

# Effluent Water Automation System and Operation Effectiveness

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## FORMAT

30 minute presentation

## KEYWORDS

New Facility, Automation Technologies, Power of Integration, Operation Effectiveness

## ABSTRACT

In order to cater for future production targets, the current surface – scenarios (disposal / evaporation pits) will be abandoned as per KOC HSEMS, and instead, sub-surface and down hole disposal of produced / generated effluent water quantities will be adapted, based on improved quality and specifications of effluent water. At the Effluent Water Disposal Plants (EWDP's), effluent water is received in Balance Tanks from the respective Gathering Centers (GCs), and then pumped through Booster Pumps to Nutshell Filter Package (Hydromation deep bed with walnut shell media) to achieve the desired water quality/quantity at the Filter outlet. KOC strategy is to produce 4.0 Millions of oil by year 2020 and the produced effluent water will increase to 1.0 MBWPD for which a new WARA PMP facility will be commissioned by end of year 2014.

The new WPMP facility is to be located adjacent to the existing EWDP-2 facility where water from EWDP-1 and EWDP-2 is collected, treated for oil and particulates and pumped to the water injection manifolds. The new facility will Provide pressure support for the WARA formation in the Burgan field by incorporation of new effluent water treating and pipeline facilities up to, but not including, the water injection well heads necessary to inject 1 million barrels (of highly treated) water per day (BWPD) into the WARA formation.

The three water treatment plants will be interconnected and operated at the same time to dispose and inject treated water around a wide geographical area of many kilometers. The new facilities operational requirements imposed high challenges on operators to manage complex logic loops, large data from the three facilities, SCADA system for the injection wells, alarm management system, partial stroking system, remote DCS nodes at substation, DCS training simulation setup, DCS, PLCs, OPCs, leak detection system, Management Information System MIS, and AMS to perform field instrument calibration from control room.

## ABOUT THE AUTHORS

**Fakhri Musameh, BSc** *EEE, North Dakota State University 1983. He joined Kuwait Oil Co. in 1990 as a Maintenance Instrument Engineer and worked with Operations Group. He worked on gathering centers, booster stations, and currently with Water Handling Team South East Kuwait. He has a total of 29 years of experience.*

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