INTEGRATED POLLUTION PREVENTION AND CONTROL (IPPC)

REFERENCE DOCUMENT ON BEST AVAILABLE TECHNIQUES FOR MINERAL OIL AND GAS REFINERIES FEBRUARY 2003

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BREF

- The BREF (Best Available Techniques reference document) on Mineral Oil and Gas Refineries reflects an information exchange carried out according to Article 16(2) of Council Directive 96/61/EC.

Techniques to consider in the determination of BAT

- Close to 600 techniques have been considered in the determination of BAT. Those techniques have been analyzed following a consistent scheme:
- environmental benefits
- cross-media effects
- operational data
- economics

Techniques are given in the BAT as a group of possibilities.

Amongst the many environmental issues addressed in the BREF, the five that are dealt with below are probably the most important:

- increase the energy efficiency
- reduce the nitrogen oxide emissions-NOx
- reduce the sulphur oxide emissions-SO_2
- reduce the volatile organic compounds emissions-VOC's
- reduce the contamination of water

BAT related issues

- *Basis for comparing refineries*
- *Cost- effectiveness*
- *BAT and environmental approaches*
  - The bottom-up approach
  - The top-down approach

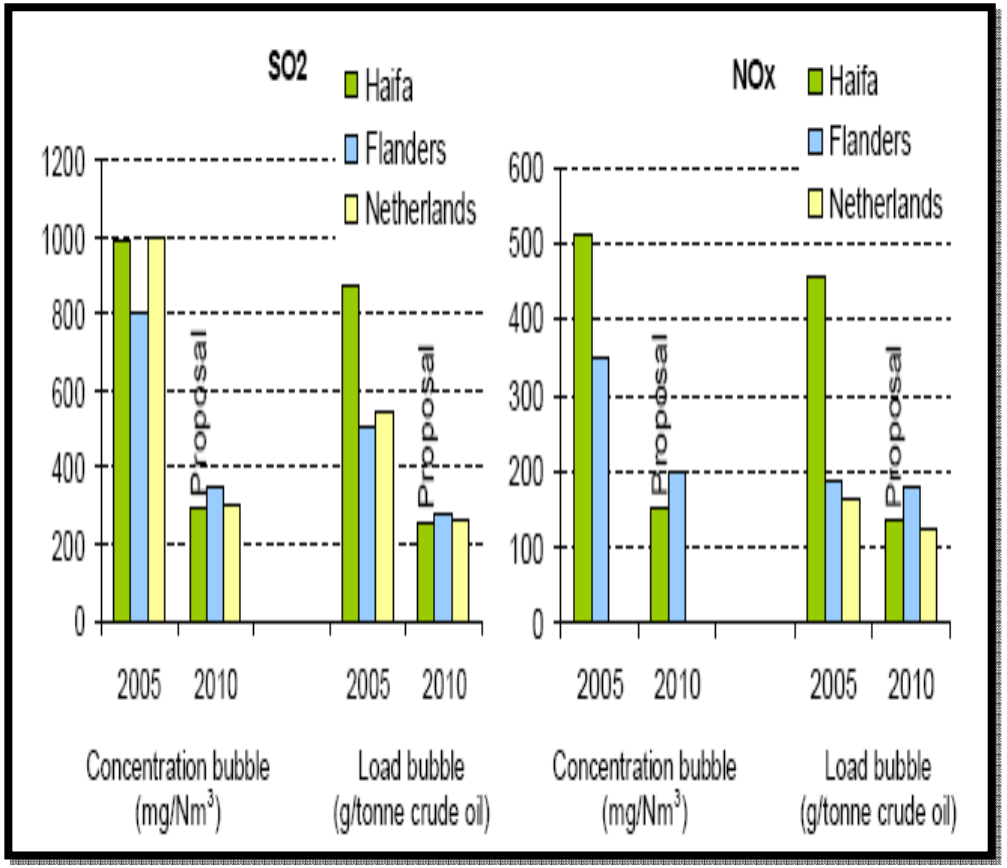
The main pollutant in the Refineries

- VOC's
- PM-Particulate Matter
- SO_2
- NOx
- Heavy metal

Method

NOx	PM	SO_2	VOC
LOW NOx burners	Cyclones	Additives to fuels	VRU-vapor recovery units
Dry-low-NOx combustors	Electro filters (ESP)	flue gas desulphurization processes	LDAR
Diluents injection	Filtration	Seawater scrubbing	
Reburning	Wet scrubbers		
Selective Non-Catalytic reduction (SNCR)	Washers		
Selective Catalytic reduction (SCR)			

Recommendation



Proposal standard for NO_x and SO_2		
NO_x		
Emission	*t/y*	**1170**
Conc bubble	*mg/Nm3*	151
Load bubble	*kg/ton*	0.13
Reduction	%	65%
SO_2		
Emission	*t/y*	**2064**
Conc bubble	*mg/Nm3*	298
Load bubble	*kg/ton*	0.26
Reduction	%	70%