REFINERY AUTOMATION INSTITUTE, LLC

NEWSLETTER: JULY 2018 ISSUE

HAVE A WONDERFUL AND SAFE SUMMER HOLIDAY

What is in this exciting newsletter?

1. IMO 2020 FOCUSED 0.5%S BUNKER COURSE
2. Blending Courses Calendar for 2018
3. US EPA RVO and How to Calculate
4. Justifying Scrubbers and 2020: Use Our ROI Calculator
5. Why You NEED an in-line blender
6. Butane Blending Calculator to Maximize Profit
7. Blending Advisory Services. Looking for help?
8. Publications: what is blending and IFO 0.5 %S

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1. IMO 2020-Focused Bunker Blending Course in Houston, October 2018

New! This one day intensive course focuses on IMO 2020 0.5% S bunker: specs, how to make it, blends components, recipes, determining compatibility, supply chain, calculating 0.5%S bunker price, and how to calculate scrubbers ROI vs. other alternatives. The course has numerous examples and exercises, answering questions such as blend profitability. It also includes a blending coursebook, tens of exercises, and hundreds of references. For details and registration, please click HERE.

2. Blending Courses Calendar for 2018 Fall and Winter

The Gasoline and Diesel Blending course is specifically-tailored for TRADERS and REFINERS, where we spend more time on specific and practical examples and exercises, answering questions such as blend profitability, comparing different blend components from different refineries, calcualting blend component prices and blend prices, fixed or variable Ethanol blending, EPA VOC vs. blend RVP vs. blend profit. For details and registration, please click HERE.

Our courses cover specs, blend components, linear and non-linear blending, estimating blend component prices, Lab test methods precision for dispute resolution, Ethanol blending, and much more. See the recent syllabus we had for New York City.

What's the "Big Deal" about these courses?
You'll get first hand knowledge about making fuels profitably from me, Ara Barsamian, who has done this successfully for 45+years, plus the modeling and optimization expertise from Lee Curcio. You also get a 800+ pages blending coursebook, 35+ blending software modules, and gasoline and diesel blend optimizers (demo versions).

In short, you learn how to maximize fuel blending profits in an uncertain economic climate. What blend-stocks should buy? How do you value a blendstock? How do you calculate non-linear properties, like octanes? How do you minimize quality giveaways? How do you avoid re-blends? How do you correct a blend? How do you exploit Ethanol and BioDiesel? How do you justify blending facility upgrades? Learn by doing, with live exercises, using your data.

3. US EPA Renewable Volume Obligations (RVO)

The EPA issued 2018 RVO's last year, and on June 26 issued proposed RVO's for 2019.

They affect directly the price of gasoline, diesel, and the RVO "currency", the RIN's.

EPA Proposed Volume Percentage Standards					
	2015	2016	2017	2018	2019
Cellulosic biofuel	0.069%	0.128%	0.173%	0.131%	0.209
Biomass-based diesel	1.49%	1.59%	1.67%	1.74%	1.72
Advanced biofuel	1.62%	2.01%	2.38%	2.34%	2.67
Total renewable fuels	9.52%	10.10%	10.70%	10.62%	10.88

These RVO's increase the price of gasoline or diesel, depending on the current price of RIN's. Below is a sample calculation for 2018. For more info, send us an email at info@refautom.com

RFS-2 Compliance Estimate For Year 2018

ARA Refining Forecast - 062918

2018 Refinery Production			Estimated (gallons/yr	(B/D)	
Gasoline produced			1,533,000,000	100,000	
Diesel produced			-	-	
Imports			-		
Total produced			1,533,000,000	100,000	

RVO Category	RFS-1 RINs (RR code,D code)	RFS-2 RINs (D code)	2018 RVO Stds	RVO RIN Calc	RINs Required
Cellulosic biofuel	25,1	3,7	0.1310%	2,008,230	2,008,230
Biomass based diesel	15,2; 16,2; 17,2	4,7	1.7400%	26,674,200	26,674,200
Advanced biofuels	25,1; 15,2; 16,2; 17,2	3,4,5,7	2.3400%	35,872,200	7,189,770
Renewable fuels	any of the above combos	3,4,5,6,7	10.6200%	162,804,600	126,932,400
Total Obligation				-	**162,804,600**
Forecast RIN Prices as of 6/29/18	2017	2018			
Cell	$2.2400	$2.3300			4,679,176
BBD	$0.3420	$0.5125			13,670,528
Eth	$0.2150	$0.2750			3,684,757
Totals					34,906,410
			TOTAL 2018 RIN COST, $'s:		56,940,871
			TOTAL RVO Cost:	c/gal	3.71

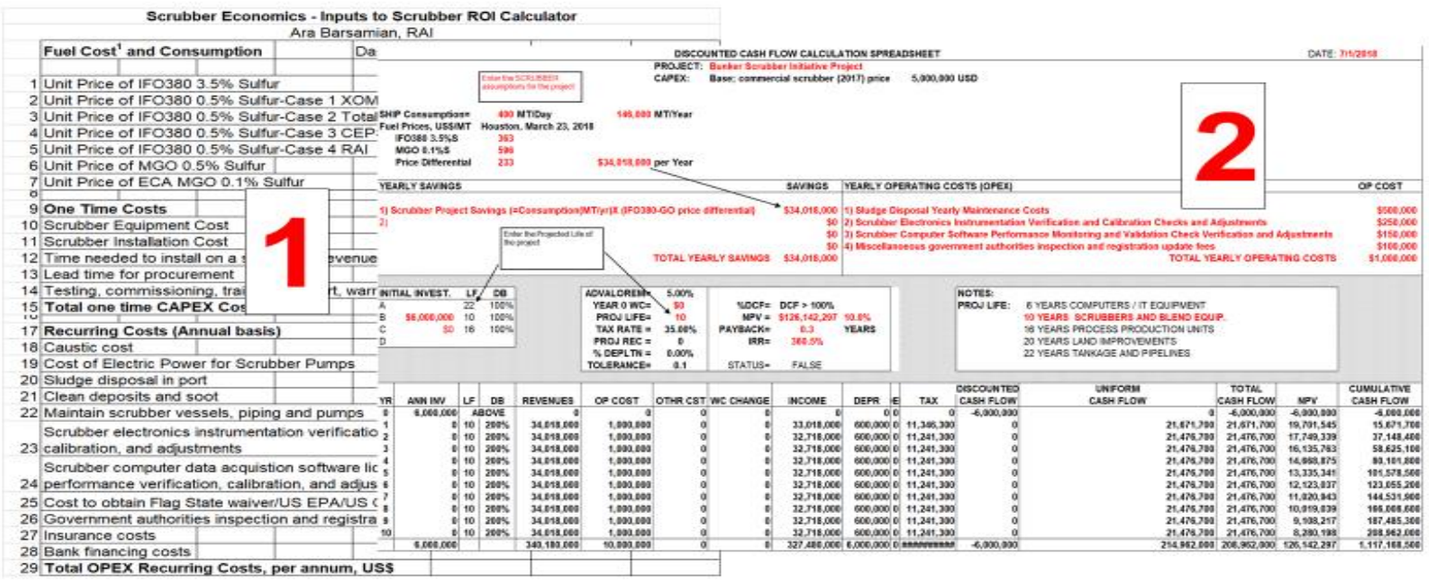
4. Justifying Scrubbers for 2020 Compliance Using Our ROI Calculator

The IMO2020 compliance “panic” is starting, and as a consequence, more people are considering scrubbers. The recent indications show that the prices have dropped considerably, from about US$5 millions to about US$2.5 to 3 millions.

A case in point is the VISWA scrubber with an innovative, small footprint design and quick installation, minimizing ship time in dry dock (www.viswalab.com)

We put together a scrubber return On Investment (ROI) calculator to help shipowners decide what is the best 2020-compliance economic solution.

There are two parts to the calculations: part 1 includes typical CAPEX and OPEX inputs to the calculator, whereas part 2 calculates the Discounted Cash Flow (ROI) return. The screen below indicates a payback of less than 6 months.



You can use your own CAPEX and OPEX numbers using our guide with “default” numbers, fuel costs, days at sea, etc.

For more info, please send us an email at info@refautom.com

5. Why You Need an In-line Blender

Why In-Line Blending?

There are many advantages in using an inline blender vs. sequential pumping components to a blend tank; for example:

1. **With an inline blender you can reduce the blending time by at least 50%, which frees tanks for other purposes and requires less inventory on hand;**
2. **You can blend DIRECTLY to a pipeline or marine terminal (barge or ship)**
3. **Much smaller octane and vapor pressure property giveaway;**
4. **No offspecs or re-blends;**
5. **Minimize demurrage charges.**
6. **Fewer/less testing of blend samples**

We do affordable blending scoping studies, by examining your Lab certificates of analysis, tank farm blending facilities, and for refiners, refinery LP plans to compare against actual performance.
The resulting report makes specific recommendations and provides cost estimates for "low-hanging-fruit" implementation.

Blending sequentially to a blend tank produces large property giveaway, immobilizes storage tank and inventory, could result in off-spec non sellable product , it is time consuming and the blend can take more than one day, beside other side effects.

Refinery Automation Institute is in this business for over 45 years, designing in-line blender for gasoline, diesel and bunker worldwide.

Save $-Money and switch to in-line blending.

We are helping you:

- **save money**
- **increase the tank farm thruput**
- **automate the process and make the things easy**

Take a look here to understand how we can help you.

We Design Pre-fabricated In-line blenders for Gasoline, Diesel and Bunker

6. Make Millions with "Smart" Butane Blending Calculator

Why Butane Blending?

Butane is a cheap high octane but also high RVP gasoline blending component. When used with Ethanol blends, i.e. CBOB, RBOB, or CARBOB, you can easily go off-spec on RVP and during Summer, VOC % reduction.

However, the typical prices for butane are about 92 cents/gal vs. about 200 cents/gal for gasoline/BOB's.

In Winter and transition season, you can add about 10% butane safely, or lower your production cost from approximately 200 c/g to 190 c/g; the 10 c/g is your profit. In the Summer, you can squeeze another 3 to 5vol% butane and still make the specs….

RBOB Blend with Butane

	F Grade Amount	Butane Amount Calculated	Blend Tank Amount	Number of butane trucks	TARGET NEAT [RVP]	Desired RVP - Actual RVP
Barrel Volume	60000	679.57	60679.57	3.4	12.50	-0.32
Percent	98.88%	1.12%	100%			
Price [$/bbl]	68.7	44	68.4	SPECS		
Properties	RBOB F4 Neat, Lab	Butane Properties Lab	Blend Properties (non linear) w nC4	RBOB F4 Neat		Check Specs
				Min	Max	
API	61.5	111.18	62.06	50.0	80.0	Ok
RVP, psi	12.27	51.89	12.82	11.5	12.5	Off Spec
ppm S	28	6	27.75	0.0	80.0	Ok
OleV%	17	0	16.81	0.0	25.0	Ok
AroV%	25.3	0	25.02	0.0	50.0	Ok
BzV%	0.6	0	0.59	0.0	3.8	Ok
RON	87.5	93.86	87.57	-	-	No Spec
MON	79.5	89.70	79.61	80.0	-	Off Spec
R+M/2	83.5	91.78	83.59	84.3	-	Off Spec
O2 wt	0	0	0.00	0.0	3.8	Ok
OxyV%	0	0	0.00	0.0	10.0	Ok
T10, ^{0}F	112.3	30.34	111.38	74.0	131.0	Ok
T50, ^{0}F	153.2	34.02	151.87	150.0	235.0	Ok
T90, ^{0}F	317.2	38.86	314.08	230.0	365.0	Ok
FBP	398.9	0.00	394.43	-	430.0	Ok
DI	945.25	186	936.75	-	1220.0	Ok
TVL20, ^{0}F	112.797	-86	110.12	107.0	-	Ok

Final Amount of Butane

The specs are before adding 10% ETOH

For prices and info, please send us an email at info@refautom.com

7. Blending Advisory Services: Looking For Help?

Do you need advice on gasoline, diesel, and bunker blending?

Gasoline

- Butane blending in Winter Gasoline
- Ethanol blending trading offs: octane vs. reformer severity
- Reducing octane giveaway: what is achievable and how
- RIN's: what can you do anything about it
- Improve blending bottom line with in-line blenders

IMO 2020 Bunkers – What To Do?

Refiners, what to do with crude slate, process units operating targets, resid destruction, resid hydrotreating/hydrocracking, clever blending of ATB's and VTB's with LCO, slurry, etc.…Review Refinery LP reports for stream allocation flexibility, and purchased components…
Supplier: what LS blendstocks are available in the supply chain, blending flexibility using blend optimizers, things to watch out for

We provide **blending economic performance assessment studies**, including cost/ benefits, at a very attractive, lump-sum fixed price.
So, send us an email at info@refautom.com or call us, at +1-973-644-2270.

Recently many oil terminals and refineries are trying to make money injecting cheap butane to be compliant. Do you know how to do that? Is the butane the only alternative? Can you blend something else like cheap Light Naphtha?

Currently we are working with many customers to achieve this goal, helping you to save and make $-Money.

Trust our expertise and know-how. We are here to blend your dreams!!!!

8 Publications: what is blending and IFO 0.5 % S

We wrote a paper that is published in Hydrocarbon Processing describing in an easy and direct way what blending is. Please take a look to the paper and let us know your opinion.

Click here to see the paper.

The other regarding IMO 0.5 % Sulfur, it is published on Oil & Gas Journal. Click here to get a free copy.

For a free copy of optimizer brochures for gasoline, diesel, and bunker, please send an email to info@refautom.com

Get also a tutorial to understand the optimizer. It is easy to use and you can make tons of $-Money. Click here to take a look.

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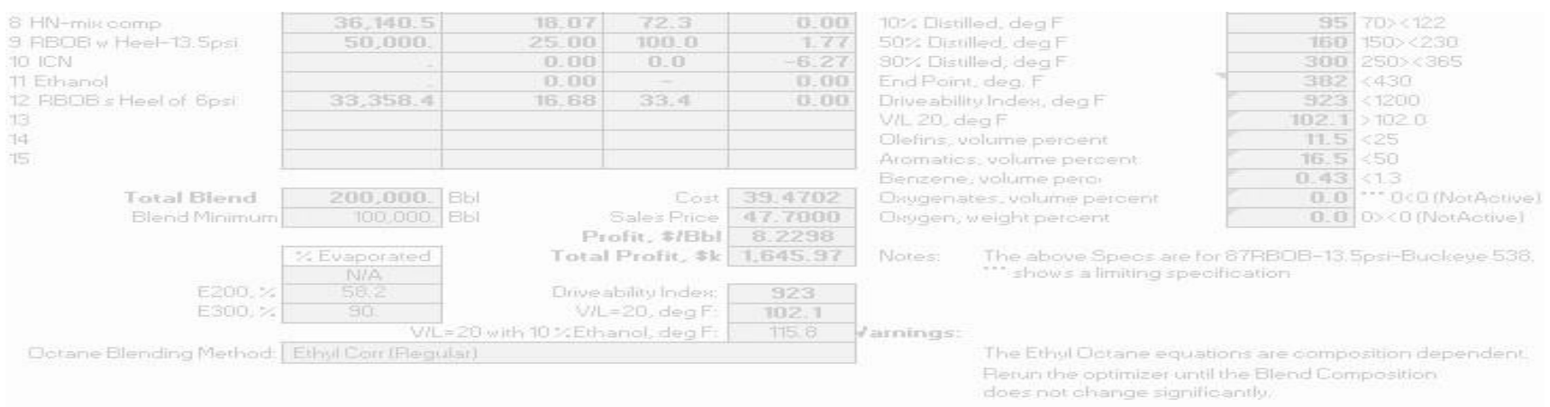
We Are Looking for an Oil Terminal to BUY!!!

If you know of any located in NEW YORK Harbor, on The Houston Ship Channel, or New Orleans, PLEASE LET US KNOW by sending us an email at info@refautom.com

You can see the desired oil terminal characteristics here….



8 HN-mix comp	36,140.5	18.07	72.3	0.00
9 RBOB w Heel-13.5psi	50,000.	25.00	100.0	1.77
10 ICN	.	0.00	0.0	-6.27
11 Ethanol	.	0.00	–	0.00
12 RBOB s Heel of 6psi	33,358.4	16.68	33.4	0.00
13				
14				
15				

Total Blend	200,000.	Bbl	Cost	39.4702
Blend Minimum	100,000.	Bbl	Sales Price	47.7000
			Profit, $/Bbl	8.2298
			Total Profit, $k	1,645.97

	% Evaporated
	N/A
E200, %	56.2
E300, %	90.

Drive ability Index:	923
V/L=20, deg F:	102.1
V/L=20 with 10 % Ethanol, deg F:	115.6

Octane Blending Method: Ethyl Corr (Regular)

10% Distilled, deg F	95	70><122
50% Distilled, deg F	160	150><230
90% Distilled, deg F	300	250><365
End Point, deg. F	382	<430
Drive ability Index, deg F	923	<1200
V/L 20, deg F	102.1	>102.0
Olefins, volume percent	11.5	<25
Aromatics, volume percent	16.5	<50
Benzene, volume perc	0.43	<1.3
Oxygenates, volume percent	0.0	*** 0<0 (NotActive)
Oxygen, weight percent	0.0	0><0 (NotActive)

Notes: The above Specs are for 87RBOB-13.5psi-Buckeye 538.
*** shows a limiting specification

Warnings:

The Ethyl Octane equations are composition dependent. Rerun the optimizer until the Blend Composition does not change significantly.

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