



SÜD-CHEMIE AG
METHANOL SYNTHESIS LOOP EVALUATION

CLIENT	Range Fuels Soperton Plant, LL	Start-up date:	4/1/2009
Catalyst	C79-7GL	Sampling date:	5/1/2009
Catalyst volume	105.9 ft ³	Days on stream:	30

GAS FLOWS		Reported data	Reconciled data	%Error (rel.)
Make-up gas (MUG)	[MSCFH]	208	208	0.03
Recycle gas	[MSCFH]		749	
Reactor inlet gas	[MSCFH]	956	956	0.00
Effluent gas	[MSCFH]		866	
Purge gas	[MSCFH]	70	70	-0.01
Recycle Ratio	[v/v]	3.61	3.61	
Stoichiometric No.:				
Make-up gas	[-]	1.22	1.19	
Inlet gas	[-]	0.26	0.26	

COMPOSITIONS

Make-up gas		Reported data	Reconciled data	%Error (rel.)
Carbon monoxide	[Vol%]	32.92	33.48	1.71
Carbon dioxide	[Vol%]	3.49	3.50	0.18
Hydrogen	[Vol%]	48.07	47.67	-0.83
Water	[Vol%]	0.37	0.37	-0.01
Methanol	[Vol%]	0.00	0.00	0.00
Nitrogen + Argon	[Vol%]	0.08	0.08	1.92
Methane	[Vol%]	15.06	14.68	-2.56
SUM		99.99	99.78	

Recycle + Purge gas

Carbon monoxide	[Vol%]	37.00	37.00	0.00
Carbon dioxide	[Vol%]	8.06	8.06	0.03
Hydrogen	[Vol%]	10.39	10.42	0.32
Water	[Vol%]	0.11	0.11	-1.02
Methanol	[Vol%]	0.92	0.92	0.00
Nitrogen + Argon	[Vol%]	0.24	0.24	0.12
Methane	[Vol%]	43.28	43.25	-0.08
SUM		100.00	100.00	

Reactor inlet gas

Carbon monoxide	[Vol%]	36.73	36.24	-1.37
Carbon dioxide	[Vol%]	7.09	7.07	-0.27
Hydrogen	[Vol%]	18.54	18.51	-0.16
Water	[Vol%]	0.18	0.17	-8.71
Methanol	[Vol%]	0.88	0.72	-22.18
Nitrogen + Argon	[Vol%]	0.21	0.21	-2.03
Methane	[Vol%]	36.37	37.04	1.82
SUM		100.00	99.95	

Effluent gas

Carbon monoxide	[Vol%]		35.01	
Carbon dioxide	[Vol%]		7.63	
Hydrogen	[Vol%]		9.86	
Water	[Vol%]		0.37	
Methanol	[Vol%]		6.00	
Nitrogen + Argon	[Vol%]		0.23	
Methane	[Vol%]		40.92	
SUM			100.00	



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CLIENT		Range Fuels Soperton Plant, LL		Sampling date:		5/1/2009
PRODUCTION RATE		Reported data		Reconciled data		%Error (rel.)
Methanol-in-crude	[GPM]		9		9	1.98
Water content	[wt%]		2.7		2.8	3.12
Space-time-yield	[mto/m ³ ,h]				0.5666	
Space velocity	[Nm ³ /m ³ -cat,h]				8540	
Spec. MUG consumption	[kmol/to-MeOH]				146.01	
CONVERSIONS						
Per pass						
Carbon monoxide	[%]				12.54	
Carbon dioxide	[%]				2.33	
Approach-to-equilibrium						
Carbon monoxide	[%]				12.54	
Carbon dioxide	[%]				2.33	
Total loop						
Carbon monoxide	[%]				62.50	
Carbon dioxide	[%]				21.73	
Carbon efficiency	[%]				57.80	
BALANCES (total loop)						
Inerts	[%]				100.01	
Carbon	[%]				100.01	
Oxygen	[%]				100.00	
Hydrogen	[%]				100.00	
Mass	[%]				100.00	
PROCESS DATA						
Conditions						
Reactor:						
Temperature, inlet	[°F]		482.0			
Temperature, outlet	[°F]		491.0			
Pressure, inlet	[psig]		1494.9			
Pressure, outlet	[psig]		1487.7			
Steam drum:						
Temperature	[°F]		490.1			
Pressure	[psig]		606.7			
Separator:						
Temperature	[°F]		91.4			
Pressure	[psig]		1486.2			



QUOTATION

Quotation Number: 20022125
Date: 27-APR-2009
Customer Ref#:
Valid From 27-APR-2009 to 31-MAY-2009

SÜD-CHEMIE INC.
P.O. Box 32370
Louisville, KY 40232

Phone: (502) 634 7200
Fax: (502) 637 3732
www.sud-chemie.com

Sold-To: (50480)
RANGE FUELS SOPERTON PLANT, LLC.
11101 WEST 120TH AVENUE, SUITE 200
BROOMFIELD CO 80021

Ship-To: (50481)
RANGE FUELS, INC.
6529 NORTH WASHINGTON STREET
DENVER CO 80229

Payment Terms Cash in Advance
Incoterms 2000 FCA LOUISVILLE KY
Delivery Time 30-60 days ARO (based on current manufacturing commitments)
Salesperson Troy Walsh

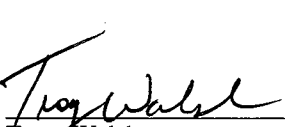
Süd-Chemie Inc. proposes to furnish the materials described below upon the terms and conditions set forth below and those set forth on the reverse side hereof and in any exhibits attached hereto. Title transfers with risk as per INCOTERMS 2000, unless otherwise specified.

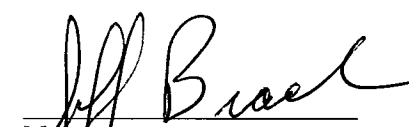
If all catalysts are purchased from Sud-Chemie, we would offer an additional discount of 5%.

Product	Product Number	Qty	UoM	Unit Price	Amount
MEGAMAX® 700: Tab 6x4 SCAG 120P: C79-7	200001703	106.000	FT3	770.000	81,620.00
ActiSorb® S 2: Extr 4.5 SCI: G-72D	200004401	158.000	FT3	217.000	34,286.00
ActiSorb® 410: Extr 3 SCI (G-41P Oxide)	9057	70.000	FT3	660.000	46,200.00

Please note: Due to production automation supplied quantities of this customer specific catalyst might deviate from ordered or offered quantity by up to 5 %. The additional quantity will be charged at the sales price per unit.

Total Items 162,106.00
Grand Total (USD) 162,106.00


Troy Walsh


Manager