# **OFFSITE MANAGEMENT SYSTEMS LLC**

Offsite Operations Automation Consultants and Solution Providers for Chemical, Oil & Gas (COG) Industries



**Product Blending Series** 

# Online Blend Control and Optimization System (gomsPONBlend<sup>™</sup>)

#### Background

In a three-tier architecture of blending control system, the refinery planner prepares a blend recipe by using gomsPOFBlend<sup>™</sup> offline blend optimizer and downloads the blend order to the offsite operations department to execute it online. The objective of blending operations then becomes to make the blend within planner's specified constraints yet with latest and sometimes dynamic process conditions. This necessitates the implementation of online blend optimization control and system (gomsPONBlend<sup>™</sup>) to produce blend with minimum quality giveaway, safely and efficiently.

# Applications

Online blending control and optimization scheduling system (gomsPONBlend<sup>™</sup>) can be used very effectively for:

- Online Execution of planner's recipe for Gasoline, Diesel and Fuel oil products in a tanks-to-tank blending configuration
- Control the feed quality of the crude unit by blending crude from various sources varying in quality
- Online quality control of run-downs from process units in continuous blending configuration

### **Benefits**

- Minimizes or eliminates the effect of dynamically changing process conditions such as component qualities
- Blends in most economical way by minimizing quality giveaways within planner's specified constraints
- Online certification for direct blending into pipeline or ship
- Production of economically optimum product blends, thereby adding to refinery's bottom line profitability
- Eliminates reblends due to violated specs and lack of in-line control
- Flexible configuration of sources and destinations of blends covers all refinery setups.

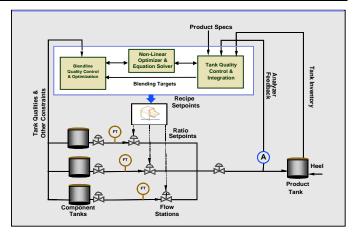


Figure 1 OMS Online Blend Control and Optimization System

#### Features

- Blend Setup
  - Interfaces with gomsRCPBlend<sup>™</sup> or any third party Regulatory Blend control and offline optimizer
  - Auto setup of multiple blenders headers dynamically system for product swings
  - Initializes the optimizer to check initial data integrity and online control feasibility

#### Blend Monitoring

- Automatically collects 250+ pre-configured blend variables for every cycle of execution of tank quality tracking run.
- Monitors online header and stocks analyzers and integrates the latest results in the optimum recipe.

nd Setup																		
Blend ID : Class ID : Product Type : Grade Type :			200209130102048				Produ	ict Tank :	A	ATK019			G	ade Specifica	tion : JUR	-90		-
							Blend Header :			AGH001 ·			Batch Size: (Ld) 15000					5
			Unleaded  Regular			-	Heel Vol: (bbl) Max Vol: (bbl)			43139			Target Rate: (bbl/hr) 5000 Recipe Mode : Auto • OMS-1 •					
						•												
nd Speci	fication	5	_			_						_						
Quality	Select	Unit	Const	raint Type	Control T		ality Min	Quality Max	Heel Ou	alties 1	Wethod	T	871 A	Stock	Tank	Initial	Optimized	Pric
ROND											ROND_EthylF			Units ->		%	95	
MOND			Min		Controller		.00				MONO_Ethy/F	RT70 0	.0	Reformer	ATK004	40.82	40.82	
RDOI			Min		Controller		.00			95.47			.01	Alkylate	ATK008	3.06		
RVP		psi	Both		Controlles			9.50			RVP_Index		0	Isomer	ATK001	18.37		
E_P10		deg C	Max		Controller	t l		65.00			E_P10_Texat			FCC	ATK006	24.49		
E_P30		deg C									E_P30_Texas			MTBE	ATR005	6.74		
E_P50		deg C	Both		Controller	5 77	.00	118.00			E_PS0_Texal		17	Mercix	ATK003	6.52		
E_P70		deg C									E_P70_Texad			<b>GNLP-Nova</b>	ATK019	99.99999	100.00	26
E_P90	× ×	deg⊂	Max		Controller	1		190.00			[_P90_Texal		17					
ABOM		ec.								51 90			n					
tows ) C Stock	olumns Tank		poner N0	nt Qualiti MONO		mponer RVP	t Index	Matrix E_P30		on ) 5 E_P70	Solution	AROM	OLEF	SPGRAV				
Units -:	>					psi	deg C	deg C	deg C	deg C	deg C	%	%	Distance in				
Akylate	ATK0		94.535	92.235	95.078	4.605			119.516	133.50		73.069						
FCC	ATK0		91.001	77.438	87.031	8.077			106.352	154.82			0.54					
HDS	ATKO		45.371	41.030	43.035	4.263			97.408	105.49		74.323						
Isomer	ATKO		82.515		83.067	14.053			29.044	32.44								
Isopenta			84.979	85.502	88.046				24.712	27.10								
Merox	ATKO		56.561	49.929	53.298	8.564			52.400	105.95		46.169	0.69					
MTEE	ATK0	05   1	17.948	104.260	109.556	8.173	120.788		121.669	124.81	7 127.283			0.745				

- Group trends of all monitored blend variables.

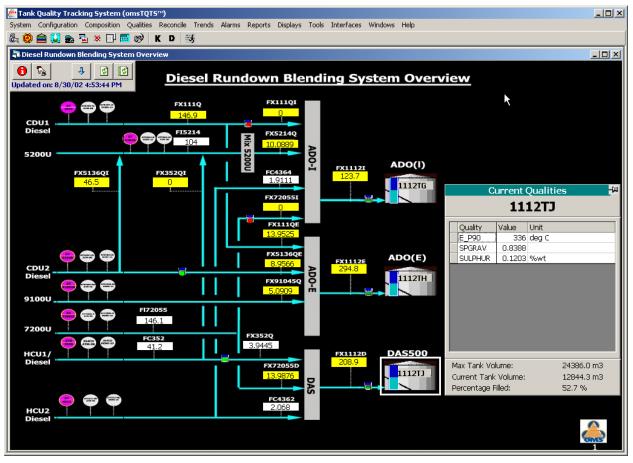


Figure 2 Online Blend Control for multiple run-down blenders from process units

# **Recipe Control & Optimization**

gomsPONBlend<sup>™</sup> controls the recipe of blend and optimizes every 10 minutes by analyzing the stock qualities and current and target qualities of final product tanks. It archives the LP matrix and solution of every optimizer execution which can be exported to gomsBlendOpt<sup>™</sup> system for later analysis and diagnosis.

#### Interfaces

- Regulatory Control Product Blend System gomsRCPBlend<sup>™</sup> or any other third party system
- Offline blend planning, scheduling and optimization system (gomsPOFBlend<sup>™</sup>)
- Tank gauging system and tanks farm inventory management system gomsTIMS<sup>™</sup>
- gomsTQTS<sup>™</sup> for online tank quality tracking system.
- Blend Information Management System for feedback of model biases (gomsBIMS<sup>™</sup>)

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# Economics

Economically, it is estimated an annual savings of 5–7MUS\$ by online Blend Control and optimization alone. These benefits are achieved cumulatively by integrated three-tier implementation of offline, online and regulator blend control systems.

# System Requirements

Intel Core i7 or equivalent, 3+ GHz, 32GB RAM, 1TB+ HDD, CD ROM, 17"+ color monitor, Windows 7 and higher OS

# **Contact Information**

Offsite Management Systems LLC 3311 Stoney Mist Dr. Sugar Land, Texas 77479 USA Tel: 281-265-4386 / 281-650-3707 Fax: 866-450-4035 Email: info@globaloms.com Web: www.globaloms.com

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