

Innovations for clean water



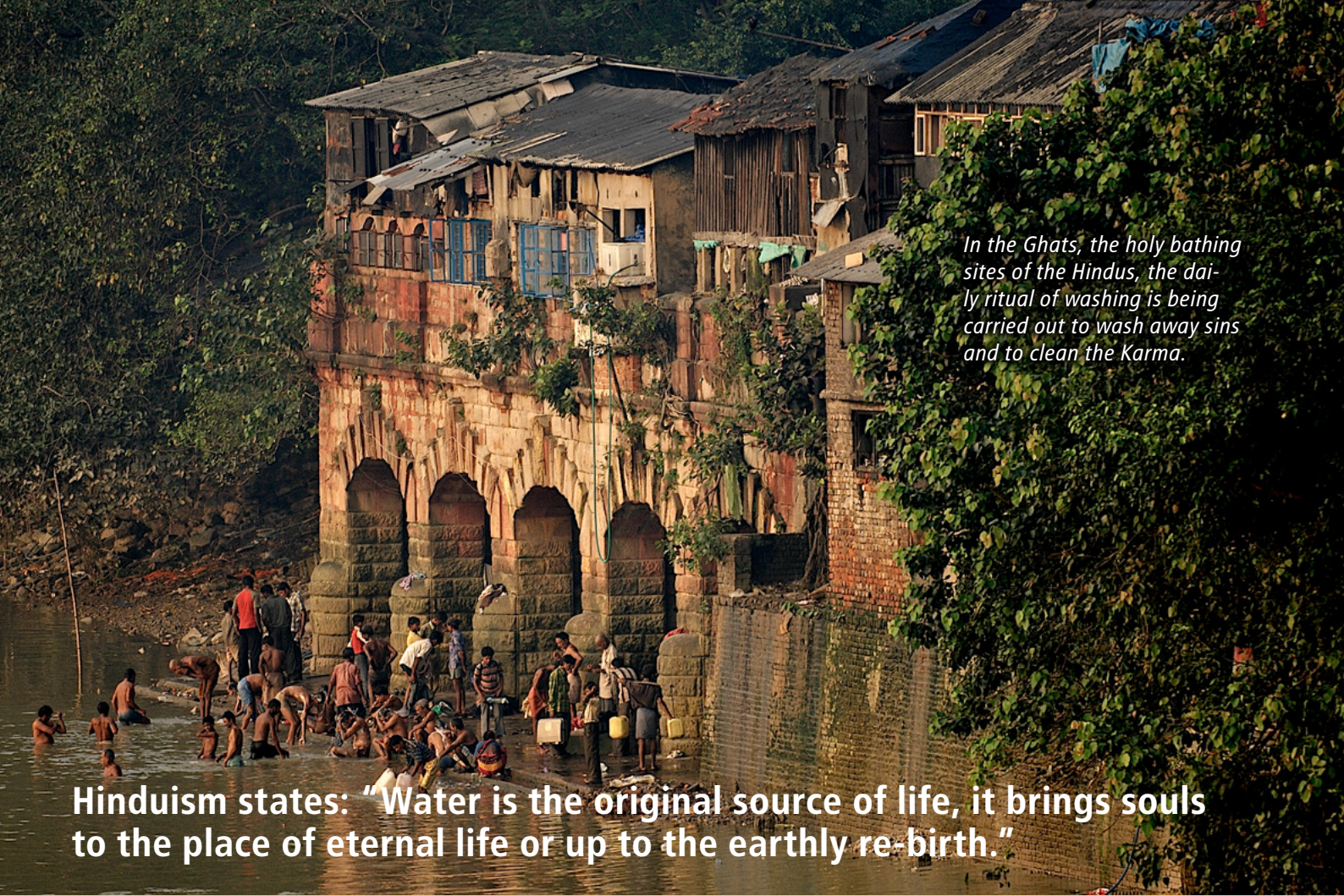
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The magic of India

India was always a myth: the legendary orient, the magical East and the enchanted Far East. Now, added to this, comes a new myth: the booming economy. And with this many new challenges: climate change, environmental pollution, water problems. Nevertheless – despite everything, one thing remains: The magic of this breathtaking subcontinent.



In the Ghats, the holy bathing sites of the Hindus, the daily ritual of washing is being carried out to wash away sins and to clean the Karma.

Hinduism states: "Water is the original source of life, it brings souls to the place of eternal life or up to the earthly re-birth."

As the water, with the hundred year tsunami, came to Elliot's Beach in Mamalapuram, countless people were sacrificed and many houses as well as historical structures were flattened. One of the few buildings which survived the catastrophe undamaged is the Ashtalakshmi Kovil Temple directly on the beach. The people here accepted their destiny with resignation and today go about their daily business as best as possible.



As original source of life, water influences the complete life of a Hindu and thus, practically, has all power – for good or bad.



Report & Photos: Uwe S. Meschede

It was my first time. I had prepared myself over a long period, had carried out a lot of research, had read a great deal – not only the Lonely Planet, also Helge Timmerberg’s Shiva Moon or Hermann Hesse’s Siddhartha. I had seen – for the nth time – Ghandi. I have spoken with people who had been there, had absorbed every bit of information that was available ...

Thus I considered myself to be well-prepared – physically and, above all, psychologically. Far from it. Travel educates. And allows you, again and again, to look beyond the horizon: that of the world; that in one’s own head. Incredible India.



Heat, noise, dust and garbage stupefy the understanding of the virginal India traveller. But India offers more, much more. A fascination, which will never leave again, will appear to the one who keeps his eyes open.

It is boiling hot. Relative humidity: practically 100 percent. I still detect the lead tasting dust of the road on my tongue as, on the first day in Chennai, originally called Madras, I cross over the road, in order to climb into the car which is meant to take me to my actual destination. I still detect the biting prickling in my nose as – hours later and 40 km further on – I leave my car again – in the middle of the tiny village of Kancheepuram. I want to go by foot for the last couple of hundred metres to the destination. I want to understand where I am. Frankly, I want, as with every journey, to take in the whole country, the whole gigantic sub-continent with over a billion people, all in one go. My two companions, *Sanjib* and *Singaram* from the Indian ATB partner, *Mother Indus Aqua Solutions*, leave me to it. Although their

disbelieving glance tells me clearly: “Forget it!” The heat is killing. All of a sudden. And it multiplies in perception what should better be divided: the noise of countless mopeds, the stink of the piles of garbage which are piled at the edge of the road, the many naked feet, which – pathetic and maltreated – certainly have never possessed a pair of shoes to call their own. On a building site I see Indian women dressed in colourful saris who, driven on by a foreman, balance on their heads heaps of sand, cement and brick, heavy as lead, up to the next issuer of orders. And already the next pile of garbage: in the hope of rich booty a herd of cows stick their nostrils into the evil morass. In the middle of this, again a colourful sari – this time searching for something or other. Here it seems many are search-

ing. And be it only after good Karma. Incredible India. On we go. Several cows later and richer for several succinct sensual stimuli, a large white arched gateway, similar to that of the Maharaja Palace from the monumental spectacle “The Tiger from Eshnapur” or “The Indian Monument” suddenly appears from nowhere. The text written over the palace archway informs me, that I have arrived: the *SRM Institute for Science and Technology*. And: that India combines all opposites in itself, that here the paradise can lie directly alongside purgatory. “For every single revelation which one meets concerning this gigantic and complicated country, the opposite can always also apply”, so says *Joan Robinson* from the *University of Cambridge* about this phenomenon. Incredible India.

Footnote: KARMA plays an important role in India and in the Hindu belief: Every action, every thought, according to this, has inevitably a follow-on – in this or in the next life. The way you behave and act is how you will turn out. Good results from good deeds, bad from bad deeds. « If only – above all in this life – it was so simple!

Behind the archway begins what the western world actually only knows under the synonym "Bangalore": the intelligence of India. Enormously motivated young people, mostly from the middle class – but nevertheless amounting to between 200 or 300 million people – studying at the 160 universities, 30 university equivalent establishments and 10 institutions of national significance, help to create the Indian boom. In this university, for example, there are faculties for all forms of natural science, engineering and economics. And: medicine. No wonder that the first AQUAMAX® wastewater treatment plant in India was, of all things, installed here. Ultimately, education and environmental awareness go together, they say.

"This is the wrong way", is the response as I ask on the campus which way leads to the wastewater treatment plant. In his best Indian English which, however, is barely made for

my ear, an old man explains to me in a complicated manner that I must go around outside: back through the white archway, then right, next road right again and then straight on. The road turns out to be a sand path, the sand path to be a trap: never tread into an Indian puddle, it can be a metre deep. And the trousers ruined up to the hip. On the left, once again a building site with toiling women; on the right, again mountains of garbage, this time with children playing in it. Behind a group of simple huts, cobbled together out of wooden pegs and dried palm leaves. As I learned later, here live the building workers with their families.

In front of a multi-story building shell at the end of the sand path I recognised my companions who were waving in panic. Apparently I had taken longer than I should have. My wish to get to learn India in one go had somewhat deepened the wrinkles in their faces and had dulled the expression in

their eyes. However, still friendly, "Do you like India?" "Yes, I do. It's incredible."

Outside the monsoon season, that is between January and September, the water supplies in this region regularly come to a standstill. Precipitation and high temperatures here often allow more than just the plant world to collapse.

The *SRM University*, a private institute with – for Indian conditions – not insignificant study fees, wanted to be protected against this and, even in dry periods, did not want to be without gorgeous displays of flowers and luscious green lawns. Only: practicable concepts for this are rare, worldwide.

The company entrusted with the task, *Mother Indus Aqua Solutions*, from Chennai, was nevertheless, successful: in 2006, in collaboration with ATB, the company erected a pilot plant on the campus of the university, which was to have mod-

One of the ca. 200 renowned universities and university equivalent establishments in the country and operator of the first AQUAMAX® plant in India: the SRM Institute for Science and Technology with over 11,000 students.





For West European circumstances unthinkable; here however, nothing unusual: Indian women carrying out hard physical labour.



Not a few people live from garbage: cows seek nourishment, children toys and grown-ups anything recyclable for their own use or for selling on.

In the matter of environmental protection there is still a great deal of convincing to be carried out and much to do, as this photo of a "completely normal" river in the centre of the 4.5 million inhabitant metropolis of Chennai documents.



Using the AQUAMAX® BLUE UV disinfection system the continuous watering of the lawns and gardens – also those to be created later – is ensured by the SRM University. And a practicable concept for one of the Indian water problems has been found!





Devout Hindus and worshippers of the god Shiva have themselves marked by a temple priest with the Tripundraka, three horizontal lines made from ashes or sandalwood paste, in the Kapaleeshwarar Temple in Chennai. These Tilaks cool the brain during meditation and are usually put on with special mantras, which is a repeated incantation.

el character as a solution to India's water problem.

The plant, an AQUAMAX® XXLS1-600, daily treats up to 90 cubic metres of wastewater which, following treatment, is held temporarily in an intermediate tank with a volume of ca. 60 cubic metres. An AQUAMAX® BLUE UV disinfection system using a throughflow volume of 10 cubic metres per hour disinfects this temporarily stored water continuously in circulating operation. If the water is now taken for the watering of the comprehensive garden and green areas, it is again disinfected during output.



Morning toilet at one of the innumerable public washing places.

A concept which adds up, as both the daily practice and also continuous examination of the discharge values by

independent laboratories prove.

Having taken some photos of the plant, the controls and a few of the surroundings, also included in these the female worker, who wanted to sell me her baby for a couple of dollars, I went over to the building shell directly alongside of the plant. I wanted to go right to the top – including taking my 12 kg camera bag and my 4 kg tripod: twelve storeys, no lift, 36°C, still almost 100% relative humidity. The sweat no longer knows where to go and pours down into where nobody wants to it to go! Sometimes I curse my job. But a photograph of the plant from right above

Footnote: SHIVA is "the good one" and one of the most important deities of Hinduism. On his forehead he has a third eye and three horizontal lines of ash, which are also often to be seen with his followers. GANESHA is Shiva's son. He possesses a human body and an elephant's head.

– that’s tempting. And then, soaking wet in the highest storey, the shock: the scaffolding, hammered together roughly from bamboo canes up here, is as wobbly as a freshly produced vanilla custard pudding before cooling down. I don’t suffer from vertigo or from claustrophobia, but what I am experiencing here is just too much, it is only something for madmen. The four Indians in the background, who noticed my breaking out in sweat at the sight of the scaffolding, finally give me an idea. However, one which requires trust – MY trust – which, in the past, had brought me a lot of misfortune. But: nothing ventured, nothing gained. And the photo is still tempting. Using my hands and feet – they unfortunately don’t speak English – I ask the four to help me. Better: to hold me by the legs so that I can lean out far enough over the scaffold-



The largest part of the Indian population takes its water from the roads. At pumps which you find in almost every alleyway. The women of the area meet daily in order to gossip or exchange news and finally to carry home on their heads multi-coloured plastic jugs filled to the brim with the heavy load of water.

ing in order to be able to shoot a couple of photos, in order, finally, to pull me back again. I am mad, simply too

trusting! Fortunately the four shake their heads violently which I interpret – almost with relief – as total refusal. Until I suddenly realise something: that our “No” shaking of the head here means precisely the opposite: YES!!! And the four are all set to go. Before this I had no idea what a shot of adrenalin meant ... - afterwards I knew intimately all about this awful stress hormone. To cut a long story short, everything worked out; I have the photo and I am still alive. Which is not difficult to guess since I am now writing these lines.

Chennai the next morning. It’s become cooler, 34°C, however, it’s still only the morning. My driver is called Manmohan. Sanjib and Singaran from Mother Indus Aqua Solutions have sent me the young man to meet all my wishes. And, I guess, to keep an eye on me. My destination is the district of

Dangerous perspective: the complete wastewater treatment facility photographed from the 12th floor of the neighbouring building shell.



Georgetown, and the mixture of narrow roads, opulent colonial buildings and bazaars. And: people. Of whom in Chennai, the fifth largest city of the subcontinent, there are certainly many: ca. 4.5 million. And in the whole of India: 1,130,000,000 (1.13 billion) people. And each day, statistically seen, a small town's worth are added: ca. 43,000 people. Every day! I am certainly going to meet a couple of these.

On every corner it smells of spices, of exotic delicacies, of fried food. I can't resist the temptation – and experience an explosion of taste one after the other. I throw all caution to the wind and try everything, chapatas, pakoras, samoras, tandoori and hot curries. And naturally crisp naans. I hope that I won't regret it! During this time, peddlers repeatedly try selling me flashing Shivas. Or Ganeshas. Or squeaking water pistols. Children run around me in order to be photographed. Women wearing saris in orange, red, green and yellow offer me a cup of tea, a chair to sit on or a glass of water. Always smiling. Always open. And always ready for a photo. Their beaming faces when looking at their portraits on the small display of the digital camera is firmly fixed in my memory. Sometimes I ask myself why a West European woman in a pleated skirt or a West European man in grey flannel can't feel the same childish joy when looking at their own portraits. Naturally I know the answer. Because a continuously good life makes one insensitive to the wonderful details of this world. I begin to love this country and its people. Incredible India.

The next day I notice, already early in the morning, that something is not quite right, something extremely important. With my stomach. With my "bodily functions". With an urge which is so trivial that it hits 6 billion people every day – only not quite so severely. I have the urge to leave the breakfast room in the quickest way possible in the direction of Room 211. Now I regret that I had not been careful enough and had not observed the first rule of every traveller in a foreign country. Peel it, boil it or leave it. I couldn't leave it. Naturally not, since I'm a real man!

Following litres of Lassi, a local yoghurt drink, which brings the stomach back into line I am back on my legs by early afternoon. On wobbly ones but nevertheless Manmohan appears to have known that the Lassi helps. How, remains a secret. I now drive with him to the Hindu Kapaleeshwara temple – in the Hindu doctrine of reincarnation my subject, India's water, ultimately plays a great role. It is believed to be the original source of life and ultimately brings souls to the place of everlasting life. Somewhere in between, the handling of water appears to be more pragmatic: Indians cook and wash themselves only with water. And drink it. However, considerably less than the



According to estimates by the United Nations, India will hardly reduce its population growth in the next decades and will have replaced the Peoples' Republic of China by 2045 as the most populated country in the world.

largest part of the remaining world. The per head consumption of drinking water here lies at about 25 litres per day. In comparison: a United States American requires ca. 380 litres and a German, for all that, still 126 litres per day. But the economic boom does not really indulge the Indians with this small amount: the groundwater is sinking rapidly with the industrialisation. Wells are drying out and what remains of the precious moisture is often certainly no longer precious as it is extremely loaded and polluted. Inter alia, polluted through the fact that over 80% of the population have to carry out their most important business without access to sanitary facilities. 800 million people! In addition, surveys show that approxi-

mately only a fifth of the total wastewater – at least in cities of upwards of 50,000 inhabitants – is collected in sewer systems and is fed to some sort of wastewater treatment. Some sort! The visit to a municipal wastewater treatment plant shortly before the romantic setting of the sun finally robs me at the end of the day of the last sensitive enjoyment of the red fireball, sinking on the horizon. Colonial-antique technology and ignorance complete the already far too long list of tasks of those willing to bring about reform. That circa 370 million people in this country have no access to "safe" water, was reported in India Today not so long ago. Now I also know why. Incredible India.

Even on my last day in Chennai it is boiling hot. The Indians for generations have adjusted to this climate: in nearly every street there is a public washing place, which is frequented widely the whole day – for the morning toilet of the extremely clean population, for refreshment in between, as source of drinking water and as happy meeting point of the male public. The water streams out endlessly in large arcs. And vanishes again somewhere or other. The rainfall period has just finished and it will be almost eight months until the next one arrives. And I hope for everybody who is squatting there happily and gives me a warm smile that the gushing jet of water will not turn into a thin trickle in the course of time. I hope that the coming dry period will not scourge these wonderful people too much. Hope that the original source of life and their belief does not leave them in the lurch. Hope – and I drive to the hotel in order to pack.

Certainly, there is a lot to be done! But a start has been made: responsible people in the whole country are aware and beginning to act; government offices and authorities have noticed the AQUAMAX® with downstream UV disinfection, the broad decentralisation of wastewater treatment is being discussed, the reuse of wastewater appears to be ecologically and economically wise. One will see ... Now I must leave, I'm already late. The aeroplane to Kolkata (Calcutta) won't

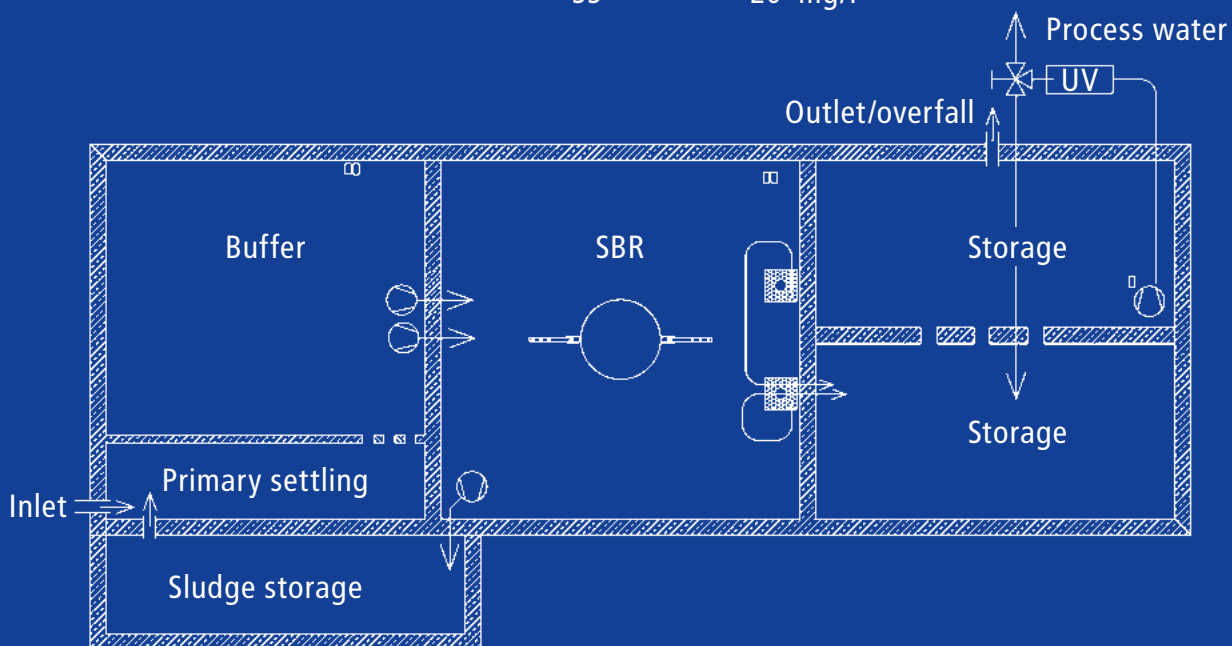
wait, the yellow taxi has already been hooting for ten minutes and the Hare Krishna youth finally lets me go with "You will see: the golden age will come". India is really incredible.



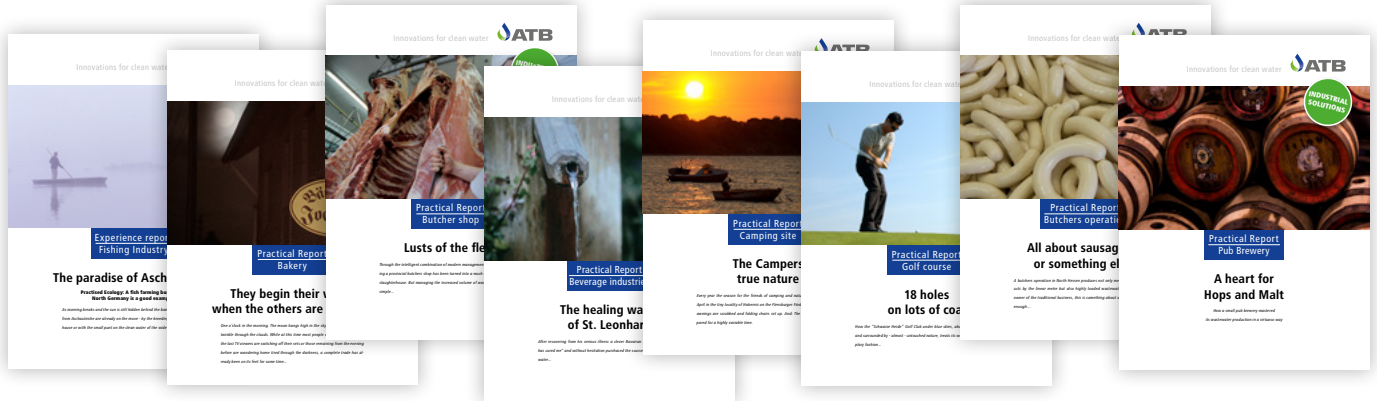
The Indian wastewater specialists of the SRM University and of the ATB partner Mother Indus Aqua Solutions in front of the AQUAMAX® plant control.

The university project at a glance:

Owner	SRM Institute for Science and Technology
Project management & Installation	MOTHER INDUS AQUA SOLUTIONS, Chennai/Indien
Plant technology	ATB Umwelttechnologien GmbH
Plant size	AQUAMAX® XXLS1-600 for 600 PT or 90 m ³ /day AQUAMAX® BLUE UV disinfection for 10 m ³ /h
Commissioning	2006
Required treatment performance	COD < 100 mg/l BOD ₅ < 30 mg/l SS < 30 mg/l
Effluent values	COD = 48 mg/l BOD ₅ = 6 mg/l SS = 20 mg/l



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