

Water for life requires ...





... inventiveness



The blue planet must remain in balance.

Darkness surrounds the astronauts in space and then a fascinating blue planet appears before them: Earth. Described by Apollo 14 astronaut Edgar Mitchell as a sparkling blue and white jewel, almost two thirds (71%) of the surface of this planet is covered in water. It sounds paradoxical that for the people living there, however, water is an extremely scarce resource. In fact, only about 1% is available as vital drinking water.

Most of it is salt water or water that is attached to the poles as glacial ice. Sustainable use of this precious resource is all the more important. Water-intensive industries such as the paper industry, are already making enormous progress in this respect. The international decade for action “Water for Life”, proclaimed by the United Nations, began in 2005. Therefore, when it comes to conservation of resources, topics such as water scarcity, wastewater treatment or sustainable water use will be the focus of global interest time and again up until the year 2015. In addition, “Water for Life” should promote sustainable forms of water use and reduce by half the number of people without access to safe drinking water.

Water shortage is getting worse

Today, half a billion people in 31 countries around the world already suffer from a lack of water. They have too little clean drinking water at their disposal or none at all. Water could become even scarcer in the future.

The Intergovernmental Panel on Climate Change fears that this number will increase to three billion by 2025. And this is not because there will be less water but because the per-capita consumption is continually rising and more and more people have to share the fresh water supplies.

The example of New York illustrates what impact several small measures towards more efficient and, therefore, sustainable use of the valuable resource water can have. In 1990, there was a water shortage in the megacity, which forced the entire city to save water. The present balance proves that a great deal can be achieved in private households. Measures including flushing the toilet with less quantity, repairing pipes or flow restrictors for fittings resulted in each resident using 100 liters less water per day than in the previous ten years. The paper sector in particular proves that industry also sees its responsibility and takes it seriously. For years, they have been working on doing justice to the resource water by



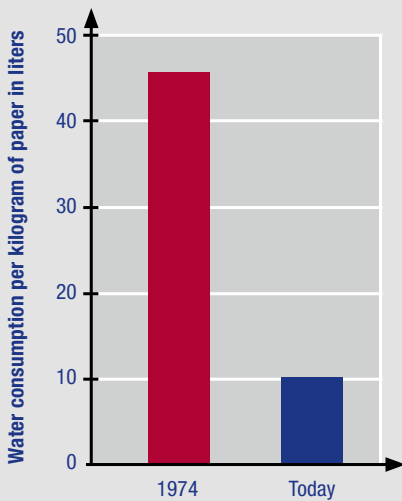
The paper industry can reduce white water loops and save water.

In 1990, there was a water shortage in New York that forced the entire city to conserve water on a long-term basis.

developing new process technologies and continually reducing consumption.

Less water per kilo of paper

Two figures illustrate what the efforts in the paper sector have already achieved. Back in 1974, 46 liters of fresh water was used to produce one kilogram of paper in Europe. Today, while the average consumption is just ten liters. In the same period, the water requirement for pulp production fell by 75%. Voith Paper Environmental Solutions (VPES) is working on a paper production that uses even less freshwater and produces even less wastewater. The Voith Paper group of enterprises, which is still in its early years, has found a solution for reducing the specific water consumption per kilogram of paper even further:



Water consumption on average for the production of 1 kg of paper in Europe.

The Voith R2S Reactor at SCA Packaging in Lucca, Italy, takes care of the anaerobic treatment of all the factory's water. This produces biogas corresponding to the heat consumption of more than 1,700 German households per year.

by recirculating recycled wastewater. If you consider that approximately 8,000 paper mills produce around 383 million tons of paper, board and cardboard worldwide, you get a clear picture of the scale of sustainable production in this sector. What lies behind the solution by VPES is a system technology that enables sustainable use of the precious resource, water.

Wastewater goes back to where it came from

The innovative R2S Anaerobic Reactor technology combined with the Lime Trap opens up new possibilities. It makes the lime problem manageable and therefore opens up new possibilities for closing the white water circuit further. It enables biologically treated and decarbonized water to be

recirculated into the production process. It is precisely this kind of water recycling that ensures the average water consumption can be reduced further. VPES has therefore succeeded in coming a step closer to the “zero liquid effluent mill” it has been striving for since the 1990s.

In the R2S Anaerobic Reactor the suspended organic load in the wastewater is converted into biogas with a high calorific value by a digestion process.

This degrades around 80% of the COD load (chemical oxygen demand). The biogas that is created can be used to generate e.g. “green energy” in the mill in a combined heat and power station. This goes in line with the costs for sludge treatment and disposal. Furthermore, energy consumption for the aerobic stage, which

is downstream from the anaerobic treatment step, is reduced.

“Water, a shared responsibility”

The VPES example makes it clear that Voith Paper is supporting the paper industry’s commitment to deal with the resource water in a sustainable manner with its new integrated water treatment concept.

The classic view of wastewater treatment as the “end of pipe” is undergoing a radical change. Recycling wastewater moves this last stage in water clarification closer to the production process and therefore requires a comprehensive process control system. The “World Water Development Report”, which is published every three years since 2003 under the guidance of UNESCO, provides information

about the current situation of water reserves. “Water, a shared responsibility” is the name of the latest report, which leaves no doubt that proactive technologies to counter further water shortages must be implemented throughout the world. And this means beyond the “Water for life” decade too.

These kinds of technologies are essential to ensure the blue planet, the view of which leaves not only astronauts spellbound, remains in balance and that paper will be able to be produced in greater harmony with nature in the future.

The Lime Trap at Leipa paper mill in Schwedt, Germany, daily removes about 3 tons of lime from the wastewater.

