

REFINERY TREATMENT CASE STUDY
CRUDE MANAGEMENT PROGRAM (CMP®)

DESALTING, FOULING AND CORROSION PROBLEMS SOLVED PROFITABLY

A Turkish refinery processing challenging domestic Turkish crudes with Middle Eastern and Russian feedstocks struggled with desalting problems, preheat fouling from ammonium chloride and ammonium bisulfide salts, and overhead corrosion in its crude unit. Heat exchangers required cleaning every four months, exposing workers to hazards during cleaning and reducing throughput and operating margins.

Dorf Ketal's proprietary CMP® crude management allowed technicians to approach the problems systematically. Recommendations included a demulsifier to improve desalter performance, a proprietary high-performance antifoulant to eliminate the ammonium salts, and a corrosion inhibitor and neutralizing amine for the crude column overhead, along with careful monitoring to optimize performance.

More than a year and a half later, just two heat exchanger cleanings had been required, neither of which were in the hot preheat train. Desalter efficiencies increased dramatically, reducing acidity in the overhead, and ammonia salt deposition was brought under control.

TABLE 1 – Crude Management Program Performance Summary

Dorf Ketal Antifoulant Program Preheat Summary					
		Before DK Program		With DK Program	
Date		2-Jan-08	30-Sep-08	1-Oct-08	16-Aug-10
Period (No. days)		272		585	
Crude Inlet Temperature (degC) FIT (degC) Hot Preheat Transfer (degC) Preheat Drop (degC) Preheat Drop Rate (degC/month) Preheat Drop Rate (degC/day)	LINE 1	108.1	111.5	112.0	136.6
		218.0	217.2	217.9	232.4
		109.9	105.7	105.9	95.8
		4.2		10.1	
		0.463		0.518	
		0.015		0.017	
Crude Inlet Temperature (degC) FIT (degC) Hot Preheat Transfer (degC) Preheat Drop (degC) Preheat Drop Rate (degC/month) Preheat Drop Rate (degC/day)	LINE 2	107.6	111	111.6	136.1
		226.9	218.3	218.7	235.2
		119.3	107.3	107.1	99.1
		12.0		8.0	
		1.324		0.410	
		0.044		0.014	

Bottom Line:

Operator safety risks declined and refinery operating margins increased.

Performance Observation:

Dorf Ketal's Crude Management Program allows complex, interrelated problems to be approached systematically and solved more quickly and profitably.



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