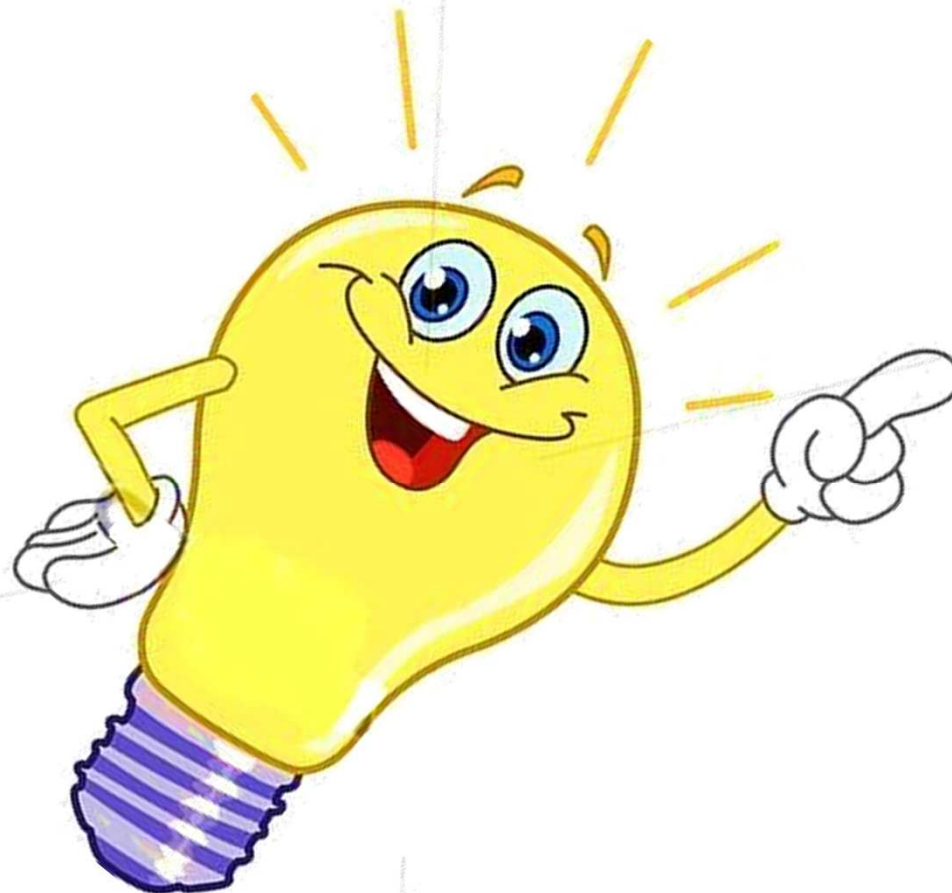
# Water Resources Management



RESEARCH ACTIVITIES COMPLETED	PROJECTS IN PIPELINE	PROJECTS UNDER EVALUATION
<b>Process Modelling (1F)</b> Models of Drinking and Waste Water Treatment processes	<b>Antibiotic Resistance</b> Determination of antibiotic resistance occurrence in environmental, drinking and waste water. (TO BE STARTED)	<b>Urban Drainage Network</b> Modelling, validation and planning of the urban drainage network for the City of Turin in some critical areas
<b>WSP Models (2F)</b> Water Safety Plan (WSP) models and case studies on three Municipalities managed by SMAT	<b>Turin WSP</b> Implementation of a Water Safety Plan for the City of Turin.	<b>Waste Water Treatment Models II</b> Extension of the model to module IV of Castiglione Torinese waste water treatment plant and implementation of the model to process improvement
<b>WSP Implementation (3F)</b> Application of the methodology developed in project		

# What are we looking for?

**Ideas!**



## SMAT Research Centre

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