CASE STUDY

Altamonte Power Plant

Italy

NO DISCHARGE PERMIT	HIGH QUALITY CONDENSATE	EXPERIENCED	98% AVAILABILITY

Altamonte Power Plant

Zero Liquid Discharge System

suez environnement Degrémont

GEA Process Engineering Division

Altamonte Plant

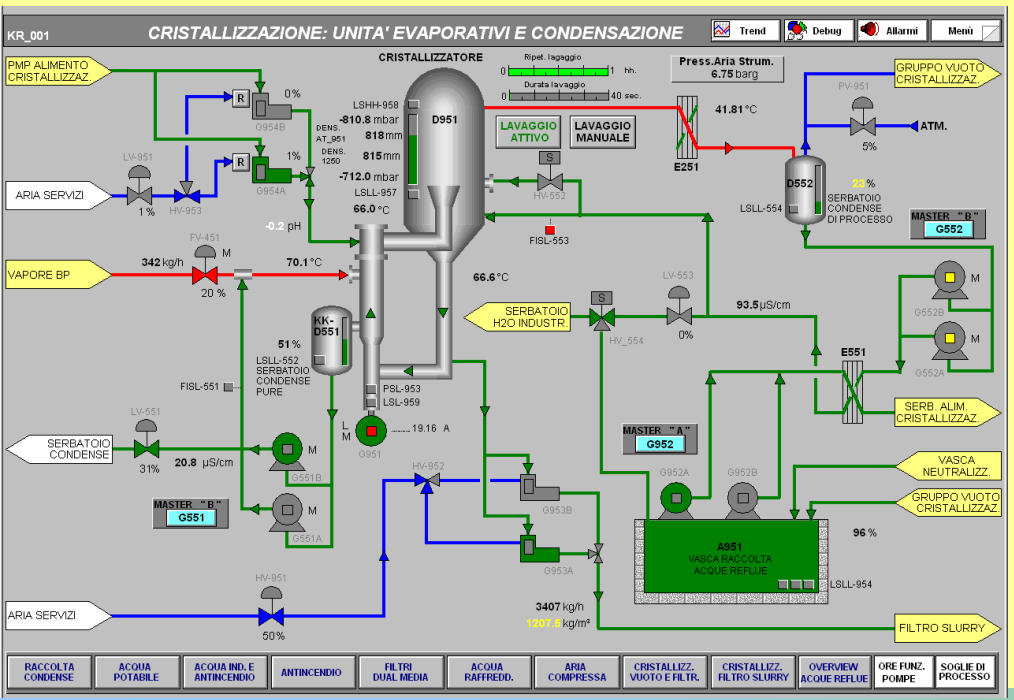
Zero Liquid Discharge System

Background

In 2007 GEA commissioned at the Altomonte Power Plant, an 800 MWe combined cycle located in Italy, a state of the art Zero Liquid Discharge (ZLD) Crystallization system. Environmental considerations and the economical benefits of water re-use have forced our customer to reduce the discharge of waste water from their power plant. These streams are diluted saline waters containing chlorides, sulphates, nitrates and carbonates, usually saturated in CaSO4. Due to the nature of this effluent, evaporative crystallization of such brines normally leads to heavy encrustation problems.

Degremont Technologies Solution (See Block Diagram)

Target of the ZLD unit is to recover high quality process condensate and separated solids of disposable quality, satisfying the stringent requirements of a power plant in terms of system reliability and availability in a single train. The unit has to treat a waste stream with 1,5%wt TS, on a 24 hours per day basis. The waste water has a high variation of; i) high conductivity effluents from deioni/demi water production, ii) first rain water (after de-oiling), iii) other chemically polluted drains.
The discharge streams out of the GEA Unit has salt cake with a maximum water content of 15%, which is landfilled and a condensate with a maximum salt content of 5 ppm, which is recycled to demineralization system.



The GEA Crystallizer

Availability factor is ≥98% (in total only seven days per year are available for cleaning and maintenance), and typically over 4 months of operating cycles are achieved.
This is due to:

- process design to prevent encrustation
- mechanical design that strongly reduces the fouling effect by encrustations
- selection of materials of construction to virtually avoid corrosion
- high quality fabrication standards
- redundant instrumentation

Infilco

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