

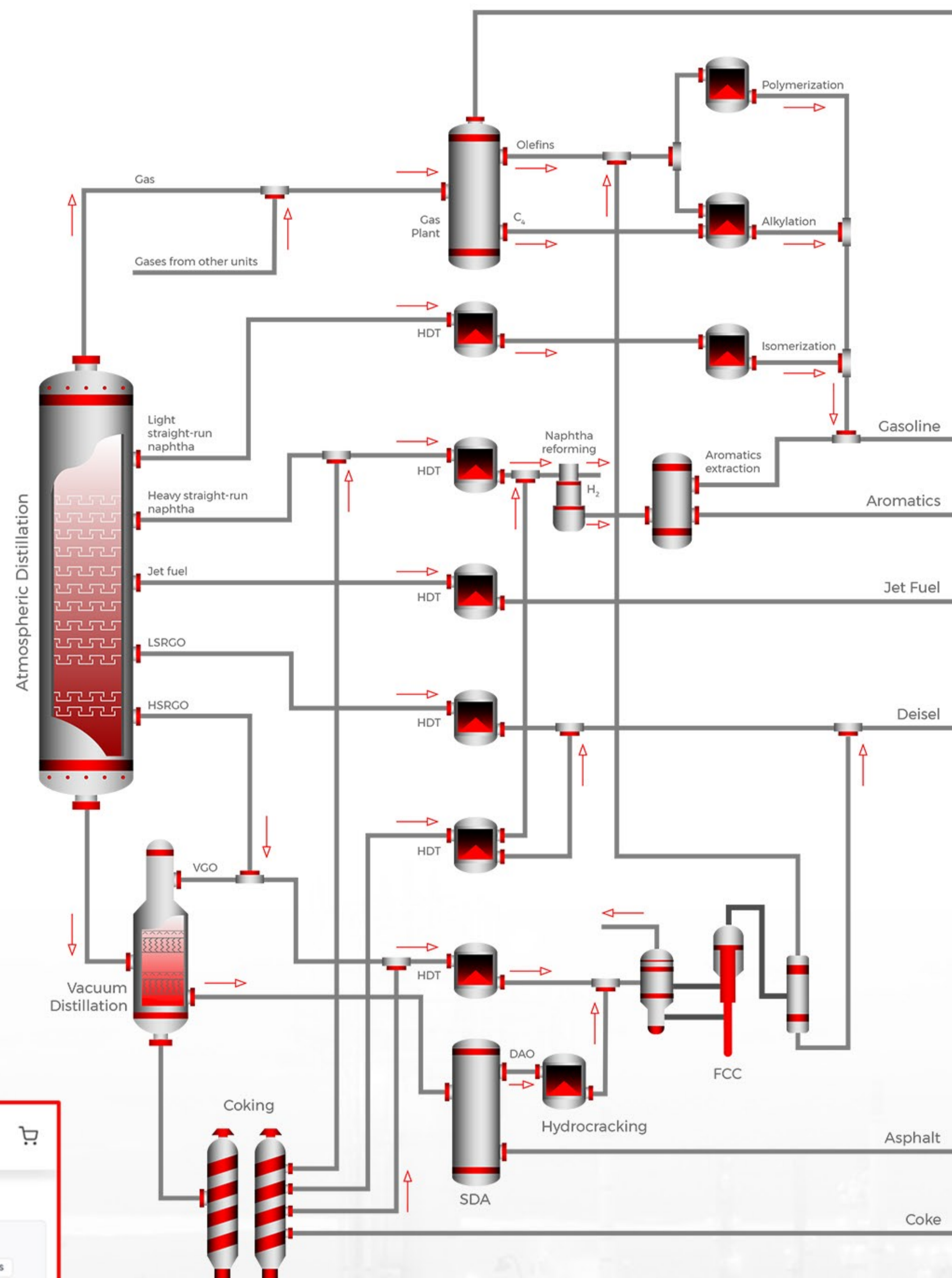


MEET REFINERY CALC

we are your refinery, petrochemical, industrial gas, bench marking, crude trading, power, natural gas and energy intelligence supplier.

The **REFINERY CALCULATOR** is a cloud-based refinery optimization software package that enables users to create actionable intelligence for any refinery or refining region around the world.

The **REFINERY CALCULATOR ENGINE** has proprietary process yield correlations and configurations for nearly every complex refinery in the world. The tool is powerful, robust, reliable and fast! It performs thousands of calculations to maximize the profitability of a refinery within seconds. Make simple selections, toggle units on or off, change capacities, prices or even build your own custom refinery and obtain the information you desire. Further, our commercial proposal is simple: no upfront software license fees and yearly maintenance fees, no lengthy installations or training sessions, no special pc or mac requirements. All you need is an internet connection and a subscription package and actionable refinery intelligence can be generated within seconds.



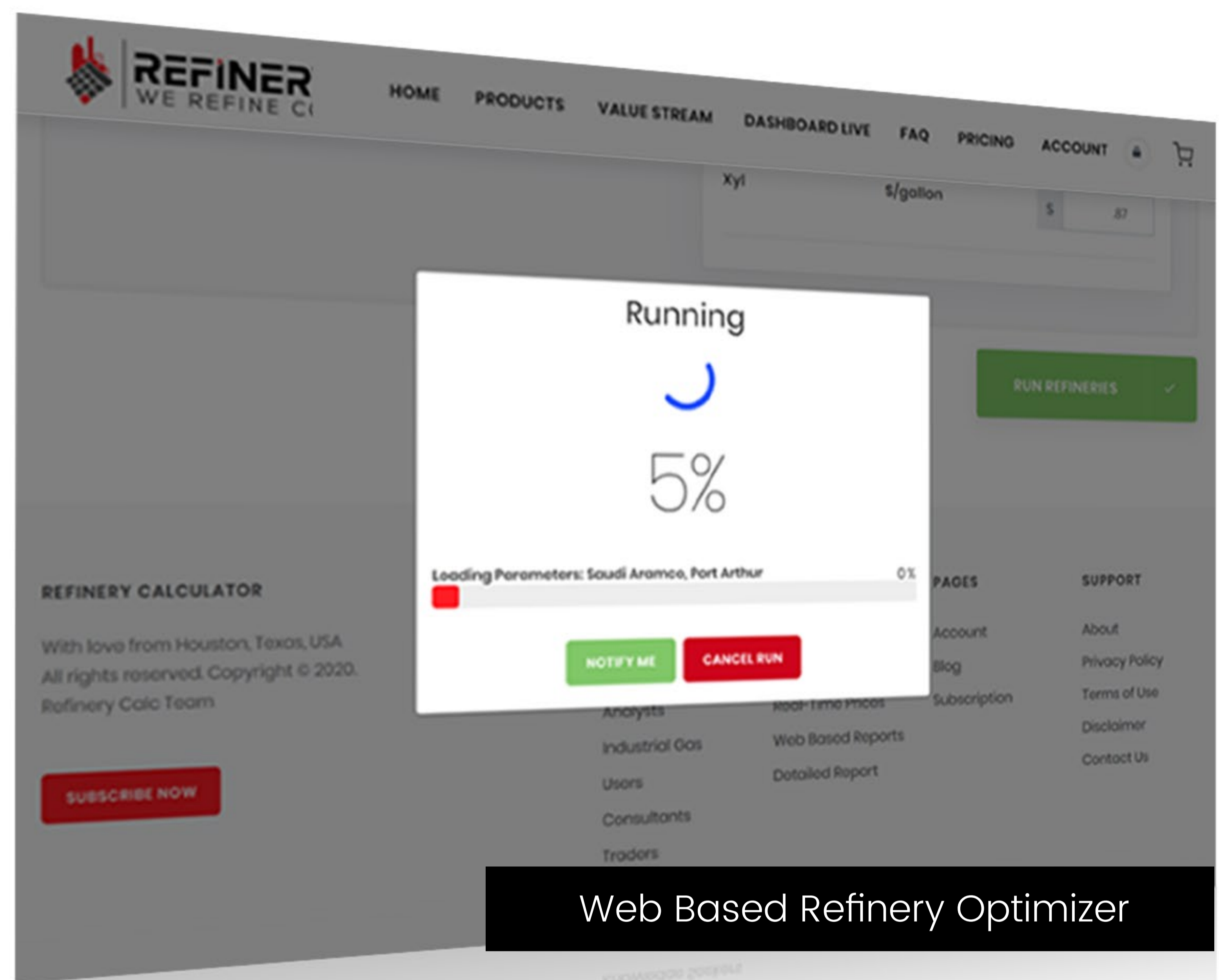
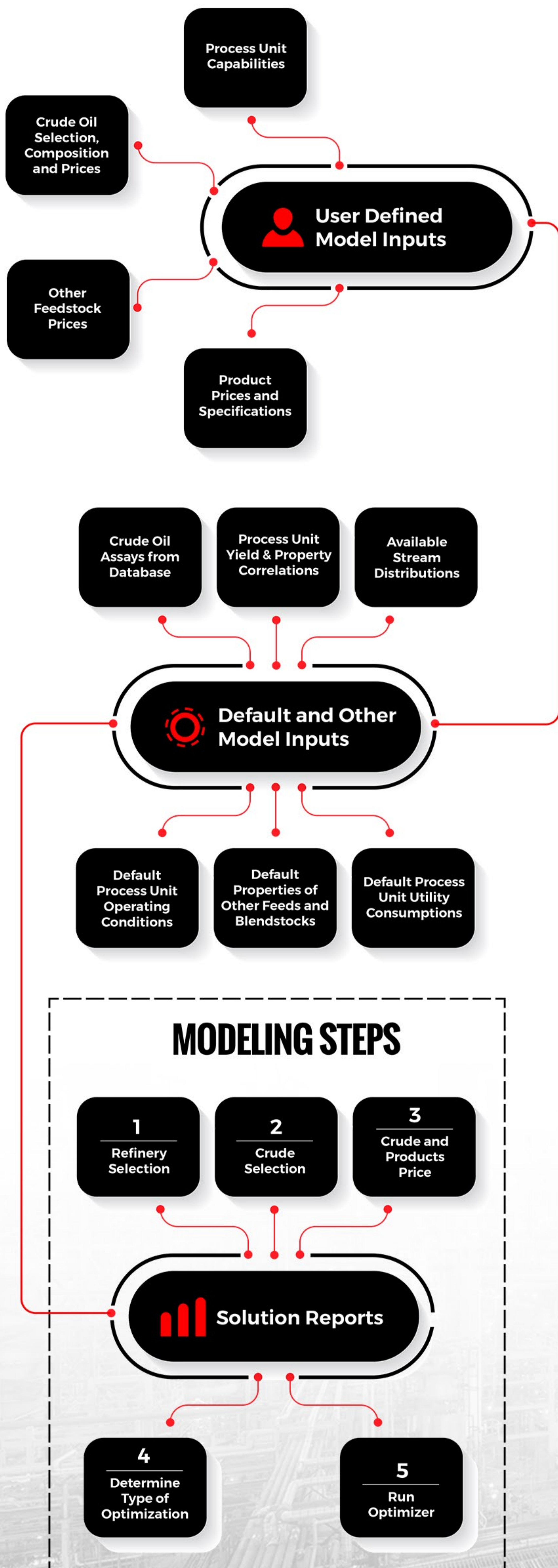
The screenshot shows the Refinery Calc web interface for Saudi Aramco, Port Arthur. It features several panels for user input and data display:

- Refinery Units:** A table with columns for Status, Capacity, Bias, and Total Capacity. Units include Alky, Lubes, Isom, GO HT, and Gas HT.
- Crude Composition:** A section for setting WTI, API, and Sulfur content.
- Product Prices:** A table for setting prices for Asphalt and Lubes.
- Crude Prices:** A table for setting prices for various crude oils like WTI, Arablt, ArabMed, ArabHvy, and Maya.
- End Points:** A section for setting temperature ranges for Resid, GO, Dist, Kero, Naph, and LSR.
- Product Prices (Detailed):** A table for setting prices for various products like Sour Diesel, Methanol, Heavy Fuel Oil, Cumene, Coke, MTBE, Heating Oil, Kerosene, and Premium Gasoline.

A "Web Inputs" label is placed at the bottom right of the interface screenshot.



REFINERY CALC OVERVIEW



Web Based Refinery Optimizer

Customized Actionable Intelligence Solutions

We can use the Refinery Calculator to create customized refinery market intelligence for your future sales plan, case study, feasibility study or analysis according to your specific needs. We can generate actionable intelligence at the regional level, country level, or global level. Partner with us to create actionable market intelligent solutions such as :

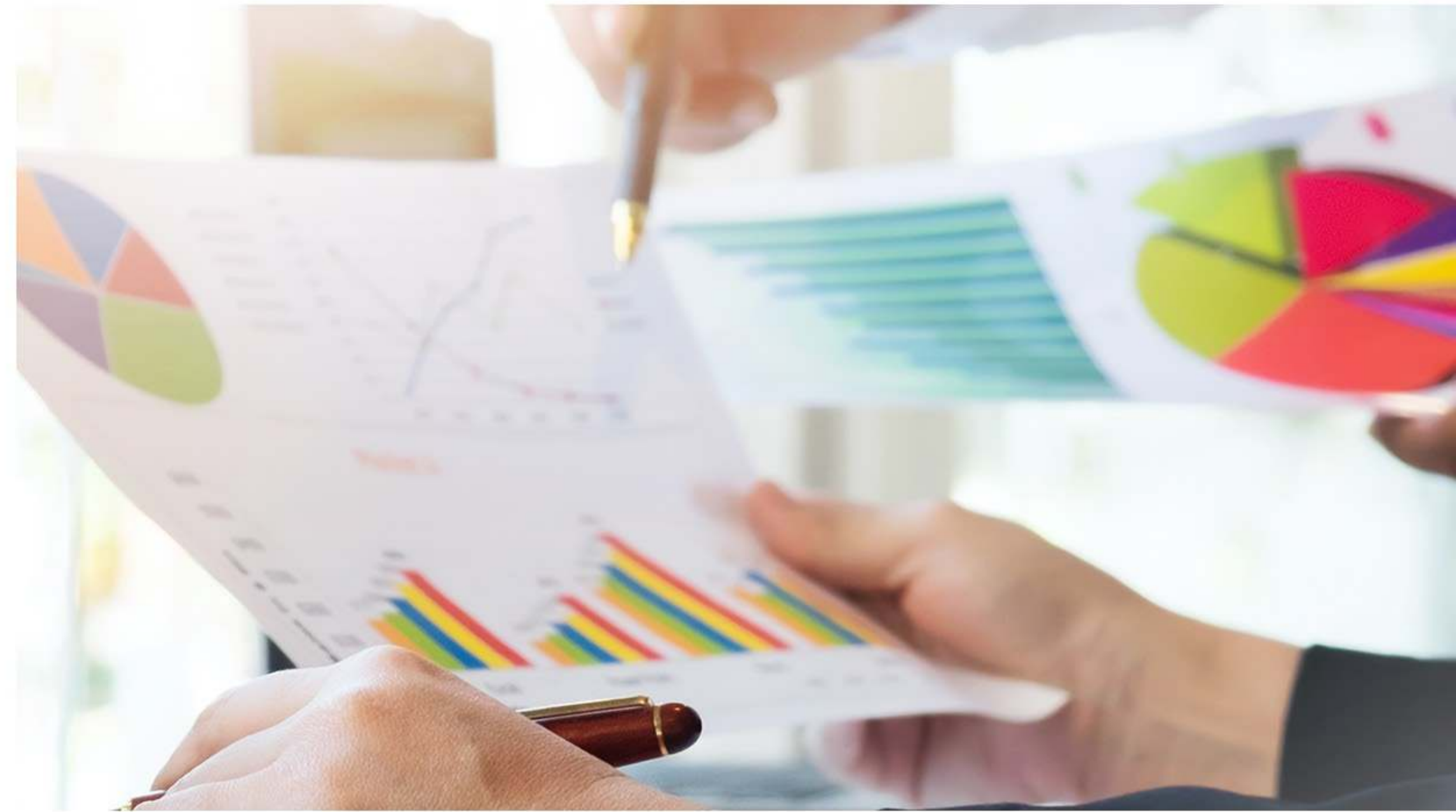
- ✓ Product Yields (gasoline, Jet, Kerosene, Diesel)
- ✓ Refinery Margins
- ✓ Refinery Utilization
- ✓ Forward Price Curves for Refined Products
- ✓ Price Elasticity Curves for Refined Products
- ✓ Prediction and Forecasting of Future Refined
- ✓ Product Prices
- ✓ Demand Side Economic Projections of Refined Products



REFINERY CALC REPORTS

Weekly US Refineries Profitability Report

This report provides users with the estimated profitability of all complex refineries in the US. The report is generated using the Refinery Calculator combined with current weekly crude and product prices and optimized for refinery margins (\$/b).



Weekly US Refineries Energy Report:

This report provides users with the estimated energy consumption of all complex refineries in the US. The report is generated using the Refinery Calculator based on fixed or optimized crude run rates.

Weekly US Refineries Sustainability Report:

This report provides users with the estimated water consumption, carbon dioxide emissions and sulfur production produced from all complex refineries in the US. The report is generated using the Refinery Calculator combined with current

North America Hydrogen Report:

This report provides users with the estimated hydrogen consumption by each major refinery processing unit, internal hydrogen production from the refineries hydrogen producing units, outside or “over the fence” hydrogen requirements, the economic value of “over the fence” supplied hydrogen and other related information. The report provides detailed hydrogen analysis for all complex refineries in the US.

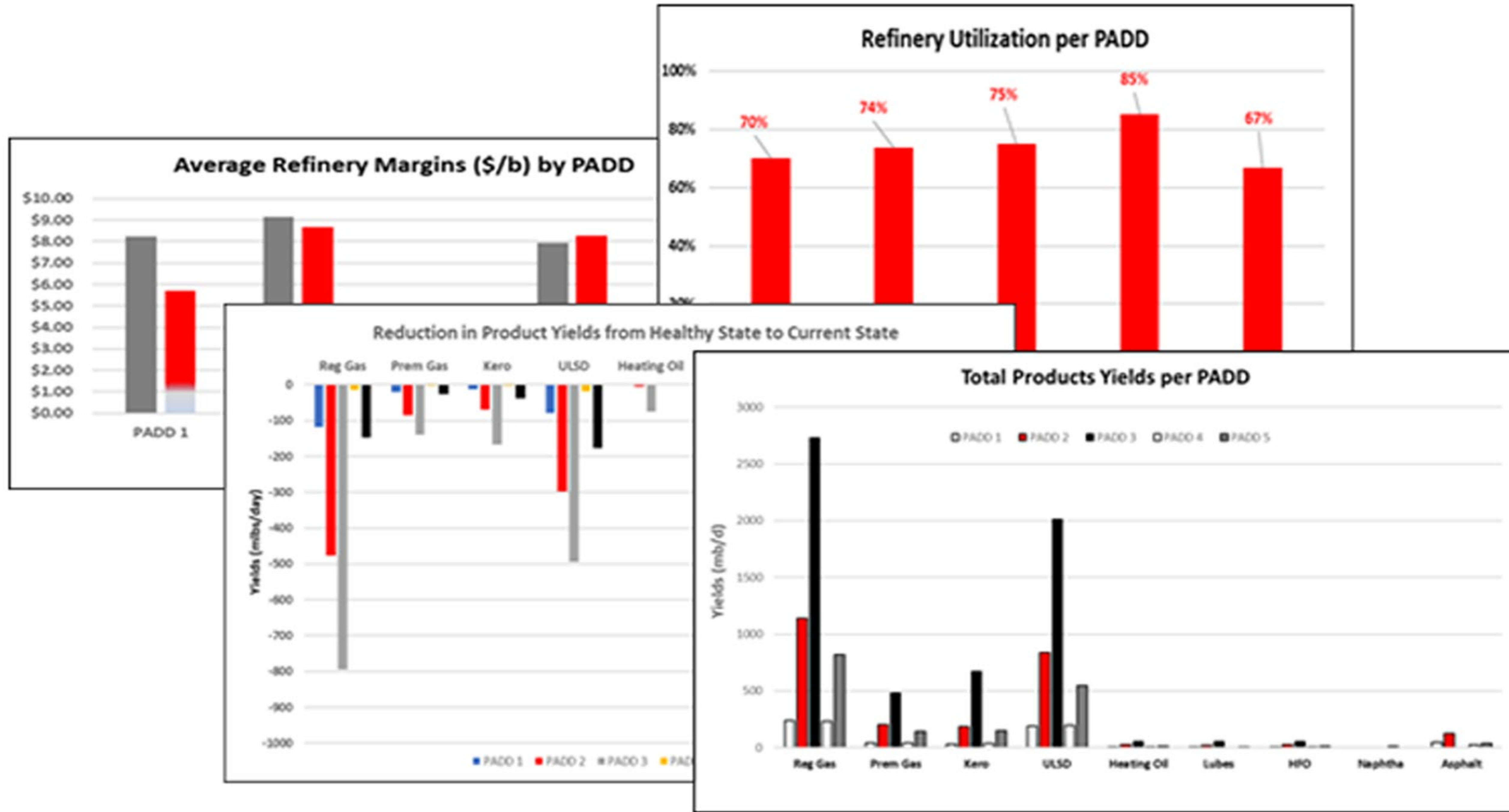
Weekly Global Refining Profitability and Energy Report:

This report provides users with the estimated profitability of all complex refineries in the world. This report will also provide users with rankings and projections of refineries at risk of shutting down or taking prolonged maintenance outages given the current economic conditions. The report is generated using the Refinery Calculator combined with current weekly crude and product prices.





REFINERY CALC SCREENSHOTS



Case	Ref No	Product	Current	1	2	3	4	5	6	7	8	9	10	11
65	17	Outside H2	232.73	30.71	32.05	32.05	67.29	203.19	190.82	137.90	126.16	180.13	59.75	54.12
66		H2 Intensity scfb	546.1	347.7	426.9	426.9	507.5	640.4	589.7	500.2	723.6	603.4	393.0	405.7
67		\$/mmbtu Natural Gas	\$2.75	\$3.00	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75	\$2.75
68		Expen Factors Process mbtu/b	268.0	293.8	277.5	277.5	286.4	254.7	236.6	278.0	269.7	256.7	257.3	265.3
69		Steam lb/b	136.2	127.3	139.1	139.1	152.7	129.6	103.4	95.6	118.0	135.4	104.9	105.4
70		Power kw/b	5.72	6.11	5.80	5.80	6.00	6.82	4.81	5.12	6.37	6.85	5.48	5.63
71		Hydrogen mbtu/b	2.9	10.0	2.7	2.7	2.3	1.3	0.8	9.6	2.8	2.0	5.1	4.7
72		Total Energy mbtu/b	442.7	457.5	455.0	455.0	480.6	433.4	368.5	397.1	428.2	442.4	394.0	402.6
73		Variable \$/b	\$1.22	\$1.37	\$1.25	\$1.25	\$1.32	\$1.19	\$1.01	\$1.09	\$1.18	\$1.22	\$1.08	\$1.11
74		Fix \$/b	\$2.10	\$2.07	\$3.75	\$3.75	\$3.38	\$2.25	\$1.84	\$2.12	\$2.18	\$2.35	\$2.11	\$2.27
75		Economics Total Expenses \$/b	\$3.32	\$3.45	\$5.00	\$5.00	\$4.71	\$3.44	\$2.86	\$3.22	\$3.36	\$3.57	\$3.20	\$3.38
76		m\$/d Revenue mm\$/d	\$42.04	\$41.47	\$17.32	\$17.32	\$19.51	\$31.84	\$28.56	\$42.20	\$16.58	\$32.61	\$20.02	\$18.85
77		Crude&Feeds mm\$/d	\$38.04	\$34.97	\$10.86	\$10.86	\$13.99	\$25.59	\$24.05	\$35.74	\$14.70	\$26.73	\$18.00	\$16.65
78		Adjust for wt bal mm\$/d	-\$0.58	\$0.18	-\$0.50	-\$0.50	-\$0.30	-\$0.44	-\$1.00	-\$0.11	\$0.24	-\$0.26	\$0.21	\$0.19
79		GRM aft adj mm\$/d	\$4.00	\$6.51	\$6.46	\$6.46	\$5.52	\$6.25	\$4.52	\$6.46	\$1.88	\$5.88	\$2.02	\$2.21
80		Exp mm\$/d	\$2.02	\$2.01	\$1.35	\$1.35	\$1.42	\$1.19	\$1.19	\$1.94	\$0.74	\$1.49	\$0.93	\$0.91
81		Margin mm\$/d	\$1.98	\$4.49	\$5.11	\$5.11	\$4.18	\$4.82	\$3.33	\$4.52	\$1.14	\$4.39	\$1.09	\$1.30
82		\$/b GRM \$/b aft adj	\$6.58	\$11.14	\$23.96	\$23.96	\$19.31	\$15.10	\$10.89	\$10.72	\$8.56	\$14.07	\$6.96	\$8.21
83		Exp \$/b	\$3.32	\$3.45	\$5.00	\$5.00	\$4.71	\$3.44	\$2.86	\$3.22	\$3.36	\$3.57	\$3.20	\$3.38
84		Margin \$/b	\$3.26	\$7.69	\$18.96	\$18.96	\$14.60	\$11.66	\$8.03	\$7.50	\$5.20	\$10.50	\$3.77	\$4.83
85		Cap mm\$/d	\$7.57	\$7.79	\$5.23	\$5.23	\$5.37	\$5.35	\$4.36	\$7.56	\$2.67	\$5.22	\$3.25	\$3.19
86		EBIT b\$/y	\$8.86	\$8.32	\$6.73	\$6.73	\$6.39	\$6.08	\$4.78	\$8.86	\$2.52	\$6.51	\$3.57	\$3.55
87		IRR %	2.39%	13.56%	19.56%	19.56%	16.77%	20.43%	17.95%	12.67%	10.95%	17.33%	5.80%	8.00%
88		Complexity EDC mb/d	7,093	7,300	4,902	4,902	5,035	5,015	4,086	7,083	2,504	4,897	3,048	2,988
89		Nelson Complex	11.7	12.5	18.2	18.2	17.6	12.1	9.8	11.8	11.4	11.7	10.5	11.1
90		Balance Wt %	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
91		Crude and Feeds Crude mb/d	608.6	584.0	269.7	269.7	286.1	413.6	415.0	602.4	220.0	418.1	290.5	268.8
92		C4	0.0	20.9	3.1	3.1	2.4	29.7	0.0	0.4	12.6	30.0	8.9	8.1
93		Toluene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

