

TWT EXPERIENCE

Customer	CURTIRISO S.R.L. - EURICOM S.P.A. GROUP
Sector	FOOD - WASTEWATER PURIFICATION FROM PARBOILED RICE TREATMENT PROCESS
Plant	ULTRA-FILTRATION SYSTEM FOLLOWED BY REVERSE OSMOSIS HT - TWT·UFLEX·RO 15000

BACKGROUND

The company under review is structured on two production units known under the brand names **CURTIRISO - FLORA**, complete with the 'parboiled' section, in which the **TECNOIMPIANTI** system has been installed. The processing plants are dedicated to all types of rice, the processing/treatment of which is destined for supply to the food industry and packaging for large-scale distribution in the EU. The origin and type of rice treated, generate in the hydrothermal treatment process (Flora Method) more or less 'charged' waste water that in view of the company's sustainability policy **must be recovered as much as possible**.

PROBLEM STATEMENT

The Flora Method of hydrothermal treatment of parboiled rice is a process that includes various stages (soaking, autoclaving, drying, etc.) at temperatures between 50° and 70°C and **generates waste water with a high COD, starch and suspended solids load**. All the resulting water was not recovered, but, after neutralising the pH and lowering the temperature, sent to the consortium disposal plant. **The challenge was to design and build a different treatment plant**, with smaller size and lower costs and comparable and/or better efficiencies than those generated by a classical biological purification process.

APPROACH

In order to achieve maximum recovery of wastewater and to be able to reuse it in the customer's plant, while maintaining optimal recovered water quality, it was decided to proceed with an experimental approach, using a pilot plant that allowed the definition of the most performing type of membranes, as well as a proper evaluation of the possible operating costs.

PLANT

Ultra-filtration system followed by HT reverse osmosis.

TECHNOLOGY

The water resulting from the hydrotreatment process, discharged from the various stages of rice treatment while still at temperature, underwent the first treatment section, ultra-filtration, which removed the coarsest pollutant load in the effluent, producing a clear, albeit amber solution.

INSTALLATION

A proper evaluation of the overall dimensions during the design phase allowed for a **considerable reduction in the space required for water treatment**, compared to a traditional biological approach, and the plant was tested, in accordance with the customer's production dynamics, in less than a year. This solution was then refined in the subsequent reverse osmosis section, producing a clear and colourless permeate with **reduced conductivity and neutral pH**.



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MONITORING

Following installation, chemical/biological analyses were carried out on the recovered water, which showed it to be of a **quality suitable for reuse in the customer's plant.**

RESULT • YIELD

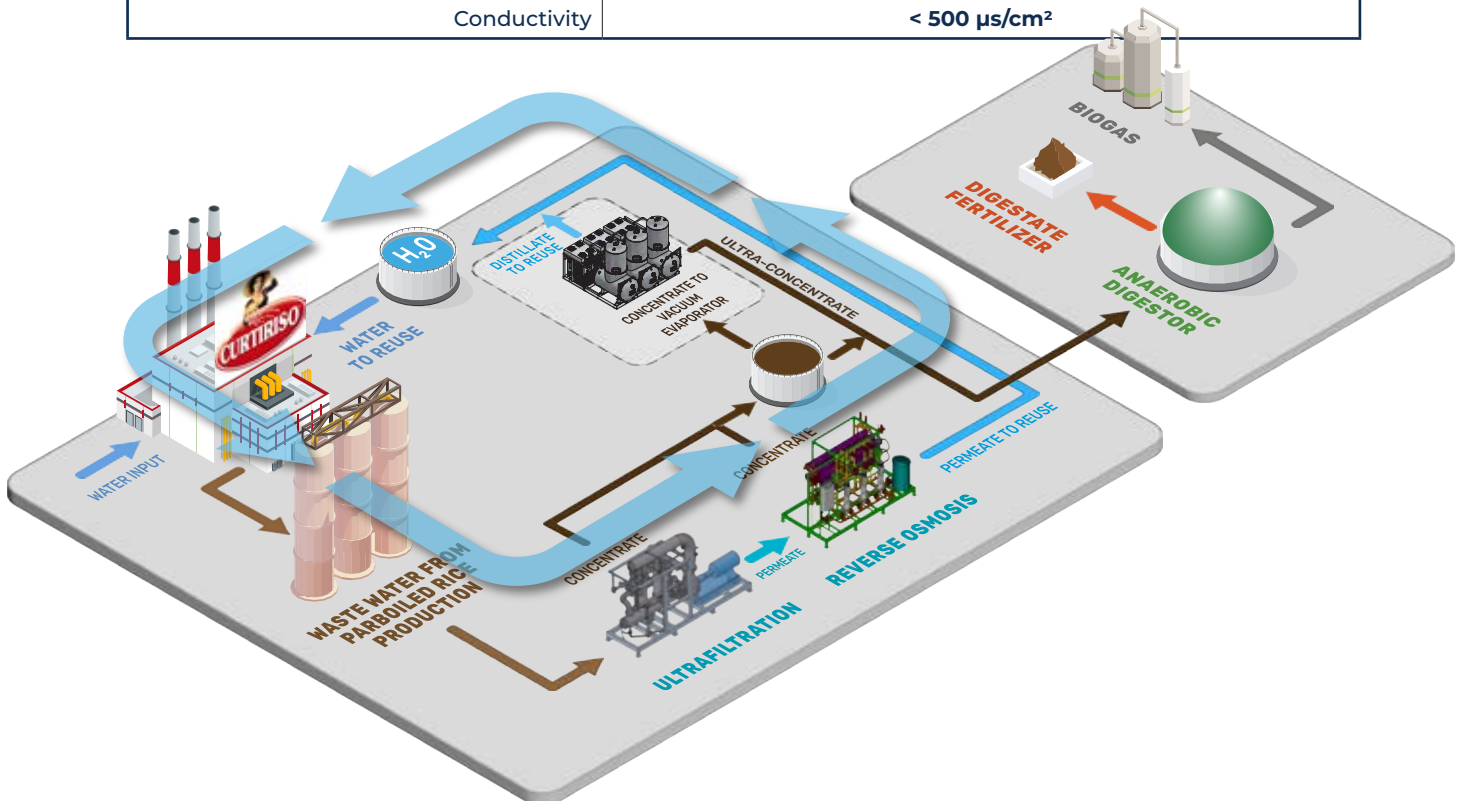
Recovery yields average 70%, reaching peaks of even 80% with the 'lightest' parboiled water. **The concentrated fraction rich in COD and nutrients, which cannot be recovered in the plant, is sold as feed to a biodigester for biogas production.**

APPLICATIONS

All biomethane production plants with WET digesters (fed with FORSU, livestock manure or biomass or mixed).

110% WASTE TRANSFORMED INTO BY-PRODUCT FOR USE IN DIGESTER

Average Efficiency	70% - 80%
Treatment capacity	12 m³/h
Occupied surface area	350 m²
Conductivity	< 500 µs/cm²



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