

Water Usage at an Oil Refinery

Abstract

An oil refinery in Wales contacted RS Hydro to see if it was possible to monitor water usage across the refinery on a temporary basis to try and determine where 100m³ was being lost.

Equipment Used

The Panametrics PT878 Ultrasonic Flow Meter.

Flow - Level - Water Quality
Groundwater - Meteorology - Telemetry



Diagnostic Tests		
Meter ErrorDx0000	Up	Down
T	243.06	243.06
P#	455	455
Sig Quality	3632	3753
Amplitude	28.2	29.0
Gain	28.4	28.6
Cnts	2405	2416
Signal	61.9	61.9
Soundspeed m/s	1443.5	
Reynolds #	kRe 0.7704	
	ΔT -0.15	
	m/s 0.00	
<input type="button" value="Cancel"/> <input type="button" value="OK"/>		



www.rshydro.co.uk

+44(0) 1527 882060

info@rshydro.co.uk

Leask House, Hanbury Road, Stoke Prior, Bromsgrove B60 4JZ

Water Usage at an Oil Refinery

Background

RS Hydro were contacted by an oil refinery, situated in Pembrokeshire, Wales, to see if it was possible to determine the water usage across the site and allow a valid water balance to be prepared.

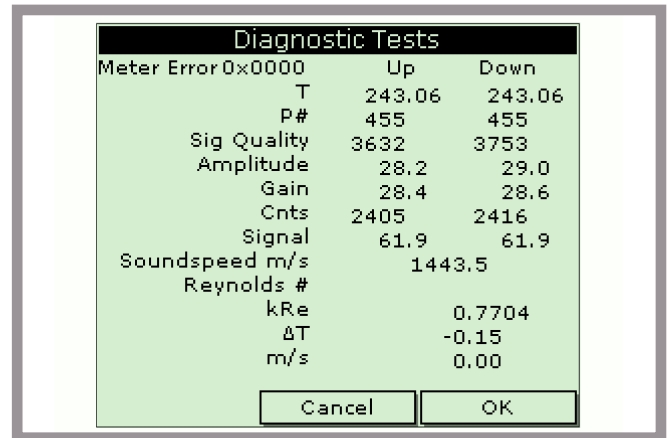
The aims of the refinery test was to gather water usage over a daily cycle so therefore required the meters to operate for a three day period for 24 hours a day unattended, to try and determine where 100m³ a day was being lost.



fig1. The Oil Refinery.

There were twelve different locations where water usage needed to be monitored. It was decided that the Panametrics PT878 ultrasonic clamp on flow meter would be installed at the locations to provide the temporary monitoring. The meters were all installed within one and a half days, without the need for any pipe modifications.

As the Panametrics PT878 has a typical battery life of 8 to 11 hours, this was not sufficient for the three day monitoring period. Normally this would be solved by running the unit off mains power but this was not a possibility at the refinery. Instead, the PT878s were connected to car batteries which provided continuous power for the three days.



Diagnostic Tests		
Meter Error 0x0000	Up	Down
T	243.06	243.06
P#	455	455
Sig Quality	3632	3753
Amplitude	28.2	29.0
Gain	28.4	28.6
Cnts	2405	2416
Signal	61.9	61.9
Soundspeed m/s	1443.5	
Reynolds #		
kRe	0.7704	
ΔT	-0.15	
m/s	0.00	

fig2. A diagnostic test page

Site conditions including noise and pipe materials caused ringing in the pipes which would sometimes cause ultrasonics to struggle. This was not the case with the PT878 and single traverse installations made the measurements possible. The meters were each set up to record flow rates and total flows over the three days.

Following each meters installation, diagnostic test result screen dumps were taken to prove that the meter was running between certain limits when left by the engineer.

Once the tests were over the field engineer uninstalled the meters and downloaded the data. All data was sent to the refinery engineers in excel format for analysis of water usage at the plant to be carried out.



fig3. The Panametrics PT878 Ultrasonic Flow Meter.