Company Technical Brochure

2024
Sultanate of Oman

Barik Engineering & Technical Services, Oman
Integrated Energy Solutions

GROUP OF COMPANIES

Barik Group LLC. is an international business group established in 2001. With operations in 7 countries, multiple offices in 6 countries.

Barik Engineering & Technical Services is an **Integrated Energy Solutions** company who provides **Niche In-House Solutions** to our clients.

BARIK GROUP

JASCO

barik telecom & projects

Barik Energy

BARIK INTERNATIONAL SAUDI ARABIA

خط الابصار للمشاريع والتجارة
Ibsar Line Project & Trading L.L.C

Barik Engineering & Technical Services, Oman
Integrated Energy Solutions

BARIK Barik Contracting & Trading

BARIK OILFIELD SERVICES

Barik IT Solutions
exploring new ways of innovation

OMAN Private School

BARIK Chemicals

BARIK Electricals

SAHEER MA'ADEN

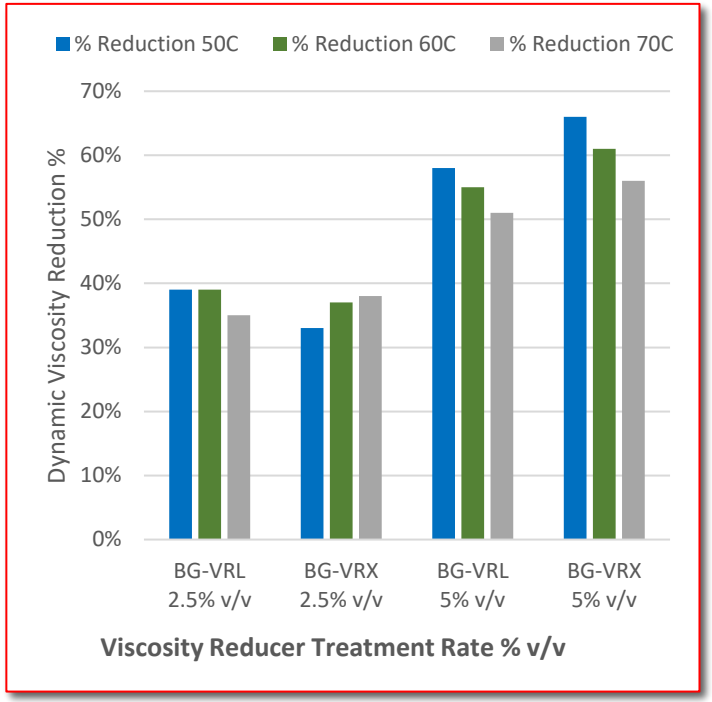
BRAVE HAWKS

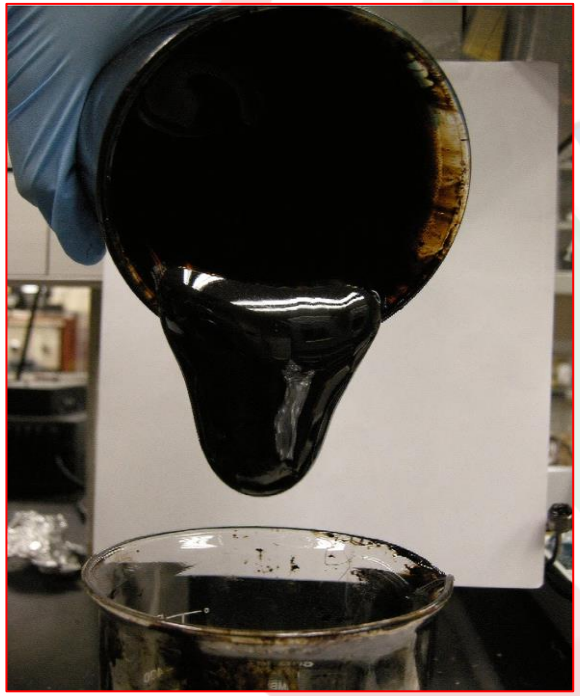
Heavy Oil Optimization & Well Stimulation (Production Enhancement)

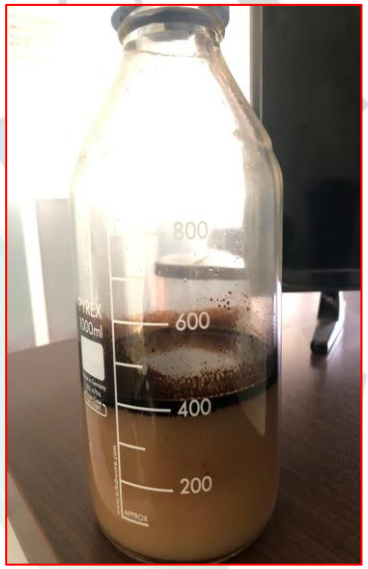
BG_HEAVY OIL SERIES

Key Technical Features

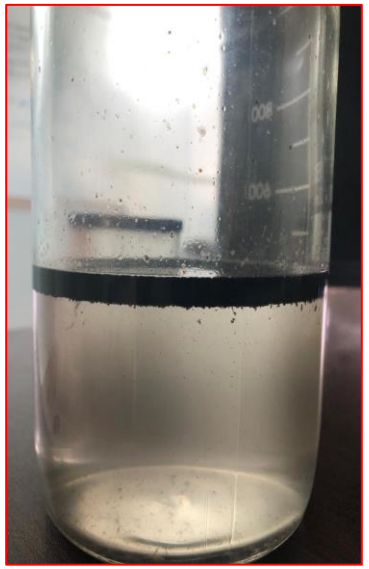
- Optimization of Heavy Oil Related Problems (<9 API) and downhole emulsion.
- Formulated to disallow waxes from forming a continuous three-dimensional network with other heavy components.
- The technology is crude compatible and make NO upset further downstream.
- Can be used wells, flow lines and pipelines during resumption of flow in lower dosage mainly as curative or preventive methodology



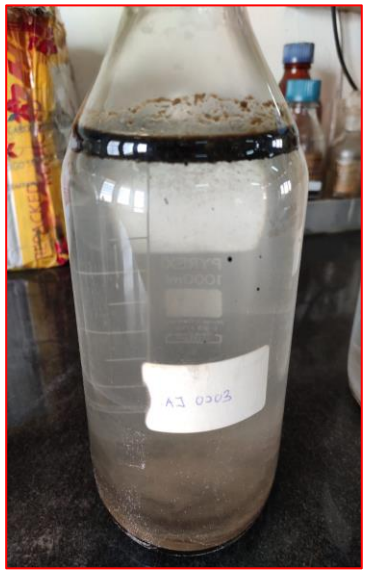




Emulsion sample



2.5% dose

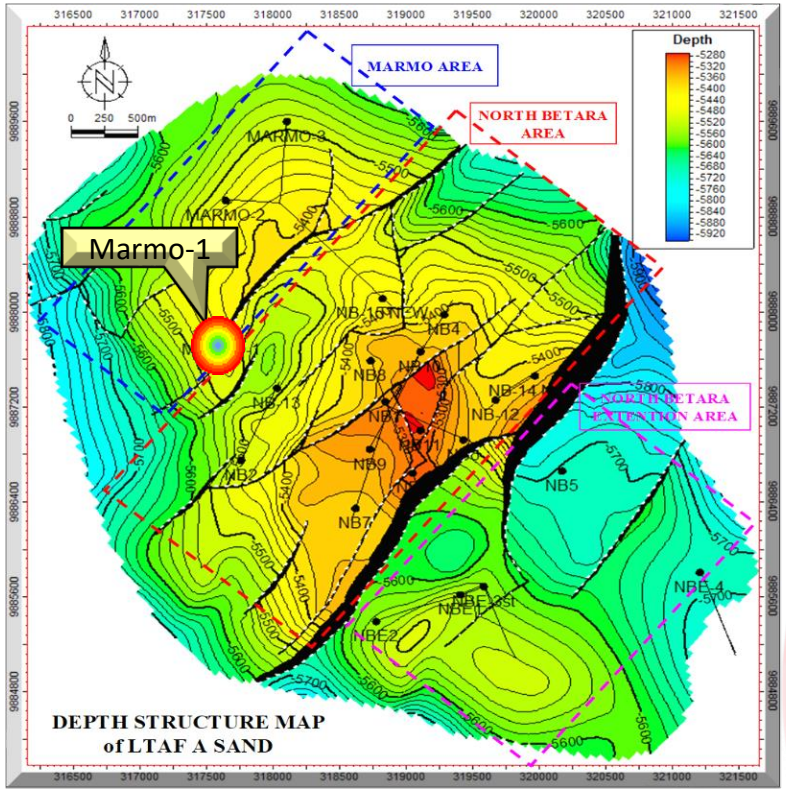


5% dose

Source: Client Report

50-60% reduction in viscosity for heavy oil in just 2.5% of BG_Heavy Oil Series

Sustainability for Waxy Field- Natural Flow



OIL CHARACTERISTIC	
API	29º
Wax	20.3% wt
Asphaltene	6.4% wt
Pour Point	98.6ºF = 37º C

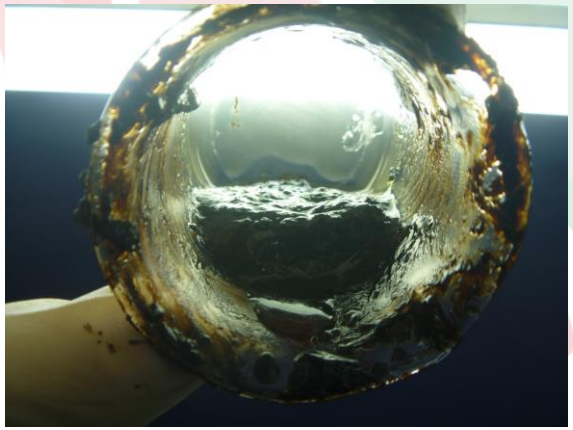
Aug 2008
- Drilling on Marmo #1

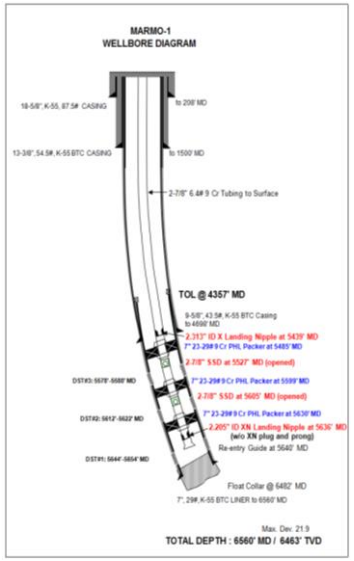
March 2009
- Started to produce
- Initial rate @ 318 BOPD

July 2009
- Shut in due to no flow.
- Crude known to have high wax content

October 2014
- Stimulation job

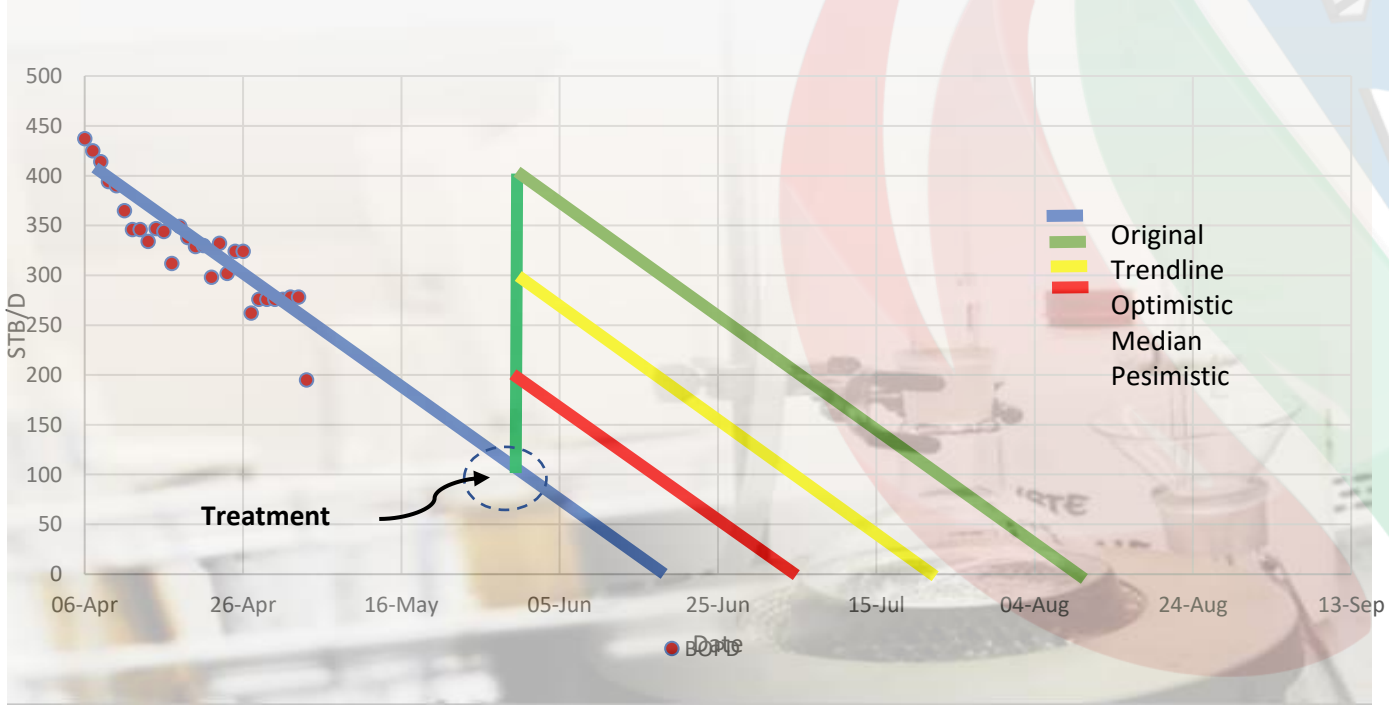
Marmo#1 Sample	Sample basis (%)	Dry basis (%)
Volatiles (moisture+ organic)	36.38	-
Saturates		
Macro crystalline wax (low mol . wt.)	30.62	48.13
Micro-crystalline wax (very high mol. Wt.)	3.26	5.12
Total Saturates	33.88	53.25
Asphaltenes	6.51	10.23
Resins	4	6.3
Aromatics	13.49	21.2
Naphthenates	5.79	9.1
Total	100	100
Colloidal Instability Index (CII)	**2.31**	
The CII more than 0.9 shows that the crude oil is instable and there is a possibility of solid deposition.		





Sustainability

	Before Treatment (Since July 2009)	Target	Actual (After Treatment)	Achievement
No. of Days Flowing	0 days	90 Days	159 days	**177%**
Total Oil Produced	0 bbl	9,000 bbl	>24,500bbl	**154%**
Avg. BOPD	0 BOPD	100 BOPD	154 BOPD	**272%**



Our record of sustainability:-

1. 5-6 months on a natural flow well
2. 1-2 year on an offshore well supported by GL

1. Periodic Stimulation Treatment (NO CTU)
2. Or continuous downhole injection

Factors that hold the production sustainability:-

1. Crude character itself
2. Production trends in the past
3. Oil in place
4. Any artificial lift
5. Inflow and outflow performance of the well

Demulsifier Technology

BG_LOW TEMPERATURE DEMULSIFIER SERIES

Key Technical Features

- Specialized formulation for demulsification of tough emulsions at low temperature and less curing time condition.
- Enhance efficiency of separation processes by reducing time and energy even up to >80% incoming emulsion rate
- Tailored to specific operating conditions and can be customized to address unique challenges of different oilfield conditions.
- Dose to be given at pipeline or even at flowline of well at wellhead to mitigate the problem.

Oil and Natural Gas Corporation Ltd.
Chemistry Laboratory, Surface Team
Mehsana Asset

PAYMENT

FILE NO.MHN /SUR/CHEM/T.R./2023-24 Dated: 23.01.2024

Test report of oil soluble demulsifier for SOB GGS-II
TEST REPORT NO: DS/06/2023-24

(A) DETAILS OF THE SAMPLE :	
1. Lab. Serial no.	06
2. Name of the product	BG_LTD_S2_A for SOB GGS-II
3. Name of the supplier	Barik Engineering & Technical Services LLC
4. Letter no. & date	BEST/ONGC/MEH/20240801/044 & dtd.08.01.2024
5. Payment details.	Online payment of Rs.37170 , reference no BSTE/Fin/0124/001 & 002
6. Sample received (lab)	11.01.2024
(B) TEST CONDITIONS :	
1. Dose	500 ppm
2. Dosing temperature °C	40 ± 2
3. Curing temperature °C	55 ± 2
4. Curing time (minutes)	60
(C) PROPERTIES OF EMULSION :	
1. Source	SOB GGS-II
2. W/C (% v/v)	86.0

(D) RESULTS:

Sr. No.	PARAMETERS	REQUIREMENT	OBSERVATION
1	Physical State	The material shall be a free flowing homogenous liquid at 5 °C, free from visible impurities.	As per requirement
2	Solubility Of 2% (W/V) In Xylene/Toluene (LR Grade) at 20°C	Solution should be clear	As per requirement
3	Water Content of treated oil (% v/v)	7.0 (Max.)	2.5
4	Organic Chloride Content (ppm)	100 (Max)	19

23.01.24
Simanta Baruah
GM (Chem)-ST
ONGC, Mehsana

23.01.2024
Pranoy Pal
Sr.Chemist-ST
ONGC, Mehsana

Sobhasan GGS II

Oil and Natural Gas Corporation Ltd.
Chemistry Laboratory, Surface Team
Mehsana Asset

PAYMENT

FILE NO.MHN /SUR/CHEM/T.R./2023-24 Dated: 23.01.2024

Test report of oil soluble demulsifier for NS CTF
TEST REPORT NO: DS/07/2023-24

(A) DETAILS OF THE SAMPLE :	
1. Lab. Serial no.	07
2. Name of the product	BG_LTD_NS_B for NS CTF
3. Name of the supplier	Barik Engineering & Technical Services LLC
4. Letter no. & date	BEST/ONGC/MEH/20240801/044 & dtd.08.01.2024
5. Payment details.	Online payment of Rs.37170 , reference no BSTE/Fin/0124/001 & 002
6. Sample received (lab)	11.01.2024
(B) TEST CONDITIONS	
1. Dose	500 ppm
2. Dosing temperature °C	40 ± 2
3. Curing temperature °C	65 ± 2
4. Curing time (minutes)	60
(C) PROPERTIES OF EMULSION	
1. Source	NS CTF
2. W/C (% v/v)	68.0

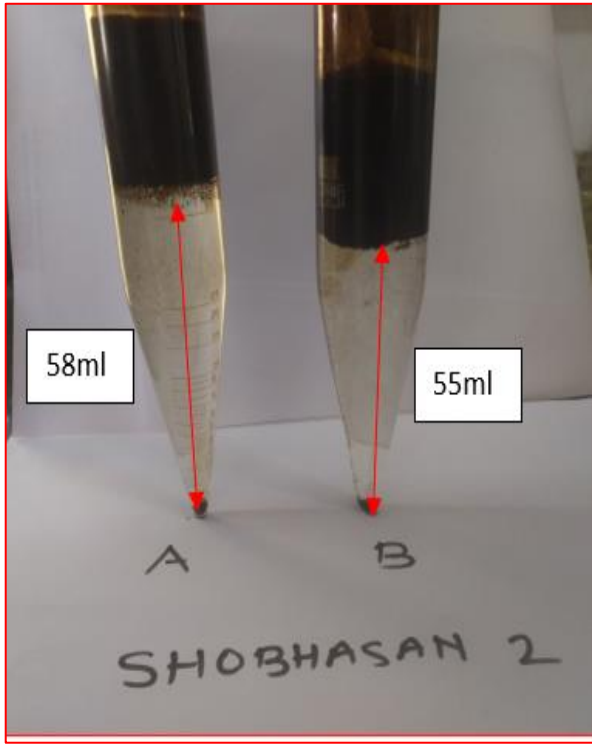
(D) RESULTS:

Sr. No.	PARAMETERS	REQUIREMENT	OBSERVATION
1	Physical State	The material shall be a free flowing homogenous liquid at 5 °C, free from visible impurities.	As per requirement
2	Solubility Of 2% (W/V) In Xylene/Toluene (LR Grade) at 20°C	Solution should be clear	As per requirement
3	Water Content of treated oil (% v/v)	7.0 (Max.)	3.0
4	Organic Chloride Content (ppm)	100 (Max)	10.5

23.01.24
Simanta Baruah
GM (Chem)-ST
ONGC, Mehsana

23.01.2024
Pranoy Pal
Sr.Chemist-ST
ONGC, Mehsana

NS CTF



Source: ONGC Mehsana Asset for demulsification of heavy oil
Met hiring criteria of achieving =<7% (v/v) water in oil by (< 3%)

Heavy Oil (Viscosity Reduction and Flow Assurance Improver)

BG_VISCOSITY REDUCER SERIES

Key Technical Features

- Optimization of Heavy Oil Related Problems (< 10 API) in pipeline flow and downhole emulsion in wells.
- Single cocktail to tackle field issues in summer and winter conditions ultimately improve flow assurance and production gain in the pipeline.
- Can be used in wells, flow lines and pipelines during the resumption of flow.
- Can treat specifically crude with high TAN numbers and paraffin content.

Low Pour Point but still facing **flow assurance** issues. **Crude congealing** in the flowline and pipeline, especially in **winter**, is creating **back pressure** and **limiting throughput**. Difficulties for **crude lifting** in well with artificial lift.

CRUDE CHARACTERISTIC (AS ANALYZED)		
PARAMETER	**Pipeline Header**	**Well X**
TAN (mg/KoH)	12.94 (1ST Sample) 14.31 (2nd Sample)	8.0
PP (degC)	-12 (1st Sample) +3 (2nd Sample)	-21
SARA/Analysis	1. Predominantly Paraffinic. 2. Rich in macro crystalline wax. 3. Resin/Asphaltene ratio is >1, so colloidal Asphaltenes will not precipitate out. 4. Highly Acidic in nature due to metal naphthenates. 5. Sulphur content is >0.45%, which is highly sour.	1. Associated water rich in **Calcium & Magnesium ions.** **2. Low solidification point with very high TAN Number.** 3. Highly Acidic in nature due to metal naphthenate. **4. Very much similar to Thayfut header crude**

THAYFUT CRUDE TESTING AT NIMR WITH BG_TH					
FORMULATION		VISCOSITY (mm2/s) at temperature degC			
Sample	PPM (doses)	40	30	20	10
BLANK		2,159.50	4,808.60	13,121.00	47,139.00
% reduction		0%	0%	0%	0%
BG_TH	2500	1,720.90	3,903.20	10,194.00	31,793.00
% reduction		20.3%	18.8%	22.3%	32.6%
BG_TH	4000	1,653.80	3,735.40	9,593.00	29,461.00
% reduction		23.4%	22.3%	26.9%	37.5%
BG_TH	5000	1,572.60	3,470.30	8,682.10	26,767.00
% reduction		27.2%	27.8%	33.8%	43.2%

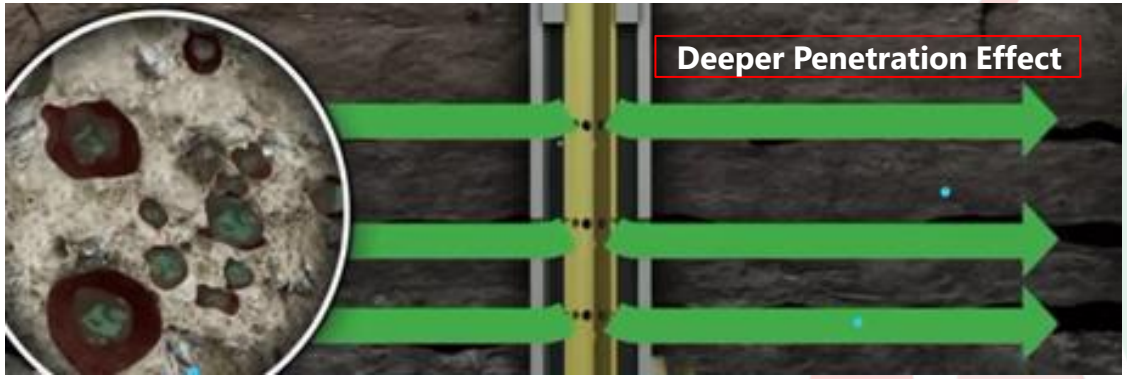
SBR-5 CRUDE TESTING AT NIMR WITH BG_SH					
FORMULATION		VISCOSITY (mm2/s) at temperature degC			
Sample	PPM (doses)	40	30	20	10
BLANK		330.00	541.76	1,042.20	2,160.10
% reduction		0%	0%	0%	0%
BG_SH	200	250.00	431.50	872.84	1,855.30
% reduction		24.2%	20.4%	16.3%	14.1%
BG_SH	500	230.92	394.35	774.03	1,681.50
% reduction		30.0%	27.2%	25.7%	22.2%
BG_SH	1000	222.89	397.84	780.04	1,643.50
% reduction		32.5%	26.6%	25.2%	23.9%

Embedded Type of Deposit (Organic and Inorganic Agglomerated)

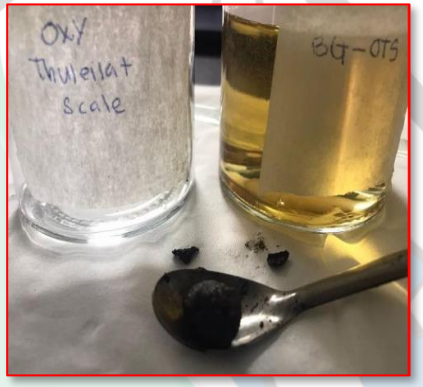
BG_DESCALING SERIES

Key Features

- One Stop Solution to remove naphthenate, organic deposit, other oily sediment and inorganic deposit related issues without any side effects.
- BG-OTS is a niche solution to remove naphthenate related issue, added to the benefits micro-emulsion formulation between aqueous and non-aqueous phase enable removal of whole gamut of solids which are complex in nature related to oil producer.

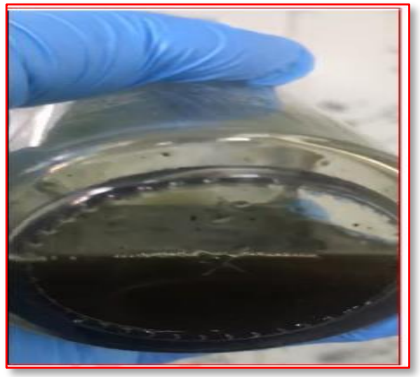


Ensure deeper penetration into rock matrix and dissolve organic & inorganic solid deposition species""



Inorganic + organic sample

Addition of customized solution



Dissolved & dispersed

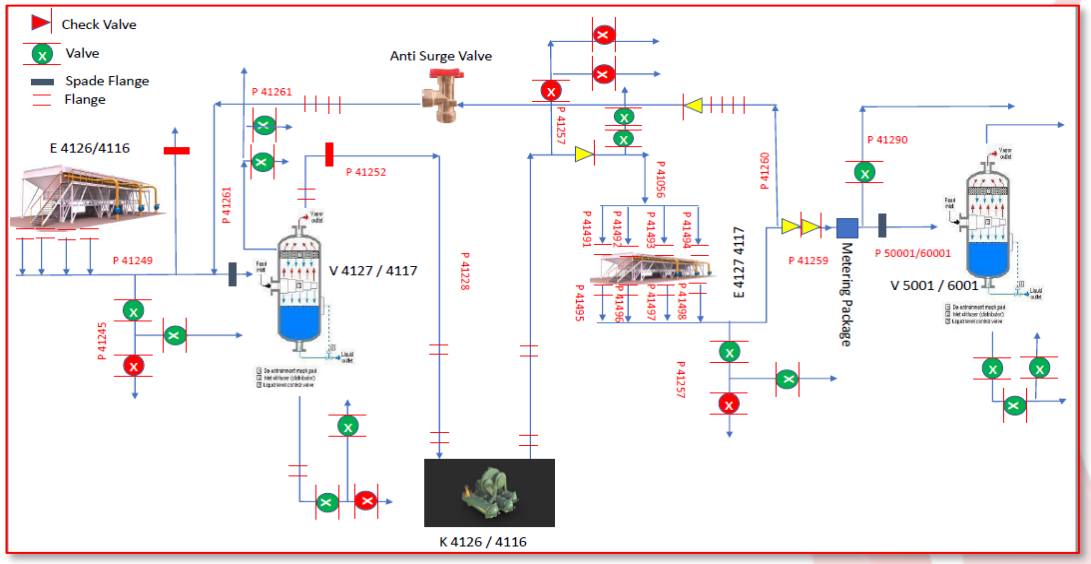
Cleaning Medium	Organic Deposits	Carbonate Scales
Acid	By-passed	Dissolves
Commodity Solvent	Partly dissolves	By-passed
BG-OTS	Dissolves/disperses	Dissolves/disperses

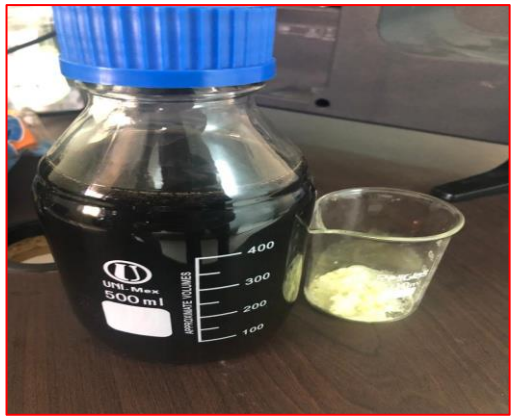
Sulphur Remediation and Studies

BG_SULPHUR SERIES

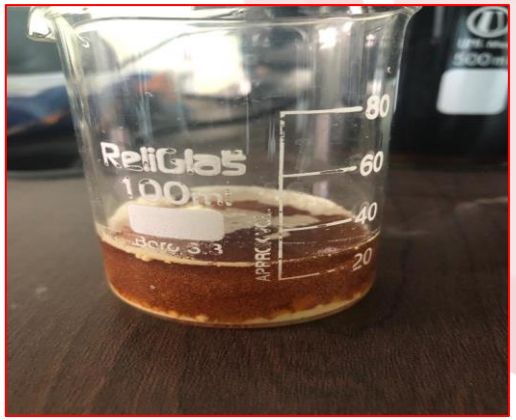
Key Features

- Single pack formulation to dissolve and disperse Sulphur deposit in highly Acid Gas Scrubber System
- Capability to dissolve the deposited Sulphur by aqueous base formulation readily without inducing any mechanical energy.

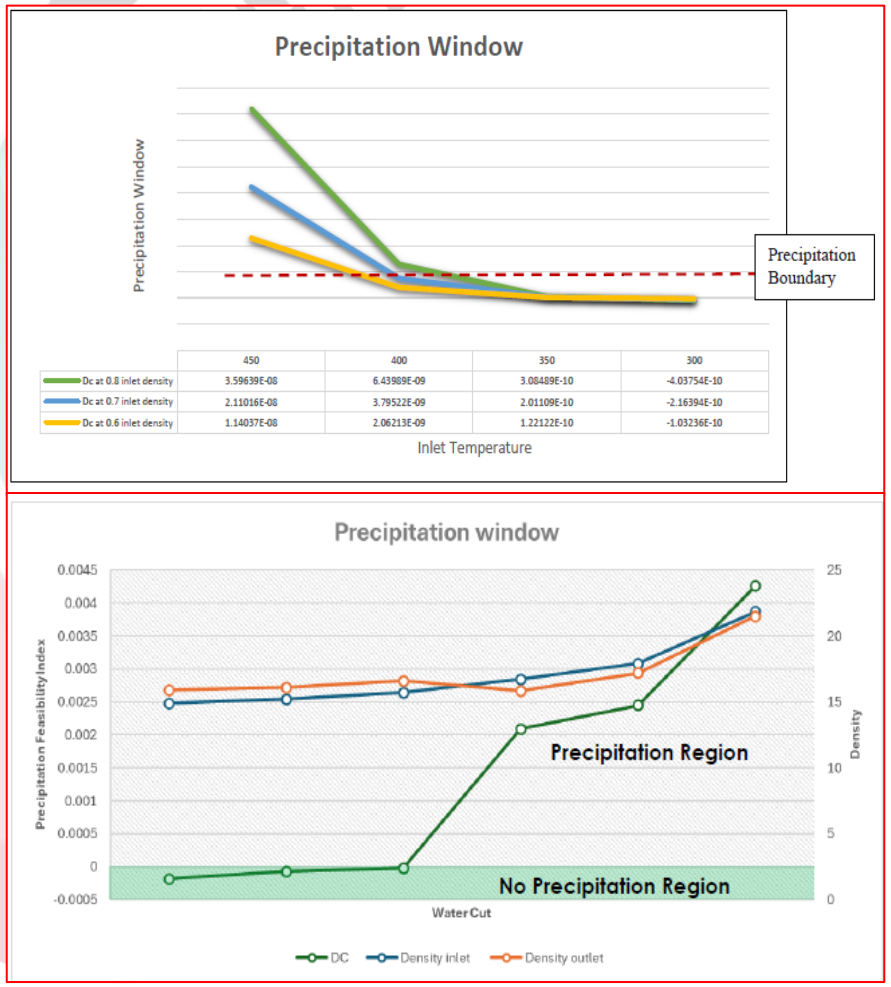




Collected Sulphur sample



Dissolved & Dispersed



	450	400	350	300
Dc at 0.8 inlet density	3.59639E-08	6.43989E-09	3.08489E-10	-4.03754E-10
Dc at 0.7 inlet density	2.11016E-08	3.79522E-09	2.01109E-10	-2.16394E-10
Dc at 0.6 inlet density	1.14037E-08	2.06213E-09	1.22122E-10	-1.03236E-10

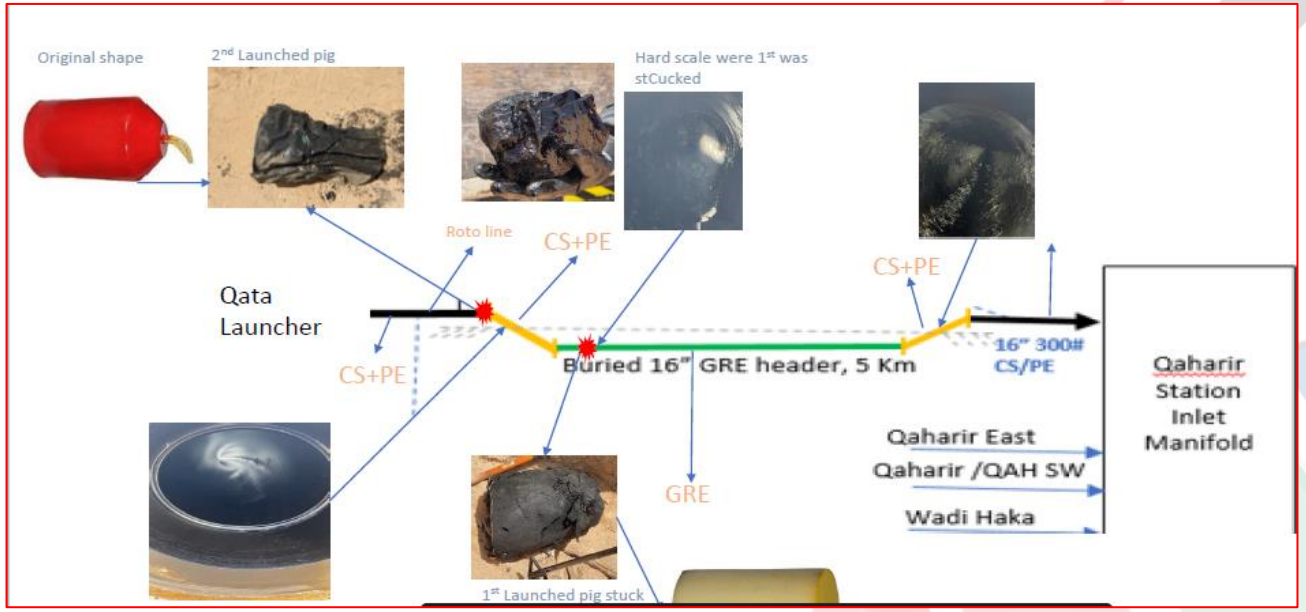
Sulphur Deposition Simulation

Scale- Barium Sulphate Remediation (Chemical Cum Mechanical Method)

BG_SULPHATE SERIES

Key Features

- One Stop Solution to soften and disperse barium sulphate scale with assistance from BG_RHA.



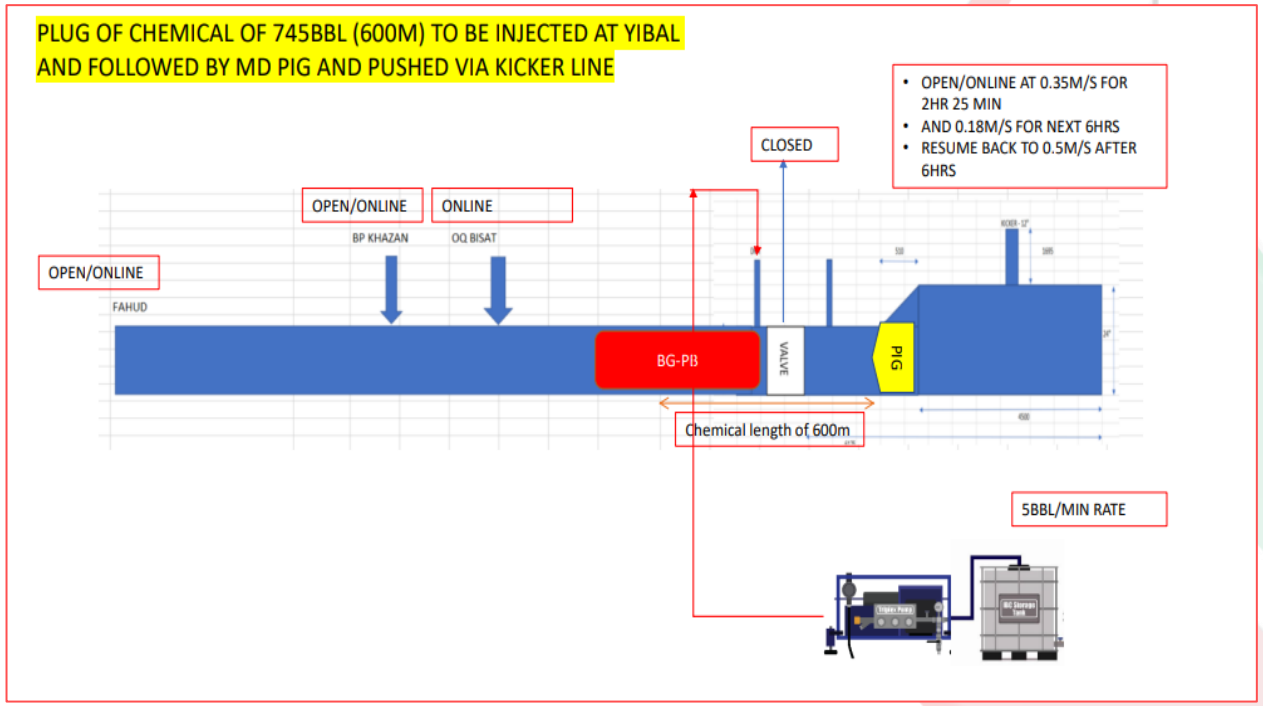
	BG_QQ_BS	BG_QQ_SS
Barium Sulfate	78.969%	80.365%
Silicon Oxide	0.115	0.906%
Strontium	3.713%	3.413%
Sulfur	10.095%	7.156%
Iron	0.106%	1.105%
Oxygen	6.023%	5.652%

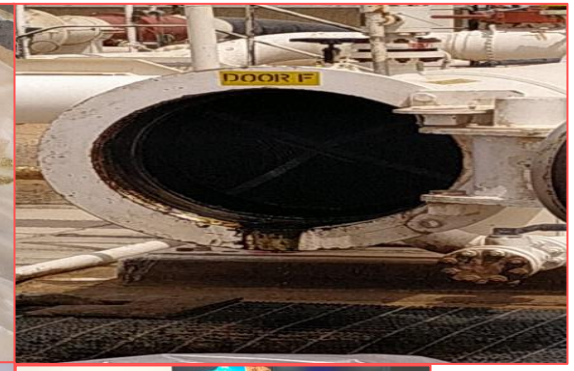
Experiment No.	Weight Reduction Efficiency After treatment (%)			
	Preflush-1	Preflush-2	BG ClenzQ	Total
1	12.40	3.15	17.21	32.76
2	13.69	3.17	19.81	36.67
3	14.09	2.9	10.99	27.98
4	11.22	3.07	22.85	37.14
5	13.08	2.96	17.64	33.68
6	13.83	3.02	18.46	35.31

BG_PIPELINE SERIES

Key Features

- **ONLINE CLEANING OF MOL 20", 58 KM STUCK WITH A PIG WHICH CARRY 27,000M3/DAY**
- Specialty formulation to break and disperse organic embedded polymers at lower portion of pipeline.
- Specially Customized for National Oil Company, Oman



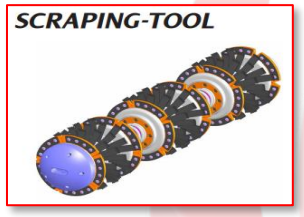


- A 600m length solution pill was injected into the pipeline to provide a
- Solution was pushed using a medium density foam pig with existing production.
- Pipeline integrity was restored to its optimal technical potential.

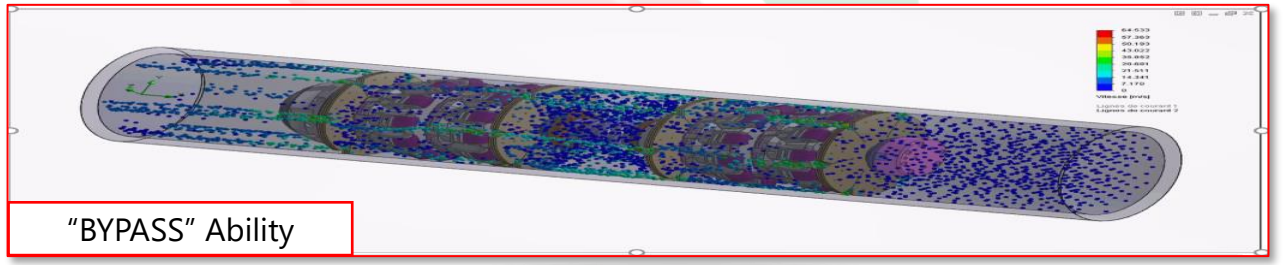
BG_RHA SERIES

Key Features

- **Combination of Chemical + Mechanical Pipeline Cleaning** with Self-Propelled Bypass Tailor Made tool for Dewaxing & Descaling
- The methodology is proven with multiple track records with 60 years of engineering studies and experience
- In-pipeline remediation is needed to clean the bare metal. Mainly to tackle deposition, which is from the family of paraffin and barium sulfate scales.
- HMC tools are self-propelled and have multiple advantages compared to pigs and other methods, which might consume time and risk to the environment due to chemicals and leakage.



Taylor made tool to ensure maximum cleaning efficiency



"BYPASS" Ability

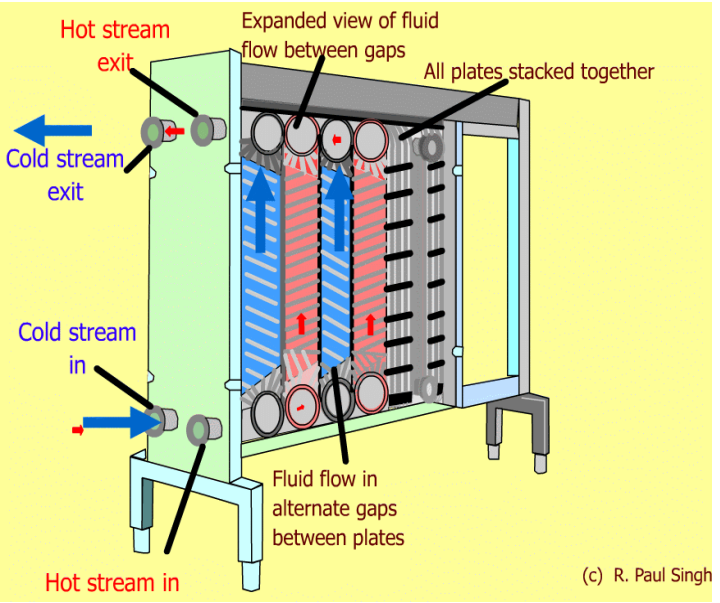
Process Equipment Cleaning (HX and Other Units)
(Chemical cum Sonic Stream Technology Method)

FOULANT

1. Fouling stands from the family of organic or inorganic that makes a layer and prevents heat exchange efficiency at a time.
2. Phenomena due to operation and type of medium being channeled through the shell/Tube/cold side/hot side
3. It acts as a resistance to the heat flow, decreasing performance. In some cases, it even corrodes the surface.

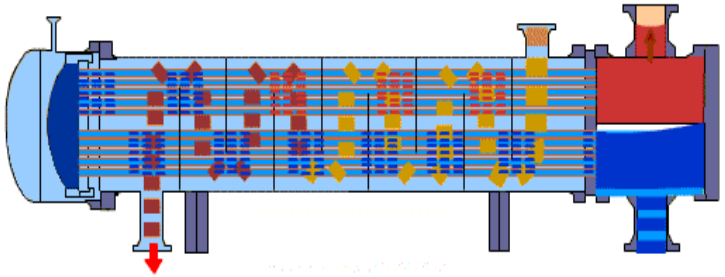
Impact:-

- Energy losses due to thermal inefficiencies
- Additional cost associated with periodic cleaning of heat exchangers
- Loss of production during the shutdown for cleaning
- Higher capital cost
- Lost of performance due to equipment damage
- Difficulties in cleaning thoroughly



Type of Fouling:-

- Scaling fouling
- Particulate fouling
- Chemical reaction fouling
- Corrosion fouling
- Biological fouling
- Solidification fouling



Method 1 : NICHE CHEMICAL CLEANING

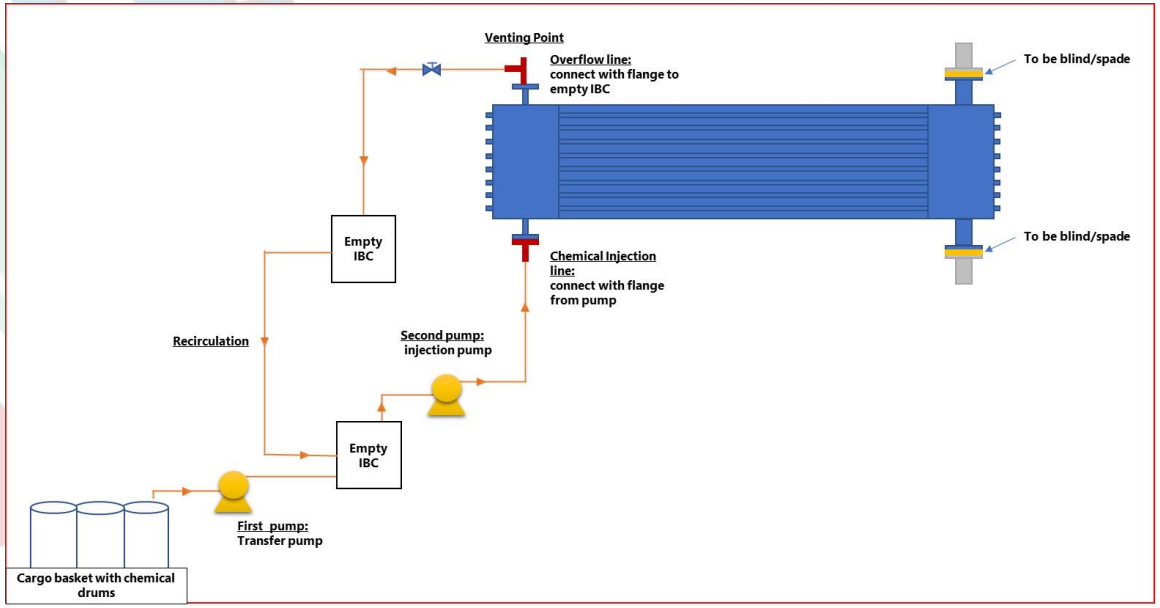
Before Cleaning

Inorganic / Organic type of foulant was detected in shell side which act as an oily layer coating thus resisting the heat exchange capability.

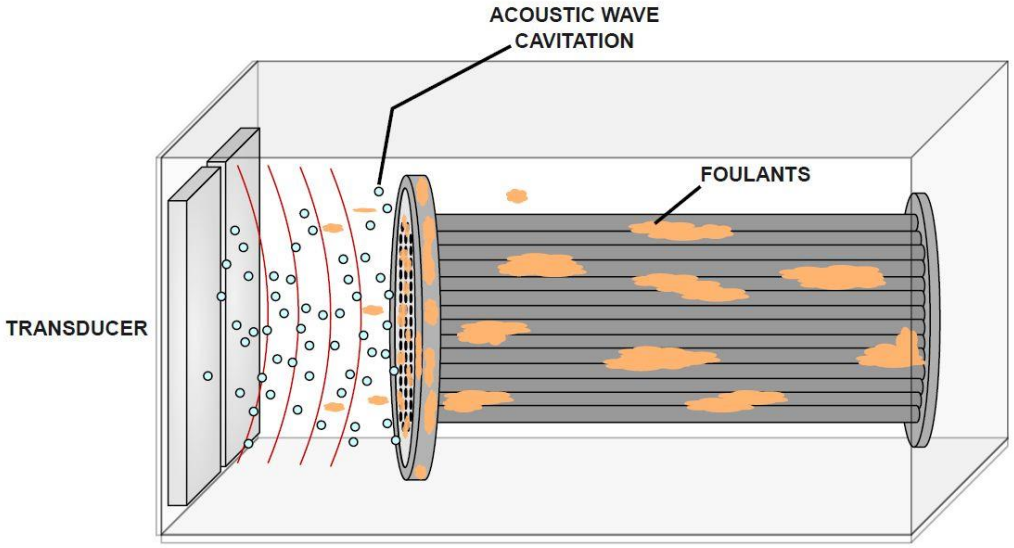
Volume of chemical (specially formulated for such unit) was injected and left for soaking.

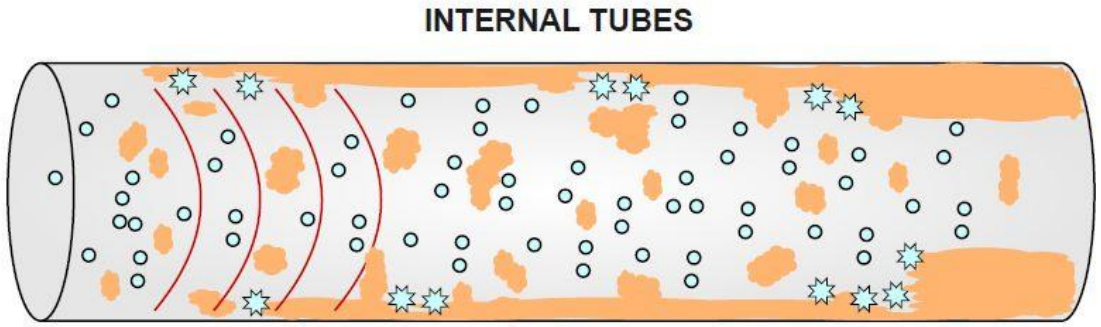
The bottom figure shows the Boroscope results, and the system is back to normal.

After Cleaning



Sonic Stream Cleaning Technology





1st stage: Cleaning Energy

- Equipment immersed in liquid (chemical solution)
- Transducer transmit high frequency sound wave.
- Micro size bubbles – form from an alternating pressure waves.
- Bubble contains high amount of energy (Cavitation).

2nd Stage: Removing Foulant

- Bubbles implode on the foulant surface.
- This separates the foulant from the surface and aid in dissolving the foulant in the chemical solution.
- Works on all the surfaces exposed to the liquid solution.

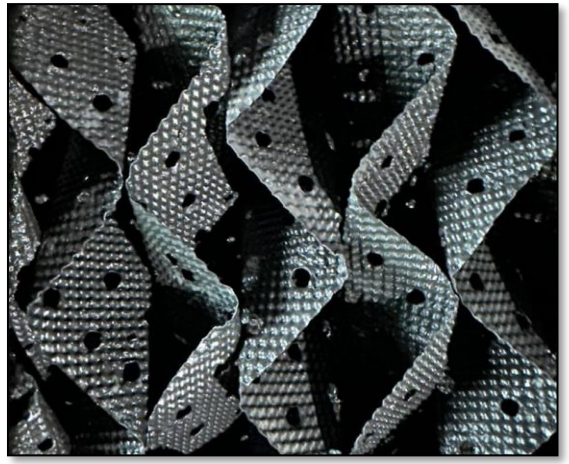
Application of Sonic Stream Cleaning Technology

BEFORE

AFTER

PETRONAS

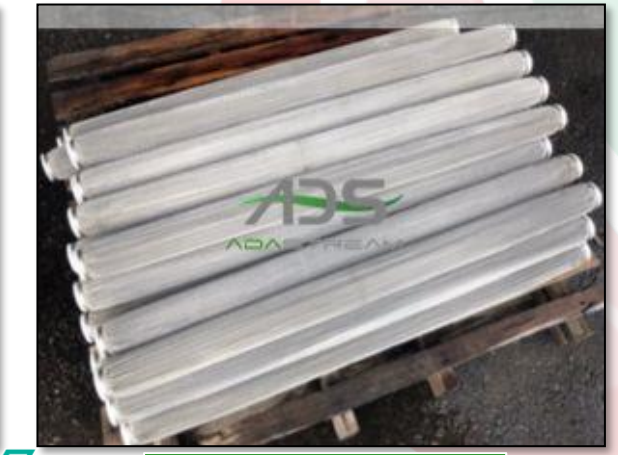
BEFORE



AFTER

PETRONAS

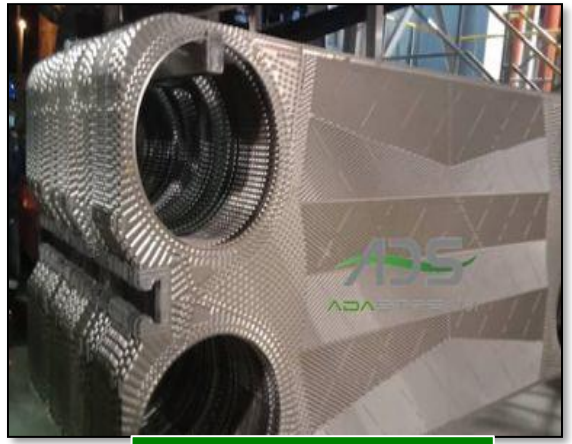
BEFORE



AFTER

PETRONAS

BEFORE

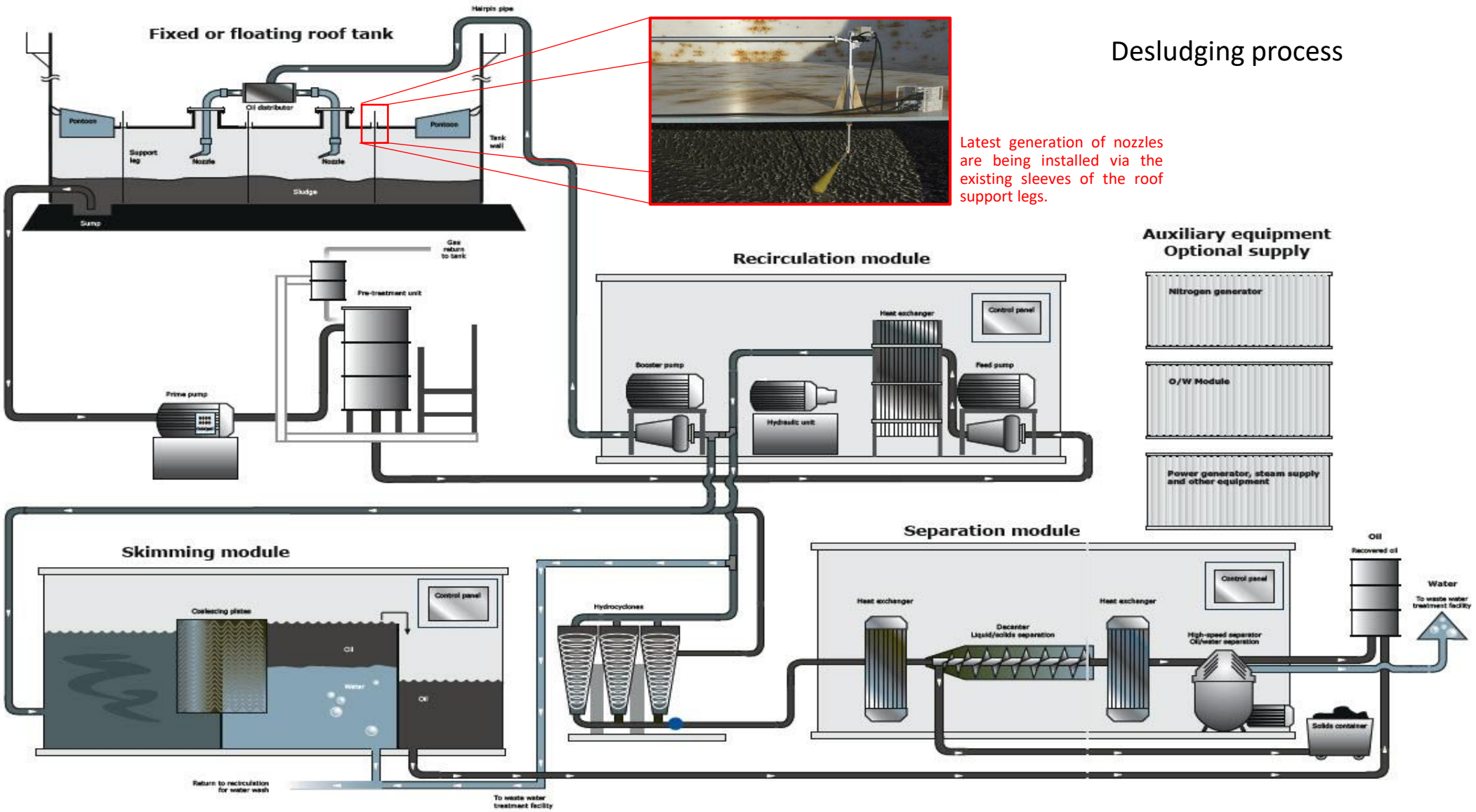


AFTER

malakoff
A Member of MMC Group

Automated Hydrocarbon Tank Cleaning and Recovery

Automated Cleaning and Recovery



Desludging process

Latest generation of nozzles are being installed via the existing sleeves of the roof support legs.

OUR CLIENTEL

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جورونا تان
المدير الفني والمبيعات
(حلول حقول نفط المتكاملة)

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