Sanitation of purified wastewater from food production

To ensure the water supply in the future, it is essential to develop concepts of water recycling which enables the re-use of water. Therefore, in a cooperative project, wastewater from a blanching process was purified to make process water with the quality of drinking water in regards to chemical, physical and microbiological aspects. In addition to the classical TVO testing methods, which are mainly based on cultivation of nutrient media to quantify and identify germs in water, the applicability of modern investigation methods like DNA/RNA based identification methods, enzymatic and immunological practices, as well as the FT-IR-analysis to identify isolates of cultivated germs were certified.
The pilot plant for production of clean process water includes a sieve for particulate matter, a high performance biological treatment coupled with an ultra-filtration unit for retention of activated sludge and a two-stage reverse osmosis plant to retain chemical and biological ingredients. With the exception of ammonia content, after reverse osmosis treatment the chemical and biological ingredients in the water were reduced to drinking water ordinance levels. The use of an additional disinfection step, one that combines Ozone and UV radiation, could reduce the microbiological contamination which remained after the reverse osmosis units, insofar as the hygienic parameters comply with the regulations of the drinking water ordinance.