



Canal de  
Isabel II

# BOOKLETS

RESEARCH + DEVELOPMENT & INNOVATION

Study on the saving potential of water for  
residential use in the Comunidad de Madrid

6





BOOKLETS  
Research + Development & Innovation

© Canal de Isabel II - 2009

Authors:

Marisa Fernández Soler  
Laurent Sainctavit

Project Direction:

Juan Carlos Ibañez Carranza

Edition coordinated by:

Subdirección de Comunicación y RR.PP.

ISBN: 978-84-936445-5-0

6

Study on the saving potential of water for  
residential use in the Comunidad de Madrid



## PRESENTATION



Canal de Isabel II's Research, Development & Innovation Booklets form part of the company's Knowledge Management Strategy and of the development involved in the Investigation, Development and Innovation Plan.

These Booklets represent an element for diffusion of projects and initiatives that are developed and sponsored by Canal de Isabel II for innovation in those areas related with water service in the urban environment.

A series of different problems that have been undertaken in each project are put forward in the Booklets, along with the results that have been obtained. The intention behind their diffusion by means of these publications is to share the experiences and knowledge that has been acquired with the entire water services sector, with the scientific community and with all those working on investigation and innovation tasks. What is pretended with the publication of these Booklets is to contribute to improvement and efficiency in water management and, consequently, in the quality of the service that is provided for the citizens.

Apart from its publication in printed format, the booklets will also be available on Canal de Isabel II's web site, into the Publications section.

## TECHNICAL INVENTORY

<b>Title of the Project</b>	Study on the saving potential of water for residential use in the Comunidad de Madrid
<b>Research Line</b>	Ensure availability /demand balance
<b>Units of Canal de Isabel II involved</b>	Deputy Direction of Research, Development & Innovation
<b>External Partnership</b>	Fundación Ecología y Desarrollo
<b>Object and Justification for the Project</b>	<p>The object is to provide an accurate quantification of the real potential of efficient domestic water saving devices and techniques in the Comunidad de Madrid.</p> <p>This is justified by the need to handle realistic data with a view to planning saving policies.</p>
<b>State-of-the-art contribution</b>	<p>Assess the feasibility, implementation costs, saving efficiency and potential, by means of direct tests, of the different plumbing technologies aimed at saving water under real use conditions; going beyond the information specified by manufacturers.</p>
<b>Summary and relevant milestones of the project</b>	<p>Of all the saving devices installed, final consumption registers were obtained from 249 units in 80 homes. At the same time, another 45 homes, where no specific technological elements had been installed, were monitored. The saving devices installed included:</p> <ul style="list-style-type: none"> <li>• thermostatic taps for showers</li> <li>• water saving aerators for sinks and kitchen faucets</li> <li>• low consumption shower heads and shower flow reduction devices</li> <li>• flushing control mechanisms on cisterns: double flushing, or flushing interruption</li> <li>• pressure reduction devices for supply lines</li> </ul> <p>Hourly consumption was monitored for a period of twelve months, after which, the consumption data collected was studied and the conclusions and final report were prepared.</p>
<b>Summary of the results obtained</b>	<p>Consumption savings per device displayed average reductions that reached values of:</p> <ul style="list-style-type: none"> <li>• Water saving aerators for taps, 17%</li> <li>• Efficient shower head, 21%</li> <li>• Flushing control mechanisms on cisterns, 34%</li> </ul> <p>The average reduction in consumption per household, having installed all the devices, reached 15%.</p> <p>The final survey displays that 74% of those interviewed classified the devices installed as "good or very good", 38% said they had changed their consumption habits, 56% stated they had not noticed any change in their level of comfort and 34% perceived an improvement in their level of comfort.</p>
<b>Research Lines open with a view to continuing the project</b>	Extend the saving potential study to a permanent monitoring panel on the use and consumption of water in the Comunidad de Madrid.



## EXECUTIVE SUMMARY



Among the actions planned and performed by Canal de Isabel II to ensure the balance between the resources demanded and the supply priority treatment is given to all measures aimed at improving efficiency in the use of water, both at supply system installations and at private users' installations. This study on the saving potential in the consumption of water by means of technical devices that enable a more efficient use of water by users without affecting their level of comfort has been prepared with a view to contributing to the said purpose. The study only focussed on the household use of water, as this represents over 60% of the total use of water in the Canal de Isabel II system.

The study seeks to assess the feasibility, implementation costs, saving efficiency and potential, by means of direct tests, of the different technologies aimed at saving water under real use conditions, and, therefore, beyond the features specified by manufacturers. This has been achieved by installing different sets of saving devices at a selected sample of households and monitoring water consumption on a permanent basis, before and after the installation; analysing the results obtained and the improvement in efficiency attributed to each one of the devices. More specifically, 249 devices were installed in 80 homes and water consumption was monitored over a period of 12 months for each household and for each water consumption device in the house. Additionally, 45 households where no devices had been installed were also monitored for comparison purposes.

Water saving devices were installed on taps, showers and toilets. More specifically; thermostatic taps for showers, air injection and water saving heads for toilet and kitchen taps, low consumption shower heads, flow reduction devices for showers, flushing control systems (flush interruption and double flushing) for toilet cisterns and pressure reducing devices for supply lines. The devices and mechanisms were preferably selected from among those that feature environmental certificates. The use of the devices in the households involved in the study depended on existing features and equipment in the said households. Almost 55% (70 homes) did not have any type of saving device installed on sanitary equipment, while the saving devices most commonly found in the study sample were efficient toilet mechanisms.

Of the devices monitored, the most effective for reducing internal water consumption in the households (not including electrical appliances) were the aerators for taps, efficient shower heads and flushing control mechanisms for toilet cisterns. The water saving aerators reduced consumption on taps by about 17%, efficient shower heads reduced consumption by about 21% and flushing control mechanism on the toilet cisterns reduced toilet water consumption by 34%. The average total reduction in consumption in the houses monitored by introducing the said three devices was 13.1%, reaching 15% in the most efficient conditions. The houses where no technological changes were introduced did not display any significant difference in consumption throughout the study period.

In spite of certain resistance by users to cooperate in the study -only 46% of those contacted wished to take part- those that did consent to the technological changes were, in most cases, satisfied with the products. 74% of participants classified them as "good" or "very good" and 90% did not appreciate any change in their comfort level or even considered that their level of comfort had improved by using the said water consumption devices.

Canal de   Isabel II