Problem
Treating of surface water to potable water in an amount of up to 680 m³/h for the water supply of the Norwegian municipality Bamble (approx. 12,000 people).

Raw water data
Colour 15-25 mg Pt/L Alkalinity < 0.1 mmol/L
pH 6.3-6.8 UV1 71-84%
Bacterial counts (enterococci, coliforms, E-coli, clostridium)

Treatment process

Solution
• Build up of a new water treatment plant to reduce colour and DOC/TOC, to increase pH and alkalinity and to ensure hygienic safety.
• Installation of an effective plasma ozone production system.
• Installation of low pressure horizontal reaction tanks made of stainless steel 316 Ti with distributor plates inside to achieve a uniform plug flow.
• Adding of carbonic acid to the water after it is discharged from the contact tanks, before marble filters.

Conclusions
• Ozone biofiltration can be a powerful process for treating surface water to potable water.
• DOC/TOC reduction is limited by the ozone dose and the EBCT in the bio-filters.
• Discolouration is a main task for the ozone biofiltration process.
• Hygienic safety of the treated water is constantly ensured.