



# **Revamping upgrading Project Of HOMS Refinery Company**

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**Policy Development  
For Clean Fuel and  
Vehicles In Middle East  
And North Africa**





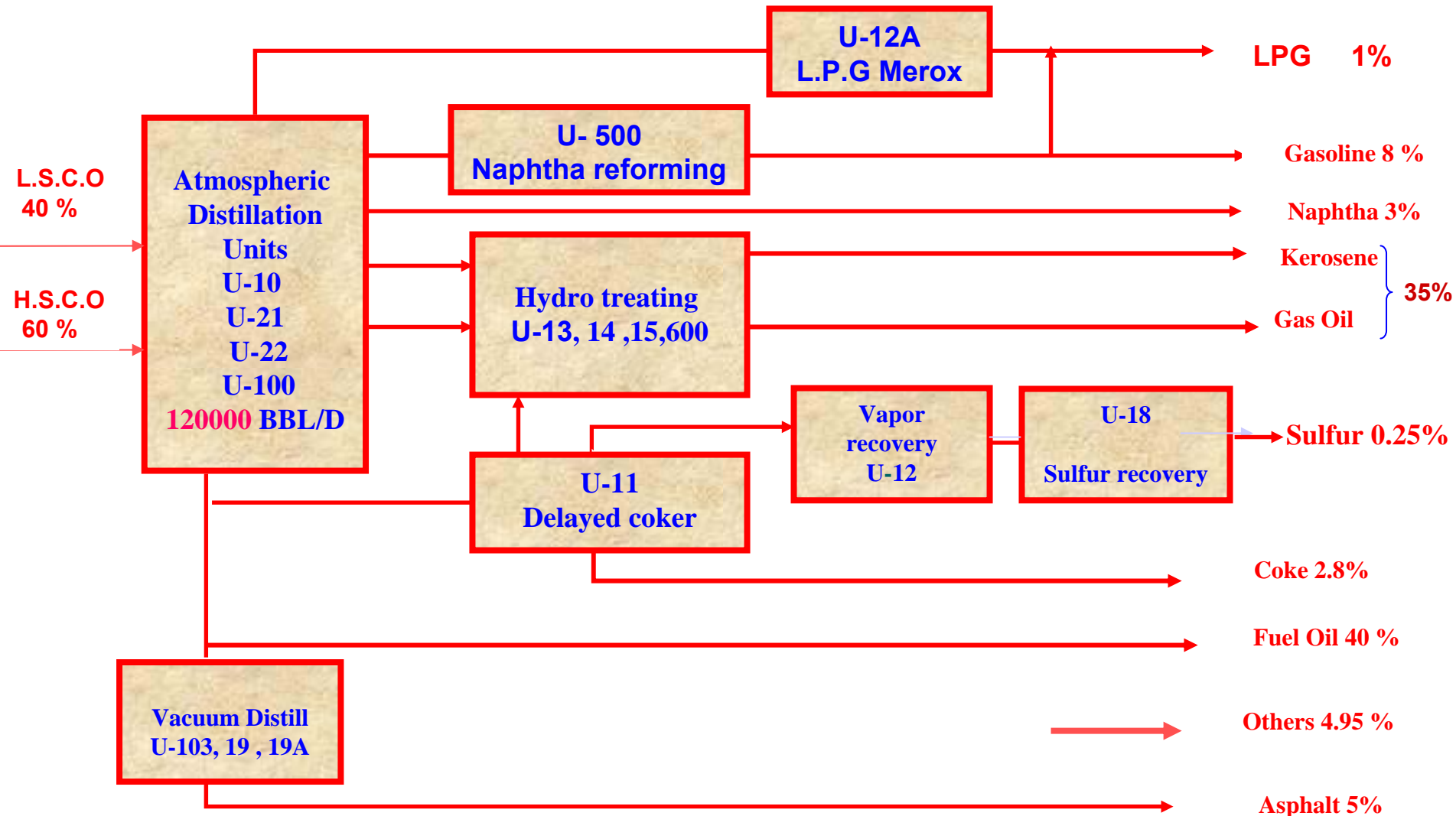
## Historical review

- HOMS Refinery Company ( **HRC** ) was constructed in **1957** and put in operation in year **1959**
- With refining capacity I million t/y -
- **HRC** designed and constructed by techno export Czechoslovakia .
- The process units involved :
  - Crude distillation unit of capacity **1000 000 t/y**
  - Vacuum distillation unit : **250 t/y**
  - Catalytic reforming and naphtha pretreater ( **RON=88**)
  - Utility units
  - off site unit

Generally the **HRC** was expanded , up dated , revamp eel six times from **1959** to **1990** .



# Homs Refinery Process Flow Diagram



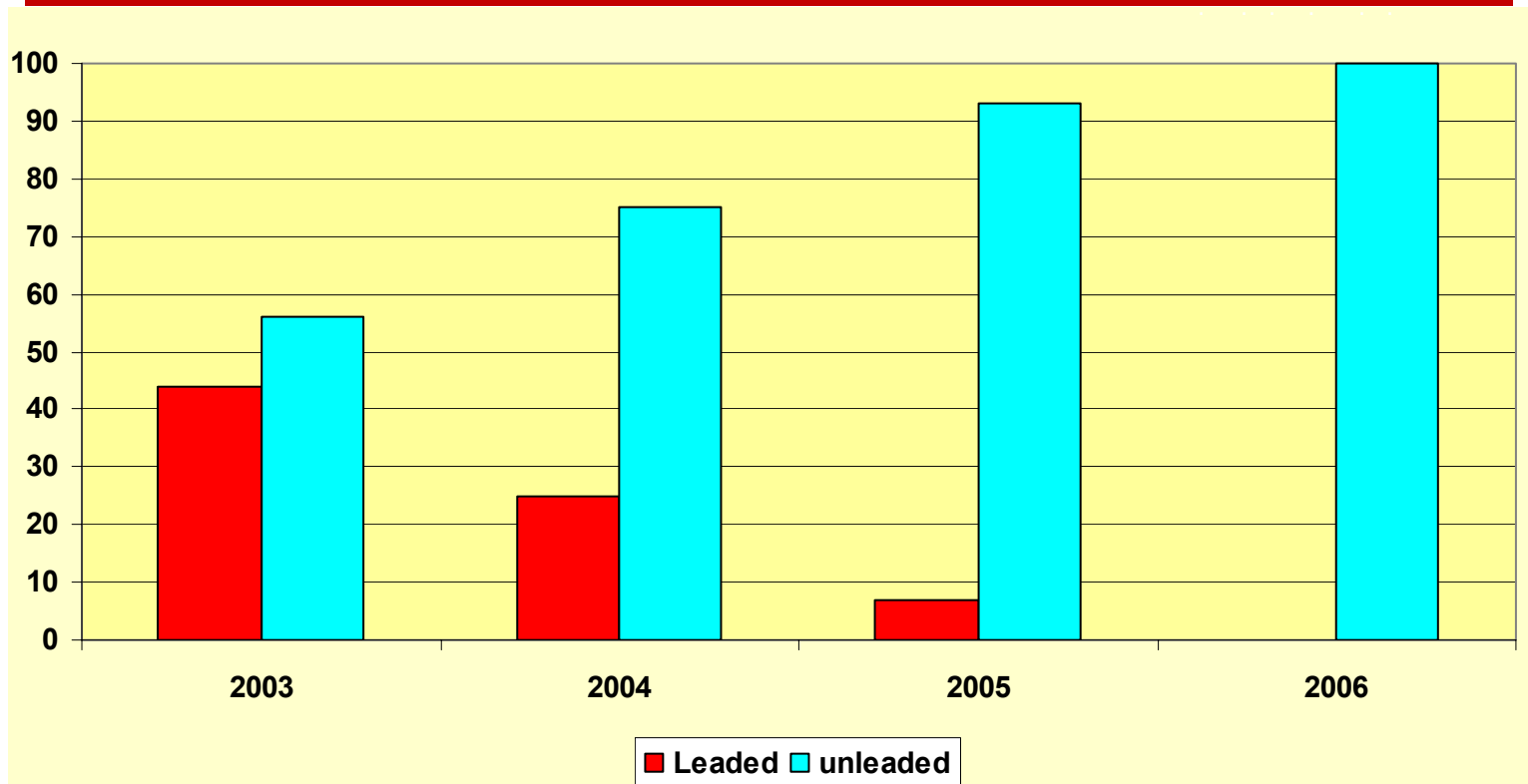


**I- The current situation of the petroleum products  
specification in HRC  
a- unleaded gasoline**

<b>Specification</b>	<b>Syrian specification</b>	<b>current specification</b>	<b>Europe 2005</b>
<b>Sp .gr</b>	<b>.720-0775</b>	<b>0.752</b>	
<b>Color</b>	<b>Yellowish</b>	<b>Yellowish</b>	
<b>L MAX/Lead g</b>	<b>0.013</b>	<b>0.01</b>	
<b>Sulphur ppm</b>	<b>1000</b>	<b>100</b>	<b>50</b>
<b>cm<sup>2</sup> max/R.V.P kg</b>	<b>0.7</b>	<b>0.4</b>	<b>0.6</b>
<b>RON</b>	<b>90</b>	<b>90</b>	<b>95</b>
<b>Distillation C<sup>0</sup></b>			
<b>10% max</b>	<b>70</b>	<b>60</b>	
<b>F.B.P max</b>	<b>200</b>	<b>176</b>	
<b>Benzene % Vol max</b>	<b>S/N</b>	<b>2.8</b>	<b>1</b>
<b>Aromatics vol% max</b>	<b>S/N</b>	<b>42.6</b>	<b>25</b>



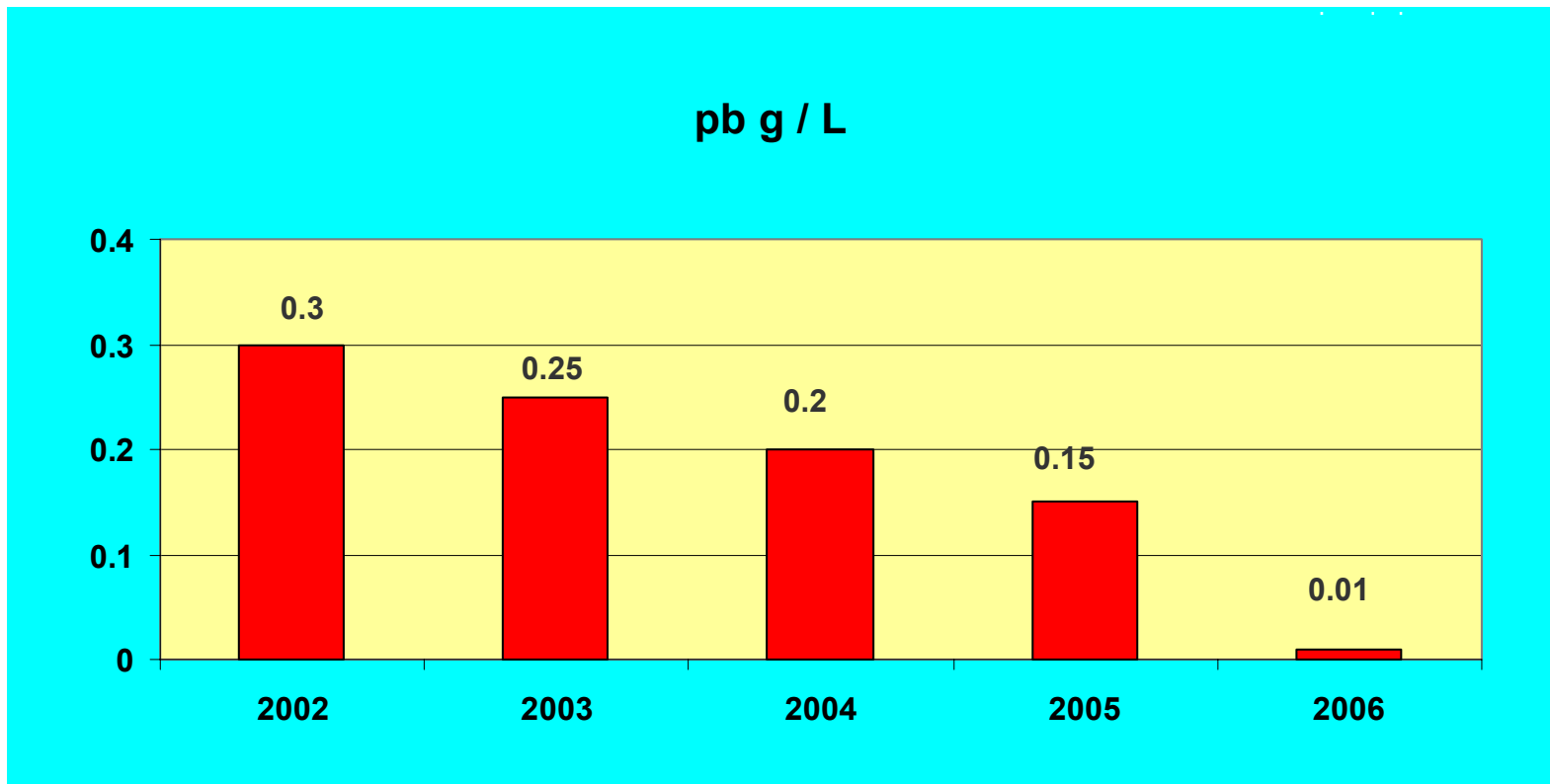
## The share of unleaded gasoline consumption in Syria



Years	2003	2004	2005	2006
Leaded	44	25	7	0
Unleaded	56	75	93	100



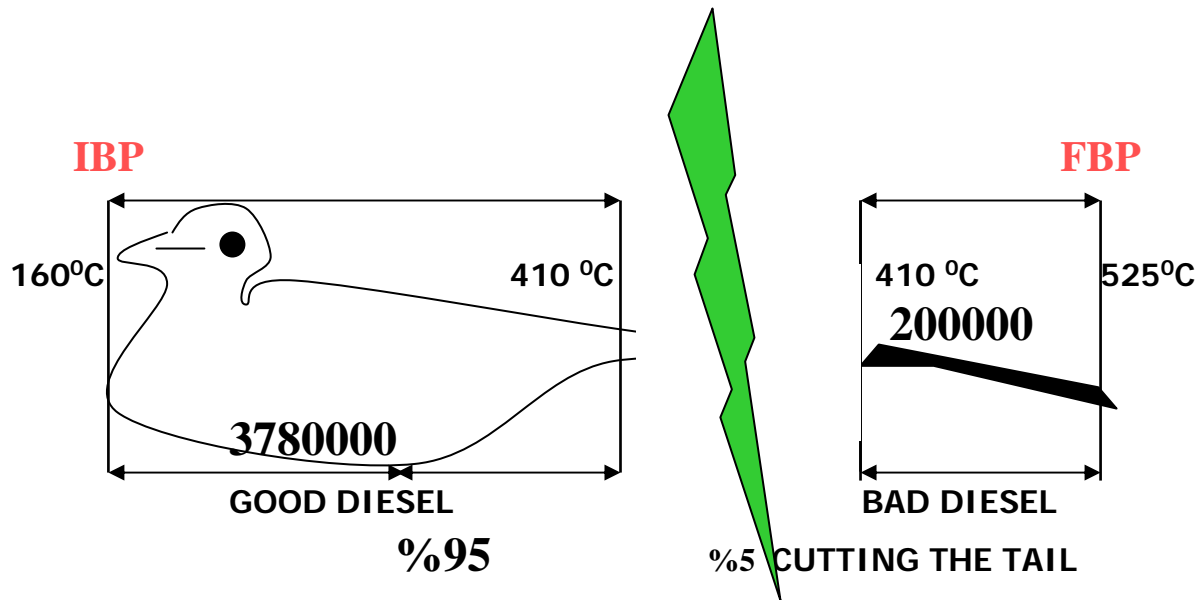
# Lead content In Gasoline



Years	2002	2003	2004	2005	2006
Lead g/l	0.3	0.25	0.2	0.15	0.01



**THIS BIRD REPRESENTS THE GAS OIL-  
PRODUCED IN SYRIA NOW THE BIRD  
WITHOUT TAIL.**







## C- Diesel Oil

Specification	Syrian specification	Current specification	Europe 2005
Sp .gr	.820-.860	0.834	0.845
Sulphur ppm max	7000	6500	50
Cetane number	N/S	46	51
p.p c max	-4	-7	
Winter			
Summer	-10	-10	
Distillation C <sup>0</sup>			
50% max	290	270	-
85% max	360	-	-
90 % max	-	350	-
95 % max	-	-	360
F.PC <sup>0</sup>			
Winter	55	60	
Summer	60	65	



## Revamping / upgrading HRC

### Objectives of revamping/ updating project

- 1-** to optimise the refining configuration of the refinery to insure that future up grading / revamping scheme will be In accordance to the latest refining technology
- 2-** product specification according with Euro year **2005**  
( Specification )
- 3-** to maximize profitability while minimizing the use of energy , water ..... etc ) .



- Comparing between revamping upgrading project and construction of anew grass root refinery .
- To improve the **HRC** commitment regarding environmental protection issue.
- To improve refinery yields to be able to meet some part of Syrian market .



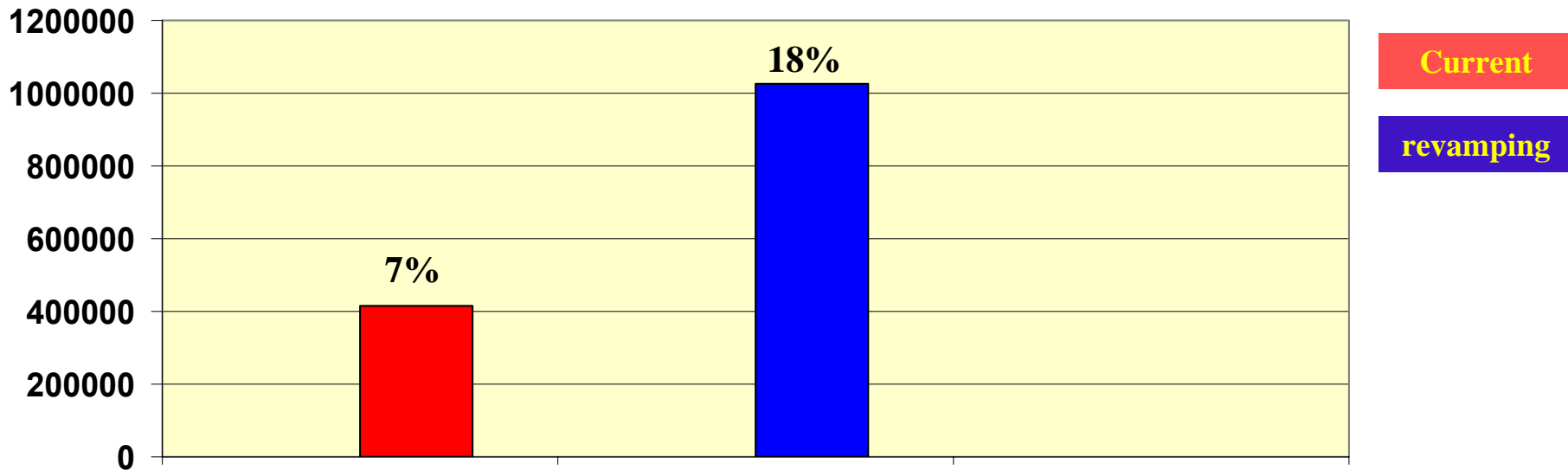
- it was requested to perform the project review and updating **ITB** package through the following phase:
  - 1-phase one** : refining process scheme and configuration study .
  - 2- phase two** : selection of processes licensors .
  - 3- phase tree** : review / update of **ITB** back age .



- Generally the refinery modelling ( configuration study) is based on the following items :
- Maximization of diesel and light distillate .
  - Minimization of High sulphur fuel production
  - Meeting future market demand ( jet – fuel oil , asphalt , )
  - Meeting products specification to be inline with euro specs( 2005)
  - Getting the optimum refining scheme complexity
  - Getting the best economics .



# Petroleum Products **HRC** Gasoline

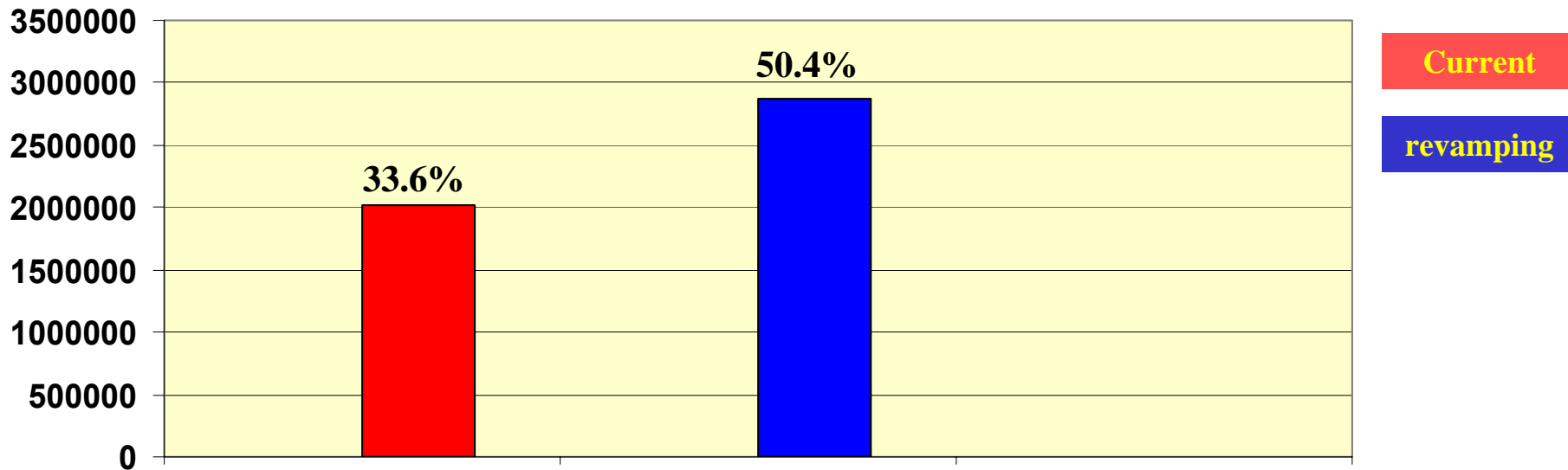


<b>Current</b>	<b>After Revamping</b>	-
<b>416000</b>	<b>1028000</b>	<b>T/Year</b>
<b>7 %</b>	<b>18 %</b>	<b>% WT / Crude</b>



# Petroleum Products **HRC**

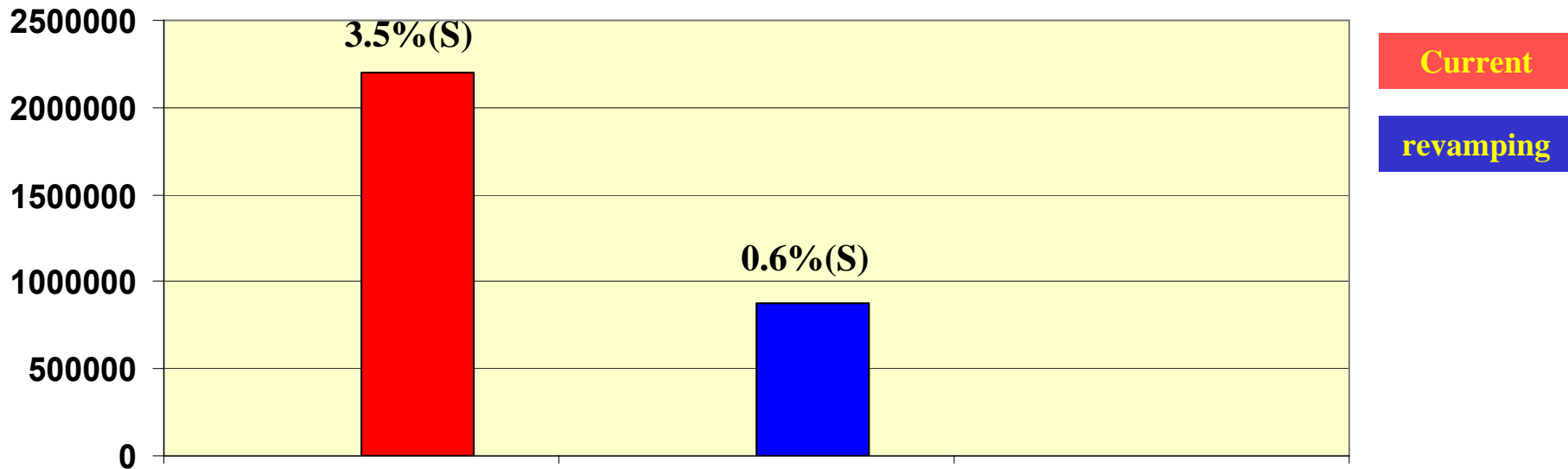
## Middle Distillate Kerosene + Gas oil



<b>Current</b>	<b>After Revamping</b>	-
<b>2017000</b>	<b>2875000</b>	<b>Q T/Year</b>
<b>33.6 %</b>	<b>50.4 %</b>	<b>% WT / Crude</b>



# Petroleum Products **HRC** Fuel Oil

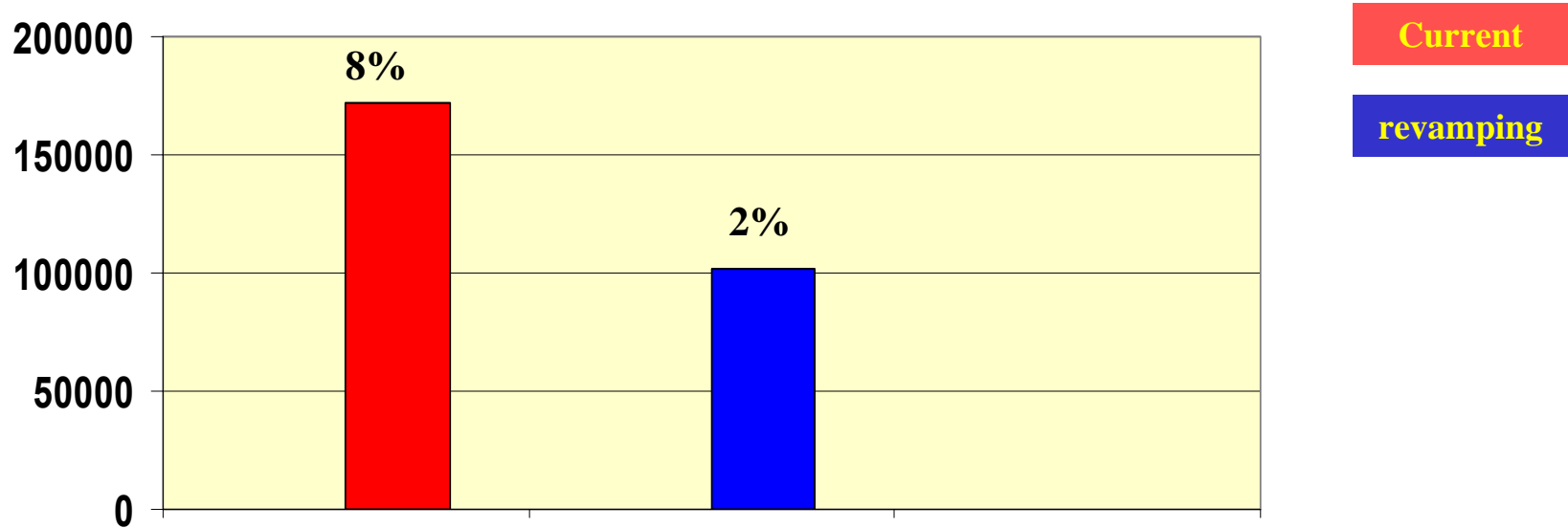


<b>Current</b>	<b>After Revamping</b>	-
<b>2196000</b>	<b>875000</b>	<b>Q T/Year</b>
<b>3.5 %</b>	<b>0.6 %</b>	<b>S% WT</b>
<b>36.6</b>	<b>15.3</b>	<b>%WT /Crud</b>





# Petroleum Products **HRC** Petroleum Coke

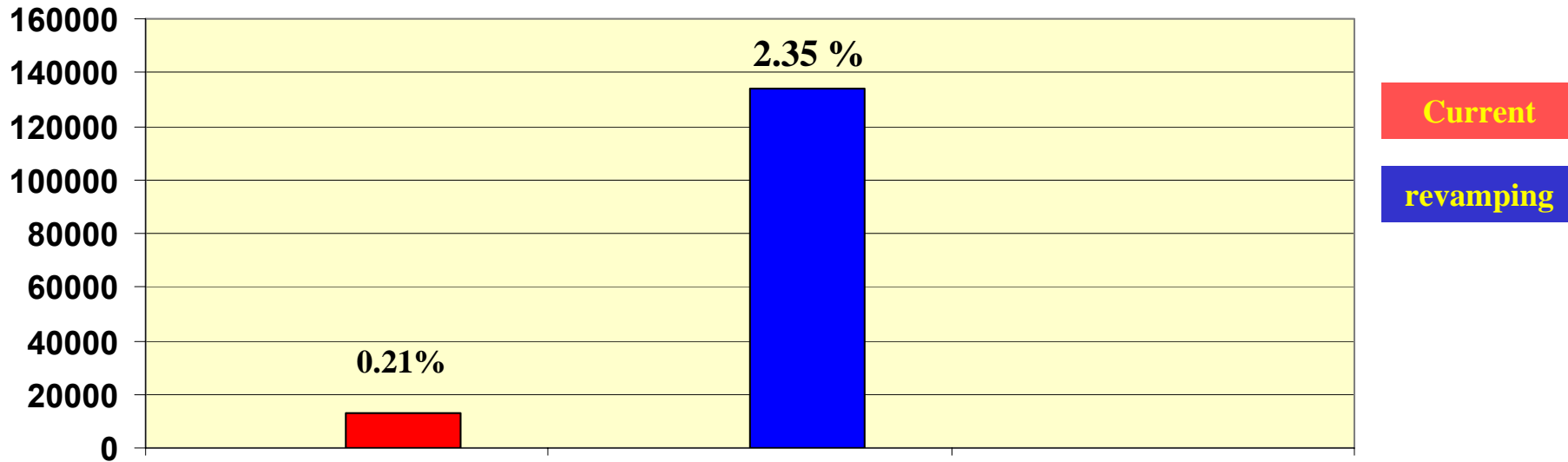


<b>Current</b>	<b>After Revamping</b>	-
<b>172000</b>	<b>102000</b>	<b>Q T/Year</b>
<b>8 %</b>	<b>2 %</b>	<b>S % WT</b>



# Petroleum Products HRC

## Sulphur



<b>Current</b>	<b>After Revamping</b>	-
<b>12900</b>	<b>134000</b>	<b>T/Year</b>
<b>0.21</b>	<b>2.35</b>	<b>% WT / Crude</b>
<b>2.7</b>	<b>3.3</b>	<b>Sulphur Content Feed Crude</b>
<b>8%</b>	<b>72 %</b>	<b>% S Removal</b>



## Development Of New Grass root Refinery Scheme

**HRC** asked consultant to make a comparison ( profitability indexes ) between revamping / upgrading project and anew grass root refinery has the same ( scheme- capacity specification of product , crude ..... etc ) .

To help **HRC** to distinguish between two projects .



## Profitability indexes for comparison

Project	Revamping UP grading HRC	New grass root refinery	Difference
Investment MM US \$	835	1326.8	491.8
NPV at 6% MM US \$	4123.3	3990.1	-
IRR	42.60%	32.20	10.4
POT Years	1.84	2.52	0.68



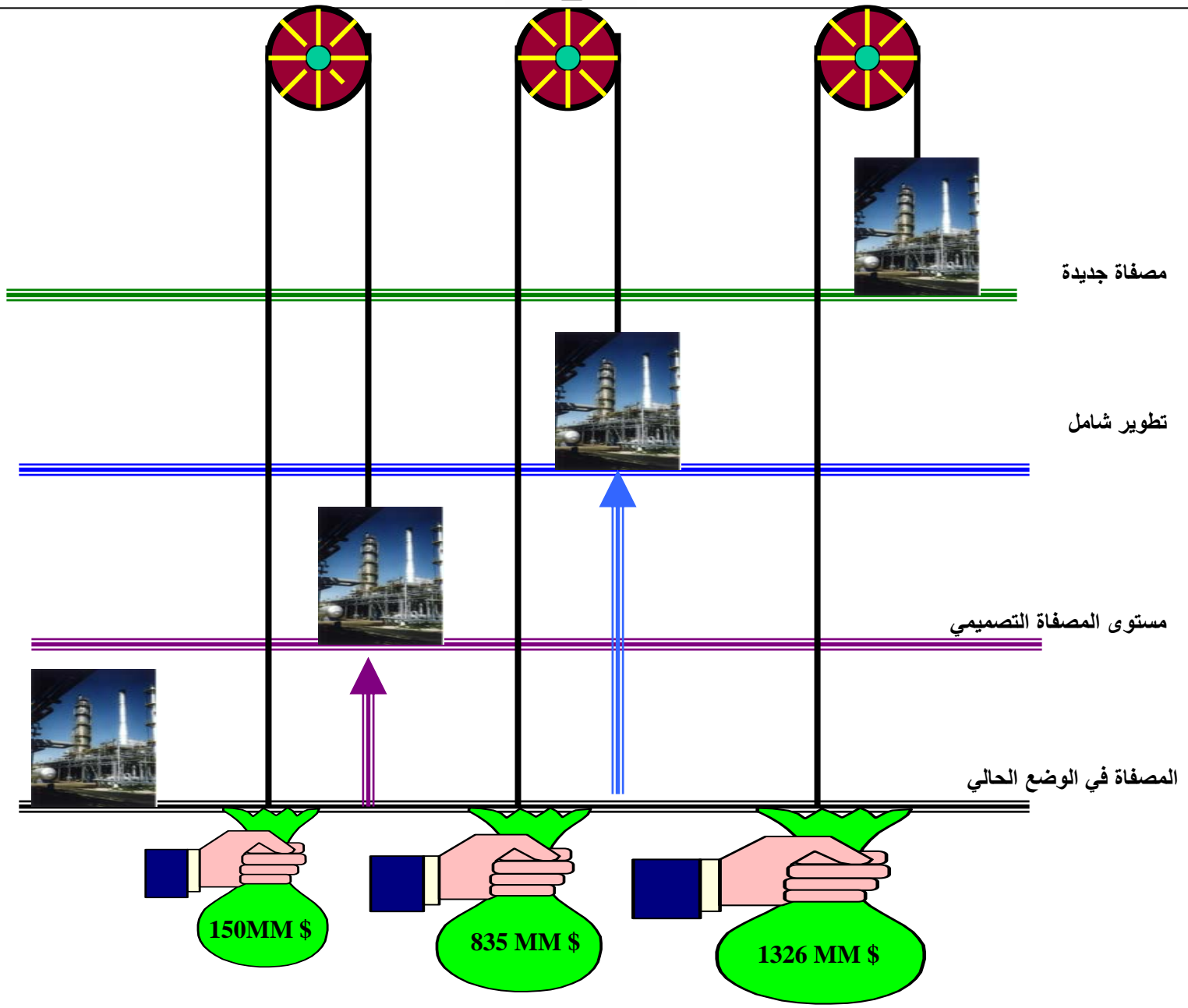
## Operating costs

<b>Project</b>	<b>Revamping/ UP grading HRC</b>	<b>New grass root refinery</b>	<b>Difference</b>
<b>MM US \$ Cost Operation Total</b>	<b>117.5</b>	<b>94.3</b>	<b>23.2</b>



## Gross & Net margin revamping (vs) new refinery

Project		Revamping / UP grading HRC	New grass root refinery	Difference
Gross margin	MM US \$ / Year	729.7	733.7	51.7
	US \$/BLL	18.3	18.4	0.1
Net Margin	MM US \$ /Year	612.46	639.4	27
TOTAL OPERATING COSTS MM US \$/Year		117.5	94.3	23.2



# END



## Thank you for your listening

*Eng. ADNAN IZZEDDIN*

*PROCESS Manager in*

*Homs Refinery Company*

*May 24-25-2006*

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**Policy Development  
For Clean Fuel and Vehicles  
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