

*PUBLIC SELECTION BASED ON QUALIFICATIONS AND INTERVIEW FOR THE AWARDING OF NO. 1 GRANTS LASTING 12 MONTHS FOR CONDUCTING RESEARCH IN ACCORDANCE WITH ART. 22 OF LAW OF 30.12.2010 NO. 240 AT THE DEPARTMENT OF MANAGEMENT, INFORMATION AND PRODUCTION ENGINEERING OF THE UNIVERSITY OF BERGAMO (ACADEMIC RECRUITMENT FIELD 09/B2 – INDUSTRIAL MECHANICAL SYSTEMS ENGINEERING - ACADEMIC DISCIPLINE ING-IND/17 – INDUSTRIAL MECHANICAL SYSTEMS ENGINEERING (FUND: ASSRICUNIAQUE17).*

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### **RESEARCH PROJECT**

***"Development and prototypical implementation of a Smart Metering project for companies operating in the Integrated Water System"***

The research project aims to design and to develop the infrastructure enabling the smart metering in terms of hardware and software needs. Specifically, the research activities will provide the definition of the technologies enabling the smart metering within a company that manages the integrated water system, and the design of a model to monitor a set of parameters characterizing the functioning of the plants in the water network. The candidate will have to define the data structure and the information needed to store the end-user consumption and to manage the network plants in order to introduce "smart grid" management. This kind of management should allow a reduction of energy consumption and a new concept to manage the whole network plants. Finally, the requested research activities will include the implementation of technologies and models in a pilot project with the aim to test the validity of the results obtained on the field.

Synthetically, the main phases of the research program are:

1. Evaluation of the available technology solutions and the required communication infrastructure to data transmission. The aim of this phase is to evaluate the currently available devices that allow: to storage data of water counters, to transfer data in real time (or in a batch way according to a predefined timing) and to analyze the communication methods in terms of network data transfer systems.
2. Definition of the data structure needed in the context of the integrated water system, its information content, and how data are managed within corporate IT systems. The purpose of this phase is to define the kind of data collected through the technological solutions analyzed in the previous phase.
3. Development of a prototype with the aim of testing available technologies. The goal of this phase is to test in a limited context the measuring devices, the transmission devices and the infrastructure communication to identify the possible gaps within the whole system.