Panel
25/09/2012

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Energy Efficiency - Driven by Legislation or Key for Refining in the 21st Century?

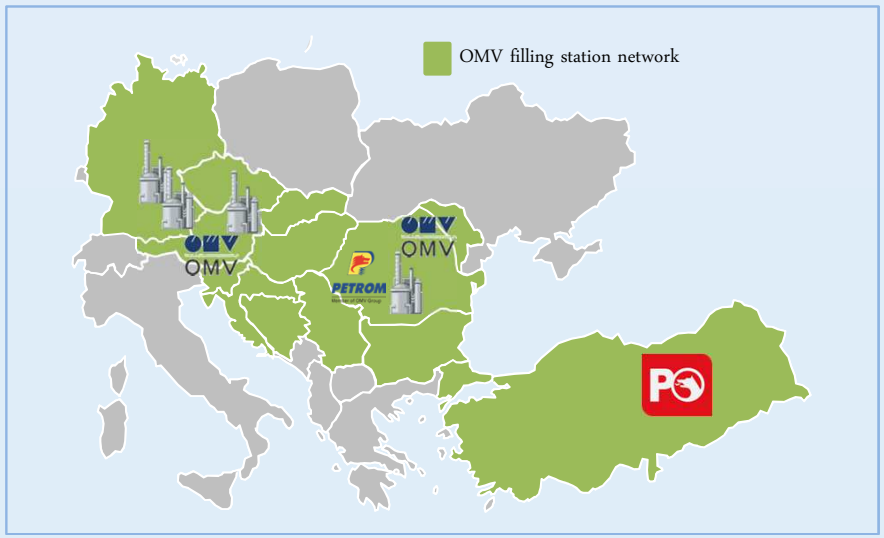
Thomas Gangl

OMV Germany GmbH

OMV

OMV Refining & Marketing incl. Petrochemicals

Supplying over 200 mn People with Energy



- Refineries in Austria, Germany and Romania
- 20% market share in the Danube region
- High product quality and environmental standards
- Refining capacity 22.3 mn t per annum
- Strong retail brand and high-quality, innovative non-oil business (VIVA)
- Active in 13 countries with around 4,500 filling stations in 2011 (incl. Petrol Ofisi)

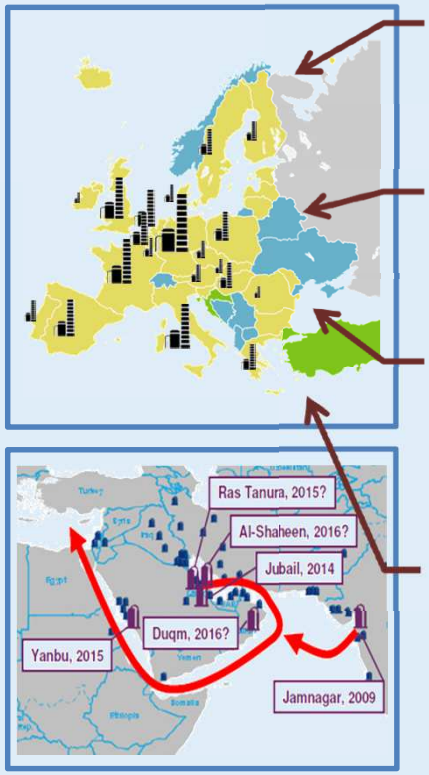
EBIT 2011: EUR 271 mn

OMV

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Refining Industry in Europe is Integrated in Global Competition

- 98 refineries with approx. 785 MT refining capacity representing roughly 17 % of global capacity.
- Competition from large refineries in Russia, Asia, and the Middle East; often benefitting from subsidies, tax regimes, and low labour costs.
- Decline in domestic demand due to energy efficiency increases and increasing share of biofuels, intensified by European policy.
- Bankruptcy of Petroplus, in Feb. 2012 illustrates how substantial and immediate the challenges for the European oil industry are.



competition from subsidise national oil company refineries

unequal environmental and other policies

exposure to demand changes e. g. US petrol market

new export refining capacity

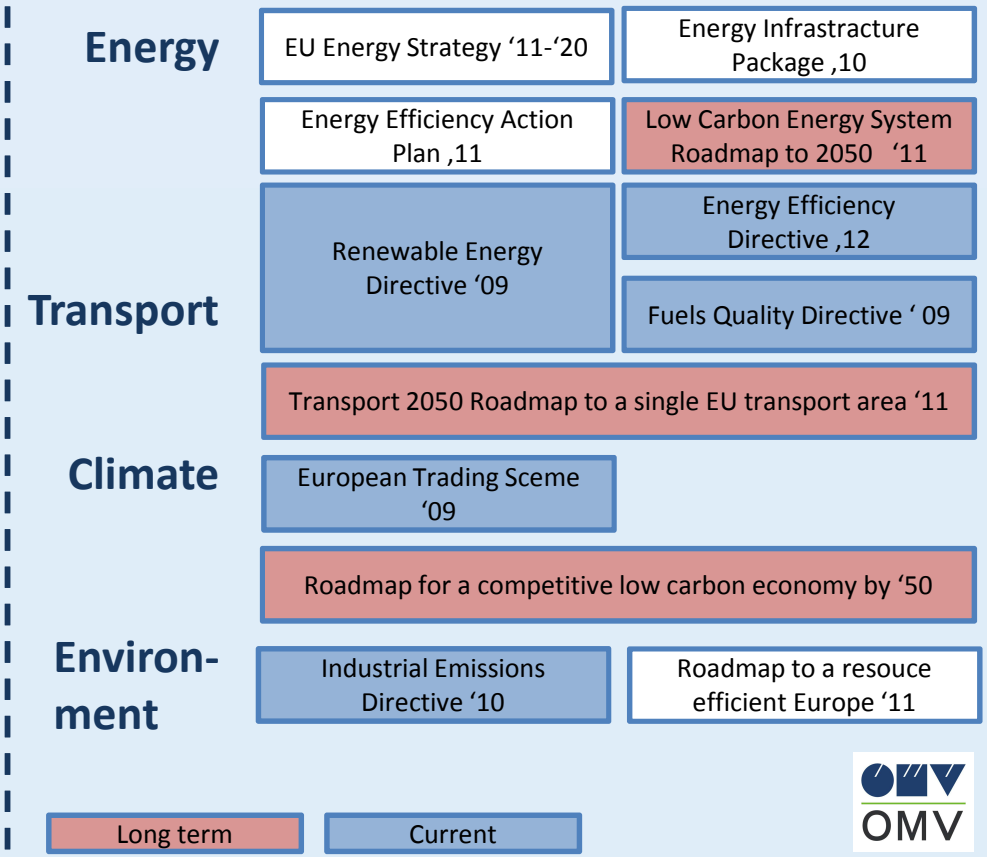
OMV

source: EUROPIA 2012

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

The Legal Landscape for European Refineries is Quite Unfavourable for Global Competitiveness

- **The EU Targets 2020 are the basis for the current enforced and planned set of legislation.**
- **This legislation in the EU increase costs for refining operations and necessitates investments to remain in business with no actual return on investments.**
- **Legislative parts are contradictive to others.**



OMV

source: European Commission, EUROPIA 2012

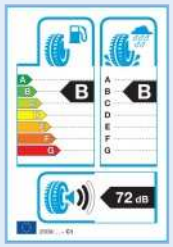
EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

The 20-20-20 Targets Drive the Energy Efficiency Legislation in Europe and their Member States

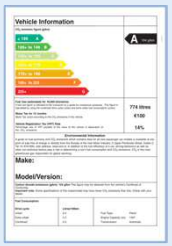
- **EU Target 2020 are**
  - 20% reduced CO_2 emissions
  - 20% share of renewable energy
  - **20% improved efficiency**
- Several **product related** directives were enforced. The **consumer** has to be **informed** about **energy efficiency.**
- **Evaluation** of achieved efficiency targets and established measures in 2011 **showed a gap towards the EU goal.**

Energy Efficiency Directive (EED) in 2012

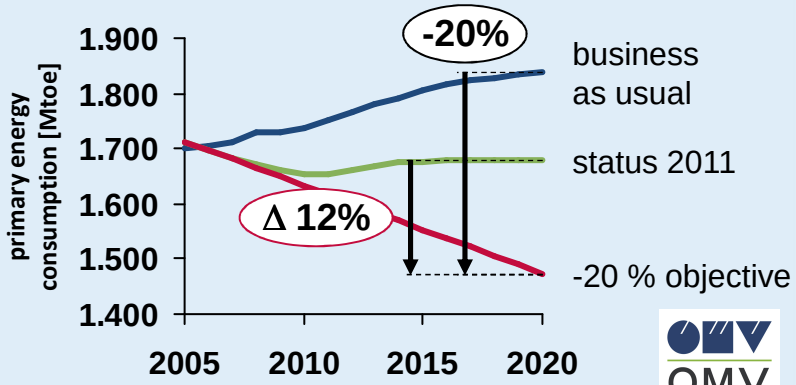
Product related efficiency information



tyre label


car label

EU Commision gap analysis



source: European Commission 2011

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Energy Efficiency Directive Calls for 1.5 % per Year Savings of Energy at Final Customer

National energy efficiency obligation schemes for Energy provider:

Achieve annual energy savings equal to 1.5 % of their previous year's energy sales by volume.

- **Saving obligation is not per se resulting in better energy efficiency; lowering the utilisation would even decrease efficiency.**
- **The height of energy savings is clearly above to sound scientific basis for refineries.**
- **Member state flexibility for transposition into national law, but cross-European harmonisation is very likely gone.**

Mandatory energy audits for large companies

- **Introduction of ISO 50001 energy efficiency standards.**

OMV

source: European Commission 2012

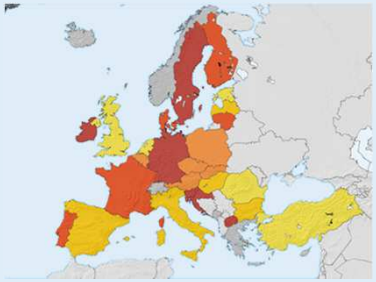
EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Energy Costs and Energy Taxes are rather Diverse even in the EU Member States

- **Globally, energy prices differ** tremendously from region to region.
- Even in the **European Union**, the **energy prices and energy taxes vary** significantly.
- **European oil industry -** as an global competing business **- suffers from high energy costs** compared to other regions .

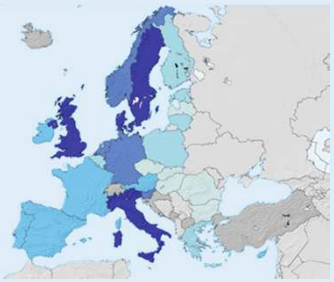
Energy efficiency is one key to global competitiveness

Gas prices for industrial consumers [EUR/GJ]



Electricity prices for industrial consumers [EUR/kWh]

Implicit tax rate on energy [EUR/toe]
Ratio tax revenues/energy consumption



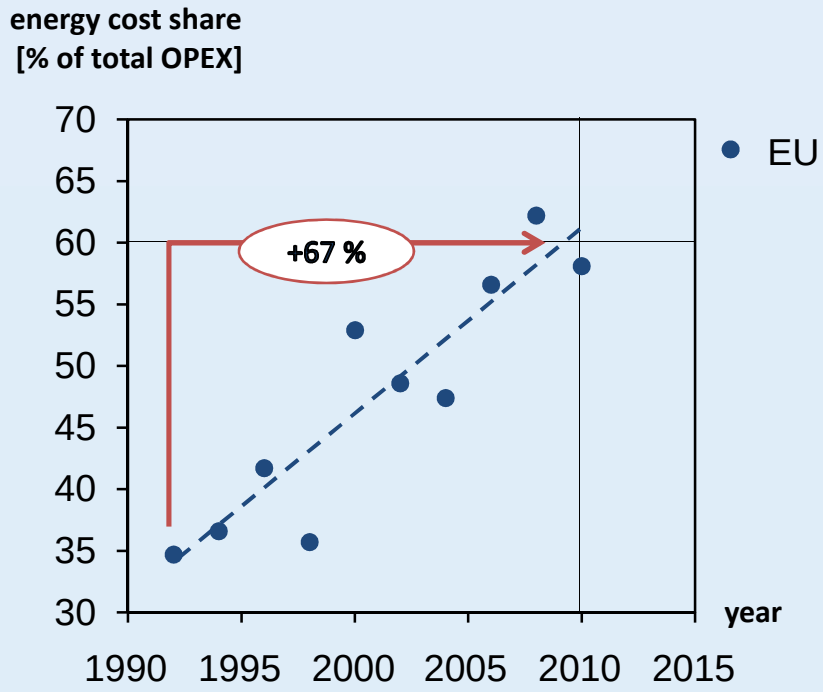
source: Eurostatt, acess Aug. 6th, 2012

OMV

For European Refining Industry Energy Costs are 60 % of Total Operating Costs

- **The share of energy costs** in total **OPEX increased continuously** since 1992 across Europe
  - Within 18 years**, the share increases by 67 %**
  - Currently, the **share of energy costs is around 60 %**, a further increase is anticipated
  - **OMV refineries** energy costs are **in line with European trend**.

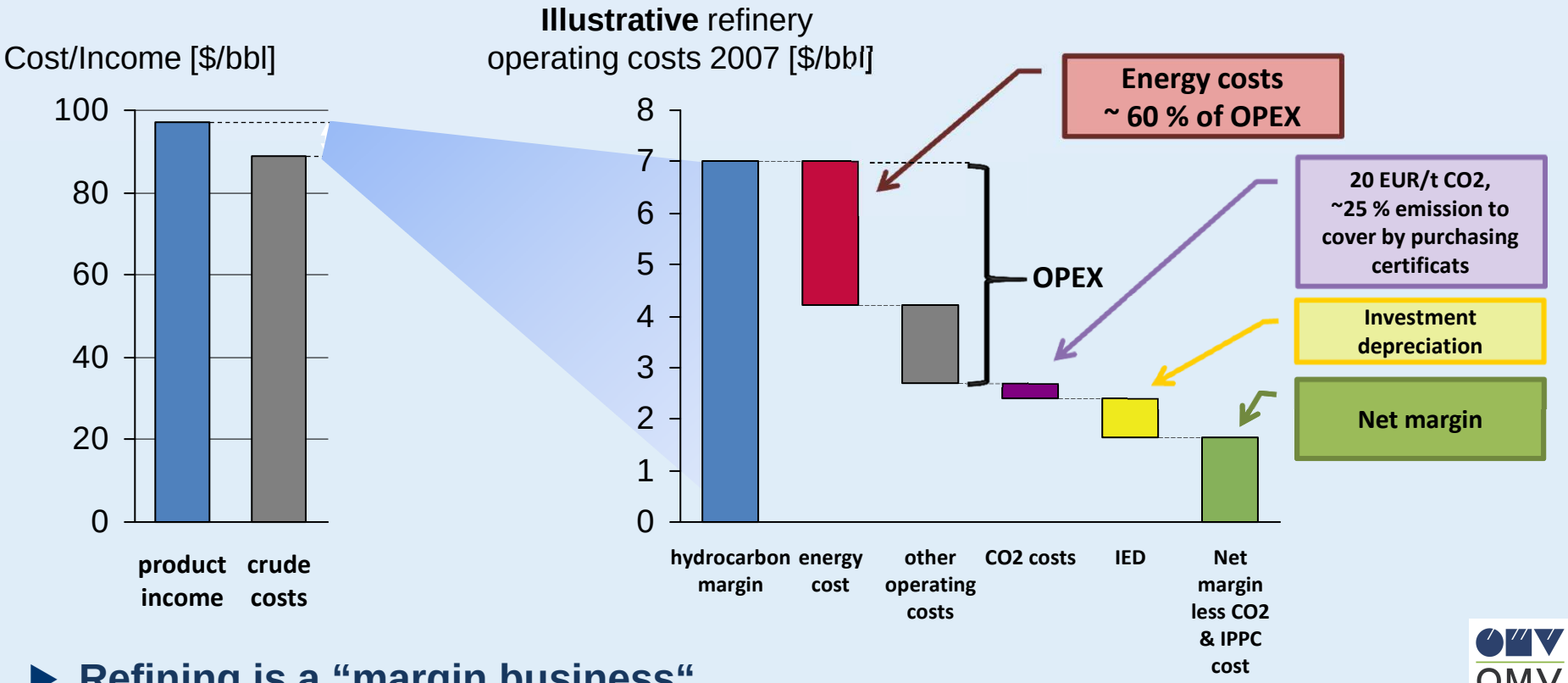
- **Energy costs are the main driver to increase energy efficiency**



source: own data and CONCAWE „Refinery Energy Systems“, 2012

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Due to global competition and legislative burden, EU refining margins are very low



- **Refining is a "margin business"**

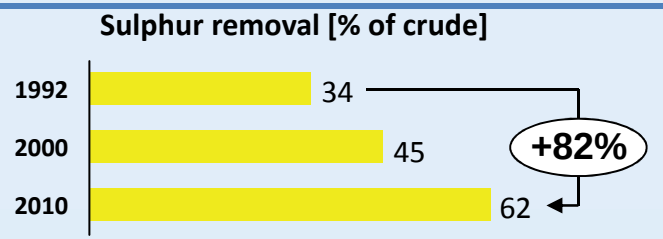
OMV

source: Platts, CONCAWE, EUROPIA 2007 & 2012

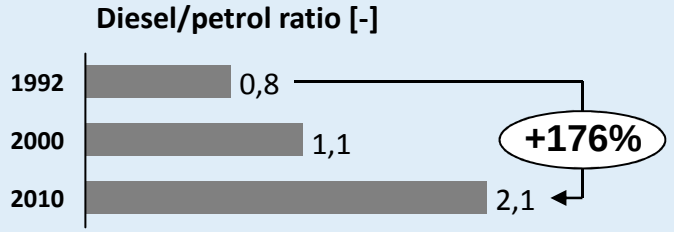
EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Resource Efficiency, Environmental Protection, and Energy Savings are a combined Challenge

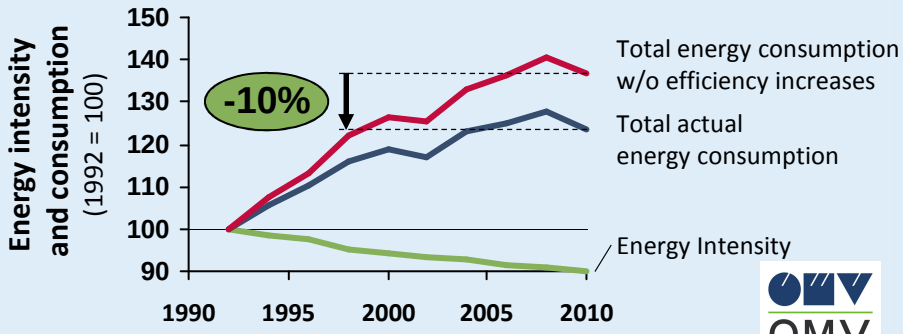
Increasing sulphur removal – e.g. in diesel to 10 mg/kg – and tightened air quality limits (NO_x, SO_x, VOC, PM)



Fuel demand change increase conversion capacities to upgrade heavy crudes and residues



The overall energy consumption is increased by aforementioned measures, but **energy efficiency is increased by 10 %** resulting in aver. 65 ktoe savings per year.



OMV

source: CONCAWE „Refinery Energy Systems“, 2012

Many Measures to Increase Refineries Energy Efficiency Exist, but Many are Cost Intensive, too

- **Process Design**
  - Direct (hot) supply of units
  - Thermal integration
- **Heat recovery**
  - District heating
  - Flue gas heat recovery
  - Tank & piping insulation
- **Cleanliness**
  - Heat exchanger fouling monitoring
- **Electrical Efficiency**
  - Improvement of pump-efficiency
  - Reduction of condensation turbine losses
- **Loss reduction**
  - Flares
  - Steam
  - Power
  - Cooling water
- **Procurement**
  - Life cycle cost criteria

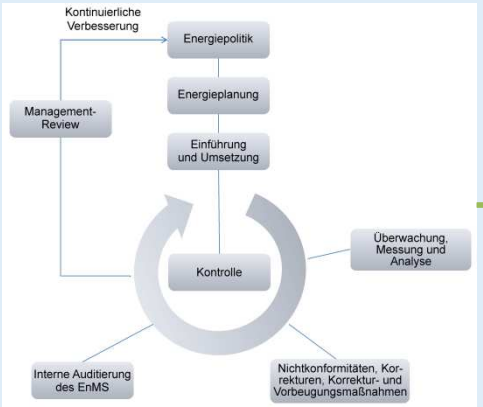
OMV

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

OMV is the First Company in Austria with ISO 50001 Compliance

Refining & Petrochemical Strategy Key Performance Indicators

ISO 50001 Plan, Do, Check, Act



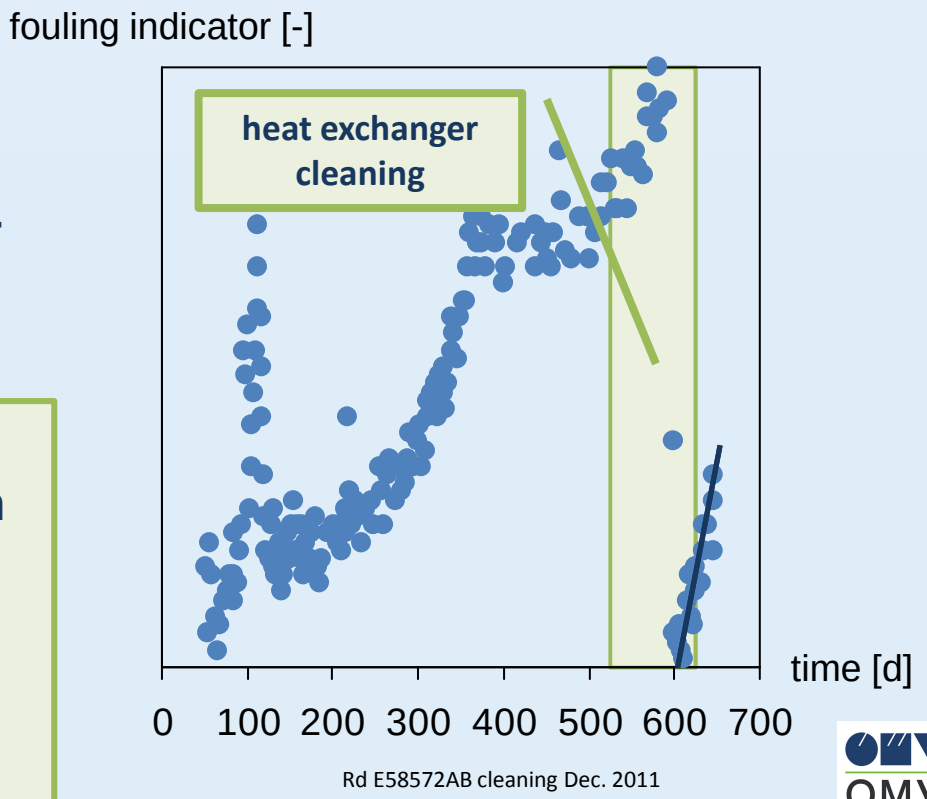
- **Energy efficiency is one cornerstone in OMV Refining & Petrochemicals strategy.**
- OMV **Schwechat Refinery** is the **first business in Austria with ISO 50001** certification.
- The **strategic approach** as well as the formation of a **multidisciplinic Energy Team** are in line with the ISO 50001 and **mandatory to achieve future efficiency gains**.

OMV

One Example of Energy Efficiency Measures:

Equipment Cleanliness

- **Heat exchanger efficiency is decreased by fouling.**
  - Losses by hydraulic limits.
- **Heat exchanger fouling indicator monitoring established.**
  - Forecasts of fouling behaviour.
- **Short cleaning stoppage for sensitive heat exchangers within regular shutdown cycles.**
  - Maintaining of design throughput and above.
  - Minimisation of energy costs.

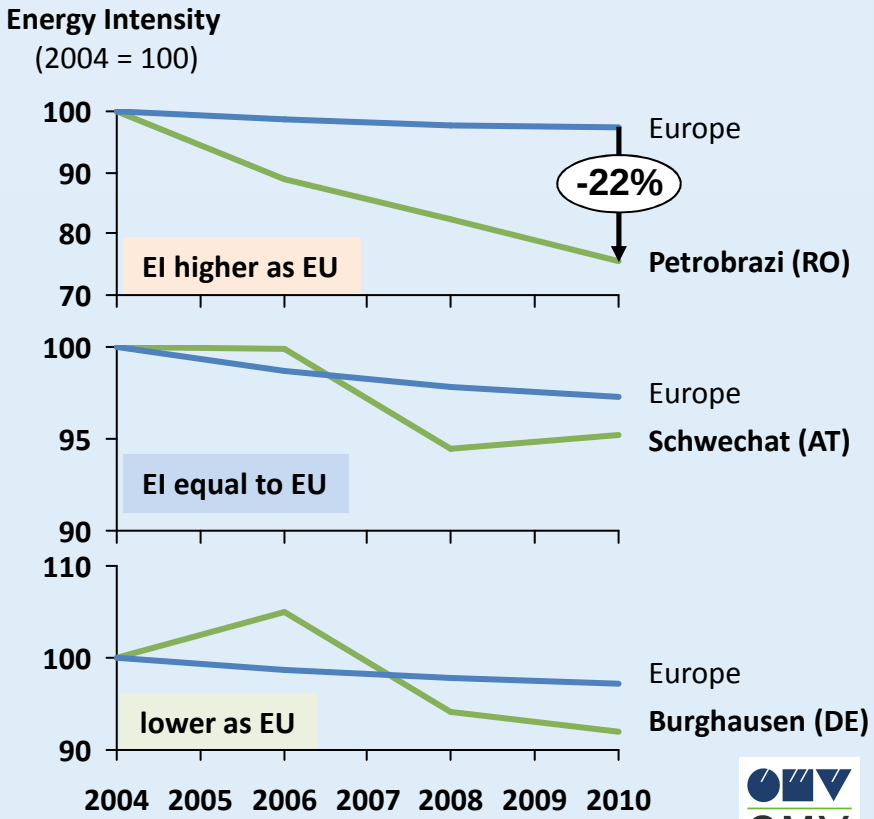


OMV

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

OMV Suceeds to Increase Energy Efficiency Faster than European Average

- **Until the purchase of Petrom Petrobrazi this refinery had a very high energy intensity. We increased the energy efficiency[1)] by more than 22 % within six years by operational measures and major investments. Petrobrazi is on the best way to European average efficiency.**
- **The energy efficiency of Schwechat Refinery is comparable to the European average, but increased slightly more quickly than average.**
- **Burghausen Refinery is among the best energy efficient refineries in the world. Even Burghausen develops faster than the European Average.**



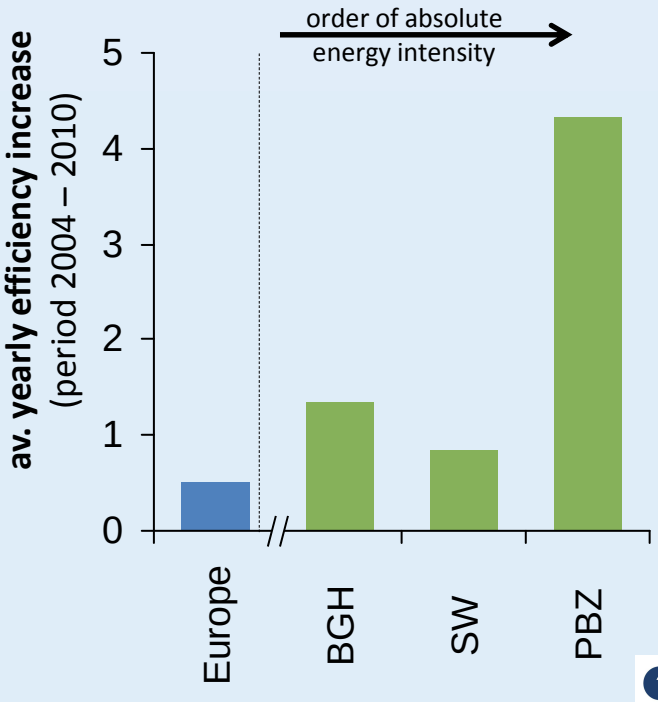
[1)] Refining energy efficiency is measured and compared with a standard state-of-the-art refinery.

source: own data and CONCAWE „Refinery Energy Systems“, 2012

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Energy Efficiency is Our Core Competency, but Contradictive Legislation Hinders Competitivness

- **Energy efficiency is one important key to global competitiveness.**
- **Resource efficiency, environmental protection, and energy savings are a combined challenge.**
- **European saving objectives are not energy efficiency targets.**
- **EU set of legislation is unfavourable for investments necessary to increase energy efficiency.**
- **OMV refineries increase energy efficiency faster than European average.**



source: own data and CONCAWE „Refinery Energy Systems“, 2012

EUMICON
EUROPEAN MINERAL RESOURCES CONFERENCE 2012

Thank you for your attention!

OMV