



Coordinators Column



I am very pleased to present to you this special edition of the AquaFit4Use newsletter. This newsletter is completely dedicated to our Mid-term event. This event is coordinated by the Consortium member UCM.

Watching a football match I was wondering what would be discussed in the changing room of both teams during half-time. Continue the earlier agreed tactics or change the strategy or even exchange some players? And is it only the coach who is telling the players how to continue or are also these players in the position to give their opinion? Finally they have to do the job. In the stadium there are sitting at least 50.000 coaches with their opinion, but they are not asked.

Although carrying out a project like AquaFit4Use is not comparable to a football game of 2 times 45 minutes, there are a lot of parallels. Most important is that we are working in a good team going for the best result. And that it is good to reconsider your strategy also based on what has been accomplished in the first half.

And now we are also at halftime in AquaFit4Use. Our changing-room is Oviedo and this is the moment that we can change things for the second half. But we are probably in a better position than the coach of a football team and also our audience is. Every person interested can comment and give his input for the plans of the coming period. And therefore I like to remind you the importance of this Mid-term Conference in Oviedo for all of us. The good organisation by the Knowledge Manager ms. Angeles Blanco and her team, the close cooperation with the Anque Congress, with high level invited speakers like Peter Wilderer and Tom Vereijken and last but not least the meeting with our Scientific Panel will guarantee a very useful meeting providing good recommendations for the second half. That the Mid-term Conference of AquaFit4Use does coincide with the World Championships Soccer in South Africa can only improve the ambition during this meeting.

Looking forward to meeting you in Oviedo !!!

Willy van Tongeren

Introduction—Foreword

By Prof. Angeles Blanco

The AquaFit4Use Mid-term Conference will take place from 13th—16th June in Oviedo (Spain) and is organised in collaboration with the Anque Congress. It creates a perfect opportunity to achieve our aims: present our results in an open forum, discuss the bottlenecks with other experts, attend other sessions on related topics, participate in the debates and round tables and much more. This is one more step towards the sustainable water management considering the integral water cycle.

It is important that we attend the conference with the mentality of sharing knowledge and experience, to be able to learn from each other and move forward to the future; in this way, each of us will contribute to achieve the objectives of AquaFit4Use.

After nearly two years of strong collaboration between all AquaFit4Use partners we have achieved great progress in all Sub-Projects and their Work Packages, from the most basic and scientific research to the most applied one. As a result of the project a good number of fundamental results have been applied and several pilots have taken place. According to the research program for the next two years we have still a long way to go but I think that we have already taken big steps towards a more Sustainable Water Use in Industry.

The main results achieved so far will be presented in 4 dedicated sessions. We will communicate the innovation potential of the project outcomes and stimulate the use of the new technologies and products. Beside the dissemination objectives, during the research carried out new questions and challenges have arisen and it is the right time to open a debate among water technology experts to focus the next steps of research.

Among the many project results that will be presented during this event we will introduce and demonstrate the Water Quality Management Tool, what will provide us with feedback from the conference participants. Several process unit models have been developed and different sensors have been evaluated which results will be shown. Results from lab studies and pilot plants on membranes, oxidation processes, treatment of concentrates, water reuse in textile, and more will also be shared with the audience. New technologies which are in demonstration phase e.g. Denitrifier for biofouling prevention, 3FM[®], and evapo-concentration will be highlighted. Four industrial pilot cases will be presented and the use of simulation to select the best alternatives will be shown. The collaboration with other organisations e.g. with the European Water Partnership (EWP), to define the necessary criteria and indicators to assess a "sustainable water use in industry" will be addressed and preliminary results from the pilot study in a paper mill will be presented.

Finally, the efforts carried out to transform information into high value knowledge will be considered. Some examples of the Knowledge and Technological Portfolios will be openly presented during the AquaFit4Use-Poster Session. On the other hand, within the objective "learning from each other" AquaFit4Use seminars have been prepared internally that will be open to all conference participants and several tailored workshops will be organised during the event for AquaFit4Use partners only.

In conclusion,
we are ready for the Mid-term Conference!!!

For more information:

www.anque2010.org

www.aquafit4use.eu



Goal of the shared event

Europe has extensive knowledge and experience in developing solutions in the field of water. However, the fragmented character of the European water sector strongly limits its potential. **The aim of the AquaFit4Use Mid-term Conference and Anque Congress is to establish a debate forum for the exchange of information and for a better collaboration and/or coordination between companies, administrations, public organizations, research institutes and universities.** The goal is to detect the future needs by analysing the past and solve the future problems by understanding previous good and bad experiences. **The final aim is to give solutions for today and to open new perspectives for the future.** During the different sessions the current bottlenecks and limits of the concepts, scenarios and technologies used today will be reviewed and the latest scientific and technological advances will be presented in order to move towards a more sustainable water management. **This aspect is very important for our initiative, given that AquaFit4Use is the current leading project for water in industry in Europe.** The balance between water demand and water availability is critical in many regions and it is affecting the water quality. For integral water management, the traditional water cycle conception is no longer valid, it needs to be complemented with innovative concepts by which wastewaters are considered an alternative water source for different uses after their reclamation.



Europe is focused on securing sufficient quantity of good quality water for urban, industrial, agricultural and recreational uses and we cannot forget that the industry has a significant impact on available hydric resources since it consumes several billions cubic meters of water per year.

To face the challenge of considering and incorporating industrial water into the integral water cycle, we need a multidisciplinary approach, much wider than the current one of our project. The participation in the Anque Congress will give us the opportunity to establish **contact with other engineers and researchers, but also with economists, lawyers, journalists, politicians, etc.** The other opportunity

we have is **to open our scientific and technological results and knowledge to the public.** This will provide solutions for Society e.g. minimising the consumption of water resources, maintaining the quality of the water reservoirs, improving the quality of the river basins, using alternative water sources, after its reclamation.

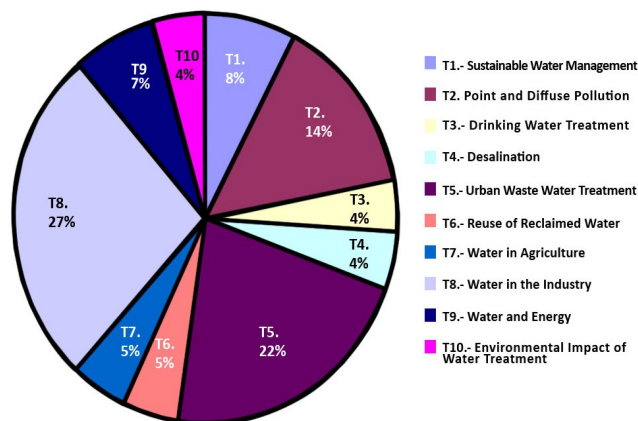
We must look into the industrial water use and the improvement of industrial water management from the integral water cycle perspective. [AquaFit4Use](#) shares this commitment with the [Anque Congress](#).

Program

As mentioned the AquaFit4Use Mid-term event will take place in collaboration with the [7th Anque Congress](#).

More than 350 works have been received in the different Thematic Areas of the Congress, as shown in the next figure. 175 oral lectures have been distributed in six parallel sessions each day and the others will be presented in the poster sessions. Furthermore, 4 plenary lectures from speakers of high relevance, four roundtables and much more is planned.

Within the thematic area of Water in Industry, 47 works have been received and three technical sessions will be held beside the four sessions of the AquaFit4Use Mid-term Conference.



Which activities are organised by AquaFit4Use?

26 lectures will be presented during the conference covering the assessment of a sustainable water use in industry, the efficient modelling of different water stages, the main results achieved so far at lab scale and at the pilot plants, the new bottlenecks found, the application of advance treatments and several industrial cases. Examples of how through the development and implementation of new tools, protocols and more efficient, reliable and cost effective technologies, it is possible to reduce fresh water consumption between 20% and 100%, depending on the sector, without affecting productivity, will be also shown as well as a case where 100% of fresh water is substituted by reclaimed water from a municipal waste water treatment plant.

These presentations have been divided in **four technical sessions**:

- Session 1.- Sustainable Water Management
- Session 2.- Waste Water Treatments
- Session 3.- Advanced Treatments
- Session 4.- Good examples of Industrial Cases

We have also organised an **AquaFit4Use-Poster session** in which some examples from the Knowledge and Technological Portfolios as well as other results from the project will be presented.

Within **AquaFit4Use-Seminars**, two open seminars have been organised as well as several internal tailor workshops according to the principle "learning from each other":

- Membrane Bioreactor Seminar and Workshop (organised by Veolia).
- Chemometric methods as useful tool for characterization of different environmental samples (organised by University of Maribor).
- Tailor Internal Workshops

Finally, we will have the **Demonstration Sessions** of the Water Quality Management Tool developed within AquaFit4Use, organised by Most for Water.



AquaFit4Use Sessions

• Session 1 Sustainable water Management

A summary of the big steps achieved in Sustainable Water Use in Industry thanks to strong cooperation during the last two years will be given. Emphasis is on sustainable water management and the methods and tools that have been developed within the project. Presentations about Water Quality Definition and Water Quality Control will be given and the developed Water Management software tool will be presented. The collaboration with the EWP to develop a common tool to assess sustainable water use in industry will be summarized and, finally, a presentation will be given of water network optimization in two paper mills.

• Session 2. Waste Water treatment

In the second session the different aspects of waste water treatment are discussed. Several examples on mathematical modeling and validation of wastewater treatment units and water circuits will be presented. Besides presentations about waste water treatments applied to different sectors of industry, at lab and pilot plant scale, are planned: MBR in chemistry, membranes in papermaking and different treatment trains at lab scale in textile. The treatment of reverse osmosis concentrates by traditional methods is also considered and, finally, attention is given to sensors and monitoring.

• Session 3 Advanced treatments

The emphasis in session 3 is at innovative treatment technologies for pre-filtration (3FM), biofouling reduction (Denutritor), scaling prevention by different types of crystallization processes (FACT), desalination (FTC) and evaporation. Besides presentations are given about AOP treatments in combination with other treatment technologies applied to process waters and concentrates.

• Session 4 Industrial cases

Last session is devoted to 4 good examples of industrial cases: possibilities for a sustainable water use in the paper sector; strategies to reuse water in the textile industry; advance wastewater treatment in the chemical sector and current and future cleaning in place (CIP) methods applied in food industry.

Round tables

Making a sustainable integral water management a reality is not an easy task. Apart from using the best available and emerging technologies it is essential to promote changes in mentality, attitude, principles, priorities, scenarios and politics. A solid cooperation is necessary to achieve a close collaboration between researchers, companies, politicians, business men, sociologists and many others. The slogan of the Congress is "Integral Water Cycle: present and future, a shared commitment". This shared commitment between all parties is necessary to find innovative and effective solutions. Four round table sessions are organised in the Congress in which important water-related issues such as the regulatory framework, the financial possibilities, the importance of innovation and the relevance of the media mass will be considered. The topics of the roundtables are:



- **"Water: Regulatory Framework"**, with Ángel Cajigas as moderator, president of the Technology Association for Water Treatment (ATTA), has the aim to analyse the challenges of the water regulatory framework.
- **"Water: Opportunities for R+D+i"**, with Herminio Sastre as moderator, FICYT president, will focus on the analysis of the available tools for financing R+D+i and for the transference of results to implement innovative solutions.
- **"Water in the Mass Media"**, moderated by Manuel Toharia. Mass media are key actors to achieve a change towards sustainability due to their capacity to inform and raise social awareness.
- **"Sustainable Water Management"**, moderated by Adrián Baltanás, Director of the Spanish Association of Water Technology Companies (ASAGUA), will focus on solutions to accomplish the Water Directive and to balance water demand and water availability.

Specific Symposiums

• Challenges and Opportunities of Water and Energy: Two key resources for the 21st century

Water and energy are two interrelated key natural resources for sustainable development. They determine economical decisions in agriculture, urban development, tourism and industry. Water-related problems are expected to worsen in the near future and the energy problems will also aggravate. The need to find sustainable solutions to the problem of water and energy is clear. Water is needed for energy production and energy is required to achieve the closure of the integral water cycle. It is necessary to establish joint policies for the integral planning of these two important resources. This symposium will constitute a forum for the debate and exchange of information among companies, administrations and public institutions, research centres and universities, in which the latest scientific and technological advances applicable to the water-energy nexus will be presented, identifying to what extent the integral water cycle requires a higher energy consumption to assure the treatment of the water to achieve the required qualities for each particular application. In this scheme of interdependence, water saving is a synonym of energy saving.

• Emerging contaminants: New control needs in the integral water cycle of 21st century

In the last decades, important steps to control and treat conventional contaminants have been carried out which are extensively regulated. Scientific and technical developments, joined to sanitary advances, allow discerning new challenges in the present and future quality control of waters in their integral cycle. The new analytical techniques allow detecting substances at very low concentration levels, making it possible to analyze, more in depth, the behaviour of micro or emerging contaminants. Emerging contaminants include a variety of substances from many sources: wastes from human or animal pharmaceuticals, endocrine disruptors, drugs, pesticides, ingredients of personal care products, biocides, fluoride compounds, disinfection by-products or nano-materials. The presence of these compounds in waters implies many technical and institutional challenges for the society, the environment and the professionals of the sector. During the sessions the latest scientific and technological advances applicable to emerging contaminants will be presented and discussed.





Upcoming events

13-16 June 2010
AQUAFIT4USE Midterm Conference
AQUAFIT4USE General Assembly
 In collaboration with "The Integral Water Cycle: Present and Future", 7th International Congress of ANQUE
 Oviedo, Spain
www.anque2010.org

2-4 June 2010
 7th leading-edge conference on water and waste-water technologies
 Phoenix, Arizona, US
www.let2010.org

9-11 June 2010
 Austria national Young Water Professionals Conference (IWA)
 Vienna, Austria
gaul@oewav.at

16-18 June 2010
 Spain National Young Water Professionals Conference (IWA)
 Barcelona, Spain
www.fundacionagbar.org/ywp.spain

23-24 June 2010
 The 1st International Water Quality Conference.
 The University of Leeds, Leeds, UK.
<http://www.waterratleeds.org/>

27-30 June 2010
 Membranes in drinking and industrial water treatment (AQUAFIT4USE contribution)
 Trondheim, Norway
www.mdiw2010.no

28 June - 2 July 2010
 Singapore International Week
 Singapore
<http://www.siww.com.sg/water-convention>

15-18 August 2010
 Biofilm reactor technology
 Portland (Oregon), USA
www.wef.org

Interview with President of Scientific Committee Anque

Prof. Angeles Blanco interviewed Prof. Eloy Garcia, President of the Scientific Committee of the Anque Congress.

What are the main Spanish Challenges in terms of water?

The main challenge is to assure water availability to all users at a reasonable price. Other specific challenges are:

- Concerning sanitation, it is necessary to achieve a homogeneous standard and clear politics for a common water management in all city councils.
- The traditional water cycle is no longer valid, we need to consider the new alternative resources e.g. reclamation and re-utilisation.
- Water saving in irrigation by developing and applying new technologies.

How much water does the industry consume in Spain?

In Spain the water consumption is higher than 30.000 cubic hectometres. From that, about 10-13% is for domestic and urban consumption, another 10% for industry and the rest is used for agriculture.

Although, in percentage, the industrial water consumption is low we need to think on the energy consumption associated as well. This is also an important reason to save water, the cost of the different treatments.

Is research the main topic of the Congress?

All subjects from the Congress Programme have a research part but it is not necessarily that research is associated to a white cote and a test-tube. Applications to practical cases will be presented as well as issues related to water management, which will not be valid if they are not based on research.

Is water research still insufficient?

There are many organisation around the world focused on water research. 60% of the Millennium Goals are concerned with water issues and there is a growing social concern on water topics that is associated to an increase in research activities. At this moment, awareness might be enough but the knowledge necessary to solve the current problems is very wide and heterogeneous. It goes from the understanding the impact of a given activity on the ecosystem to legal aspects, economic issues, etc. It is a huge challenge.



Speakers at plenary sessions

Prof. Peter A. Wilderer, Water Stockholm Prize in 2003 and member of our Scientific Panel. His conference title is "Paradigm Shift in Urban Water Management". He will present two main topics:

- 1) The universal application of "single pass solutions" is hardly feasible in areas where the demand for water exceeds the capacity of the locally available water sources and therefore it needs to be complemented by innovative concepts;
- 2) Water science and technology should no longer be considered as a well matured discipline governed by civil and environmental engineers. It is rather a holistically oriented discipline in a state of evolution.

Mr. Tom Vereijken, President of the European Water Partnership will present "The Water Future: the European Perspective". He will present different ideas about how to reach the European Vision 2030 "We have achieved sustainable water resource management and universal access to modern and safe water supply and sanitation because we value water in all its dimensions – in its economic, social, environmental and cultural importance". He will also discuss the importance of awareness, planification, sustainable water management, the integral water cycle, the development and application of new technologies, etc.

Prof. Marc Anderson, from University of Wisconsin will present "An inside on the future of desalination technology". In the year 2000, Fortune Magazine declared "Water will be the oil of the 21st Century." While the world seems to worry about energy deficiencies, water will likely be even more important. This lecture particularly addresses the subject of desalination of brackish and sea waters by discussing the methods currently being employed as well as novel new competing technologies that are just now either in laboratories or in pilot production e.g. thermal methods; membrane processes of reverse and forward osmosis, electro dialysis, and capacitive deionization.

Mr. Miguel Lopez, Director of AFRE and President of the Spanish Water Technology Platform. He will present the current status of the platform and the developments of the new research agenda.



More information

- AquaFit4Use website: www.aquafit4use.eu
- Anque congress website: www.anque.org : **you can still register!!**

VISIT OUR WEBSITE!

www.aquafit4use.eu

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