



**Hoekstra Trading LLC**

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## BEFORE YOU MAKE YOUR NEXT **CATALYST PURCHASE**

### READ THIS

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Dear Refining Leader,

Is your refinery missing out on millions of dollars in increased profits because you're using the wrong catalysts?

Again and again, we find refiners choosing less-productive catalysts -- and paying a lot more for them than they should. Most often, that's because they accept unproven claims and recommendations from their friendly catalyst suppliers instead of performing due diligence and reviewing objective data.

By helping refiners like you take a fresh look at catalysts and give them what they need to make more informed decisions, we've helped them boost ULSD and ULSG unit profits by \$1 to \$5 million annually ... and reduce the cost of their catalyst purchases by 30 percent. Our research and advice have helped them extend cycle life and significantly reduce their procurement costs. And we've accomplished those goals 100 percent of the time!



We've devoted decades to testing and researching catalyst performance and studying how various catalysts perform in real-world environments. We've revealed insights every catalyst buyer should know, like competitive pricing, supplier cost structure, and supplier profitability. Our knowledge helps refiners choose better catalysts and buy them at better prices.

Now we're offering our knowledge to refiners like you at a special price. We're sharing our Independent Catalyst Test Report #3, covering the third year of our open-market, shared-cost test program, and including:

- results of the "10-20 test" for four ULSD diesel hydrotreating catalysts.
- results of the "10-20 test" for four additional catalysts,
- a competitive analysis of available hydroprocessing catalysts,
- published reports and product literature for the tested catalysts,
- an in-person presentation offering more detailed data analysis,
- discussion of your specific catalyst selection projects, and
- six months of unlimited phone/email consultation on catalyst selection.

You'll get all that for a one-time cost of just \$50,000 -- a tiny fraction of the profit impact of your catalyst decision.

Still not convinced? *Order by March 31, 2024, and we'll include our previous Research Reports 1 and 2, giving you solid data from another 16 pilot plant catalyst tests at no additional cost.*

And, if you're considering a new catalyst we'll help you evaluate it, and even test it for you at no additional cost.

You don't need to pay upfront, either. We'll deliver the reports to you as soon as we receive a signed purchase order. I've attached a sample purchase order, along with more information about what we'll discuss with you, and our catalyst ranking grid, test protocol, and test schedule.

Of course, you can make your catalyst decisions without this independent test data. If you do, I'll predict you'll buy from your current supplier and pay more than the market price. Or you can do your own testing and invest upwards of \$300,000 and wait a year to learn what you can get from our reports right now for much less.

Don't risk making decisions about something as costly and critical as your next catalyst without this proven, valuable, and completely objective information. Reply today with your purchase order, and we'll rush everything to you.

Best wishes,

*George Hoekstra*

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P.S. Hoekstra Trading has earned a reputation for helping refineries buy the best catalysts at industry-low prices. Catalyst suppliers know we encourage a competitive sourcing strategy, so our clients usually see lower price quotes immediately -- even when they don't change their catalyst or their supplier.



"AND, IF YOU'RE CONSIDERING A NEW CATALYST WE'LL HELP YOU EVALUATE IT, AND EVEN TEST IT FOR YOU AT NO ADDITIONAL COST."



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## WHAT WILL YOU LEARN IN OUR **PRESENTATION?**

With your purchase, you'll receive an in-person presentation and discussion at a location you choose. We'll provide more detailed data and analysis of hydroprocessing catalyst technologies in today's market, discuss your specific catalyst selection projects, share real-world successes and failures our clients have experienced, and answer questions like these:

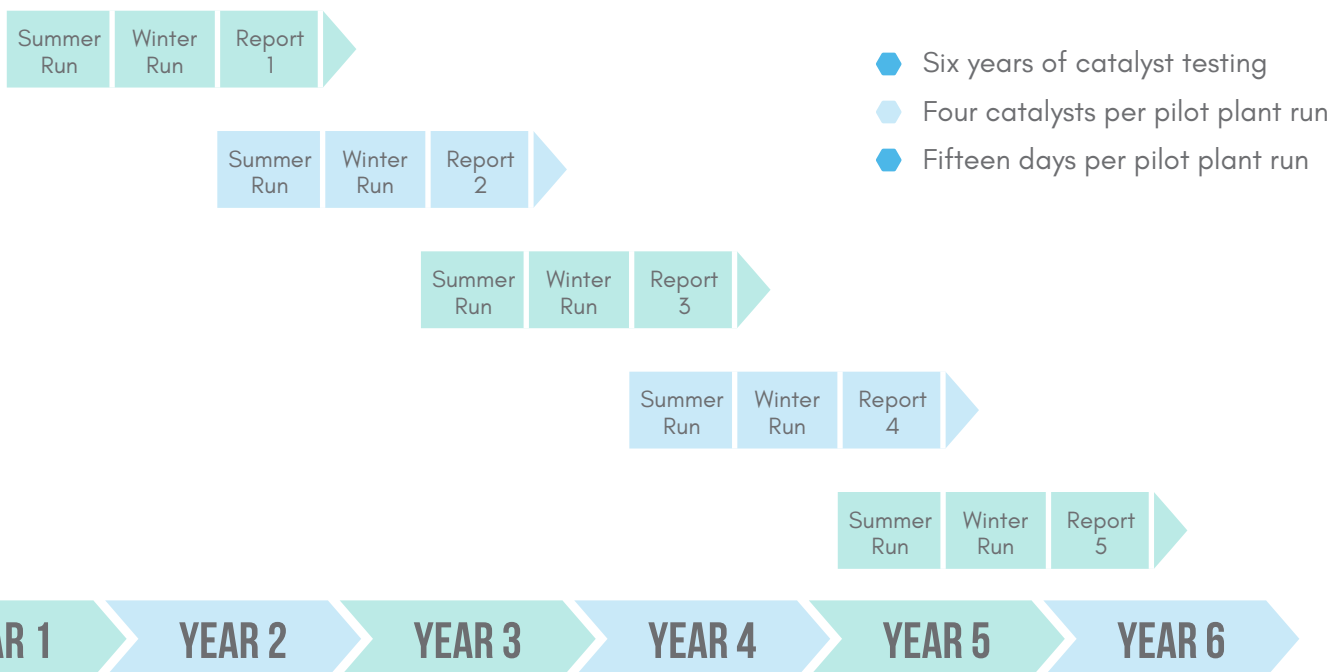
- How do the product offerings of different vendors compare in ULSD performance?
- How reliable are vendor claims for improved performance of new catalysts?
- Do the claimed benefits of new catalysts translate into better performance on real units?
- How reliable are pilot plant tests for predicting commercial unit performance?
- How is catalyst stability factored into catalyst rankings?
- What profit gain can be realized from using the best catalyst vs. a second-tier catalyst?
- What are the risks of using new, unproven catalysts?
- How sensitive is catalyst performance to feed changes and operational upsets?
- What drives most hydroprocessing catalyst decisions?
- How often does pilot plant test data swing a catalyst decision?
- What is the cost structure of catalyst suppliers?
- How is catalyst priced and how does the price charged to different customers vary?
- How profitable is the catalyst business?

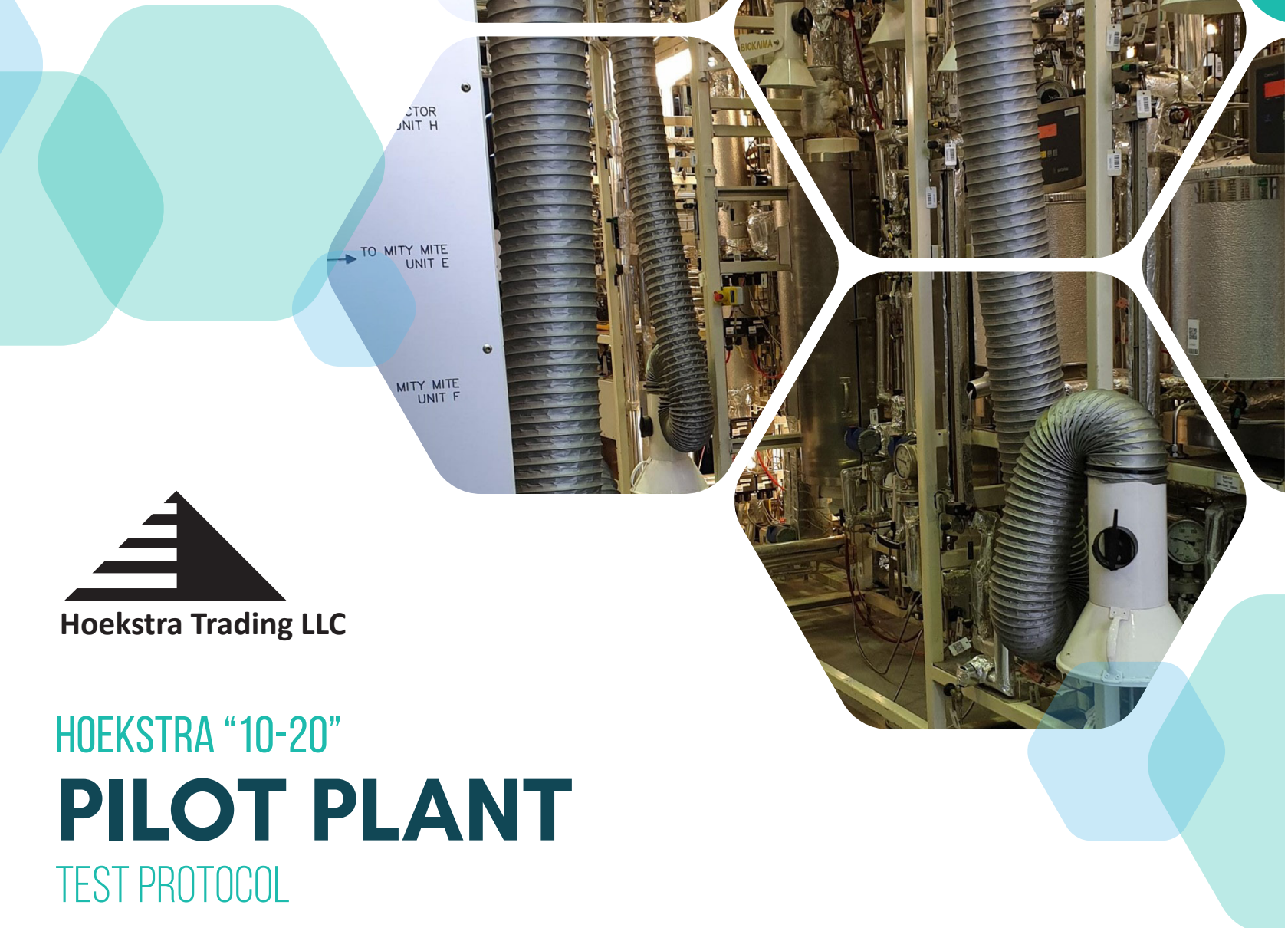




# HOEKSTRA “10-20” PILOT PLANT TEST SCHEDULE

Now to get back to our our topic of market research, this chart shows our first year’s work on a timeline that starts back in May of 2009. At that time, we had no clients and no catalysts to test. We sent out a request for participation to 15 independent refiners which described our plan and asked who wanted to submit catalyst samples to the program. A few people were very interested in our proposal. They submitted samples, which were tested in our summer 2009 pilot plant run. That was a bit of real time market research in that we found some people willing to pay to have a catalyst tested in a program like this. Then a few more people submitted samples, which showed there was some more market, and those samples were tested in our winter pilot plant run. So the process by which this happened was not so neat and clean and logical as my recap a minute ago might have suggested. In fact, our catalyst sample set came about partly from an exercise in market research, this is, in finding out who was willing to pay money to have a catalyst tested.





# HOEKSTRA “10-20” PILOT PLANT TEST PROTOCOL

## HOEKSTRA “10-20” HIGH PRESSURE PROTOCOL

Condition	Feed	Pressure		Gas/Oil Rate		Temperature		LHSV	Days
		bar	psig	nm <sup>3</sup> /m <sup>3</sup>	SCFB	C	F		
1	LGO	50	725	300	1780	340	643.4	1	3
2	20% LCO	50	725	300	1780	340	643.4	1	3
3	20% LCO	50	725	300	1780	357	674	1	3
4	20% LCO	50	725	300	1780	375	706.4	1	3
5	20% LCO	50	725	300	1780	357	674	1	3
Note: condition 5 added after run GH-1									15

- Low pressure protocol is identical except at 35 bar = 507 psig
- For ULSG gasoline desulfurization test protocol, Contact George Hoekstra [george.hoekstra@hoekstratrading.com](mailto:george.hoekstra@hoekstratrading.com) +1 630 330-8159





HIGH PRESSURE  
**CATALYST**  
 RANKING

	ART	ALBEMARLE	AXENS	CRITERION	HALDOR TOPSOE	JOHNSON MATTHEY
-5°F	Seventeen different catalysts and six replicate tests placed in this grid					
BASE						
+5°F						
+10°F						
+15°F						
+20°F						
+25°F						
+30°F	End of cycle					



LOW PRESSURE  
**CATALYST**  
 RANKING

	ART	ALBEMARLE	AXENS	CRITERION	HALDOR TOPSOE	JOHNSON MATTHEY
-5°F	Eleven different catalysts and three replicate tests placed in this grid					
BASE						
+5°F						
+10°F						
+15°F						
+20°F						
+25°F						
+30°F	End of cycle					



# SAMPLE INVOICE

## Hoekstra Trading LLC

DATE: SAMPLE  
INVOICE NUMBER: SAMPLE

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Phone +1 630 330 8159  
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EIN

TO

PAYMENT TERMS	DUE DATE
30 days from invoice	30 days from invoice

quantity	description	unit price USD	line total USD
	<b>Reference PO Number</b> _____		
1	Report, Independent Catalyst Test Report 3 consisting of: 1. Section 1 - test report for four catalysts 2. Section 2 - test report for four more catalysts 3. Section 3 - competitive market analysis 4. Attachments	\$50,000	\$50,000
1	Client presentation delivered in on-site client meeting.	No charge	No charge
1	Unlimited phone and E-mail consultation for 6 months on matters related to catalyst selection	No charge	No charge
Total			\$50,000