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

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OMV Germany GmbH

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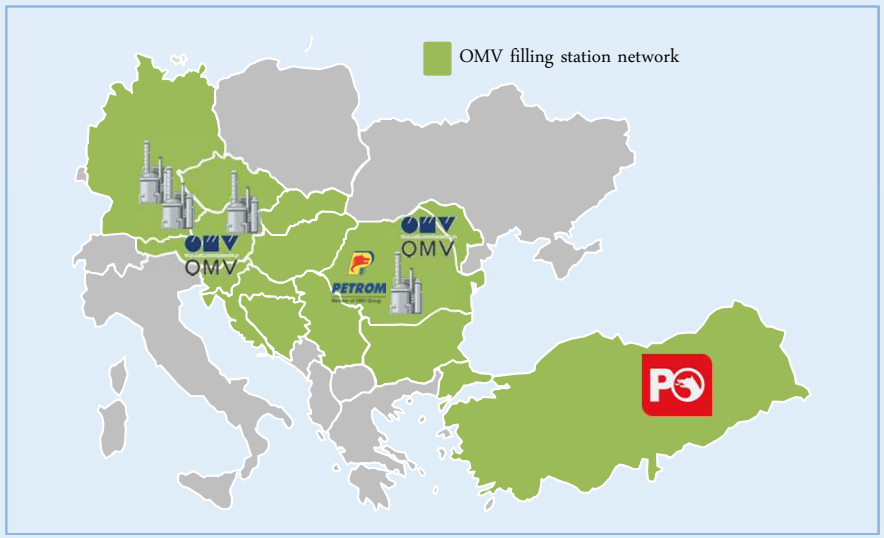
OMV Refining & Marketing incl. Petrochemicals

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

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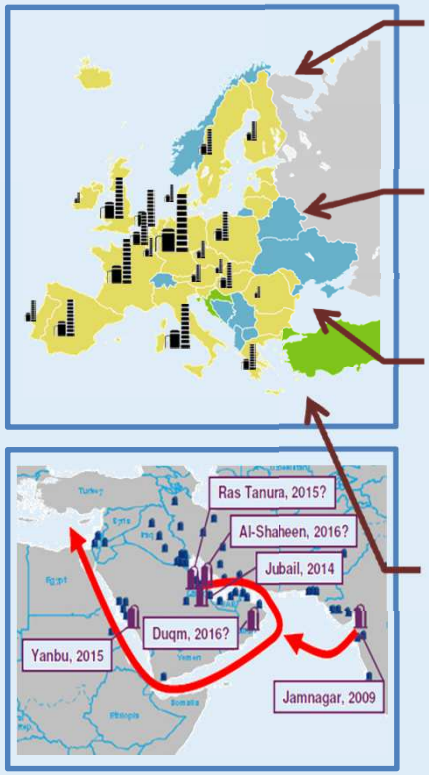
Refining Industry in Europe is Integrated in Global Competition

- 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

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source: EUROPIA 2012

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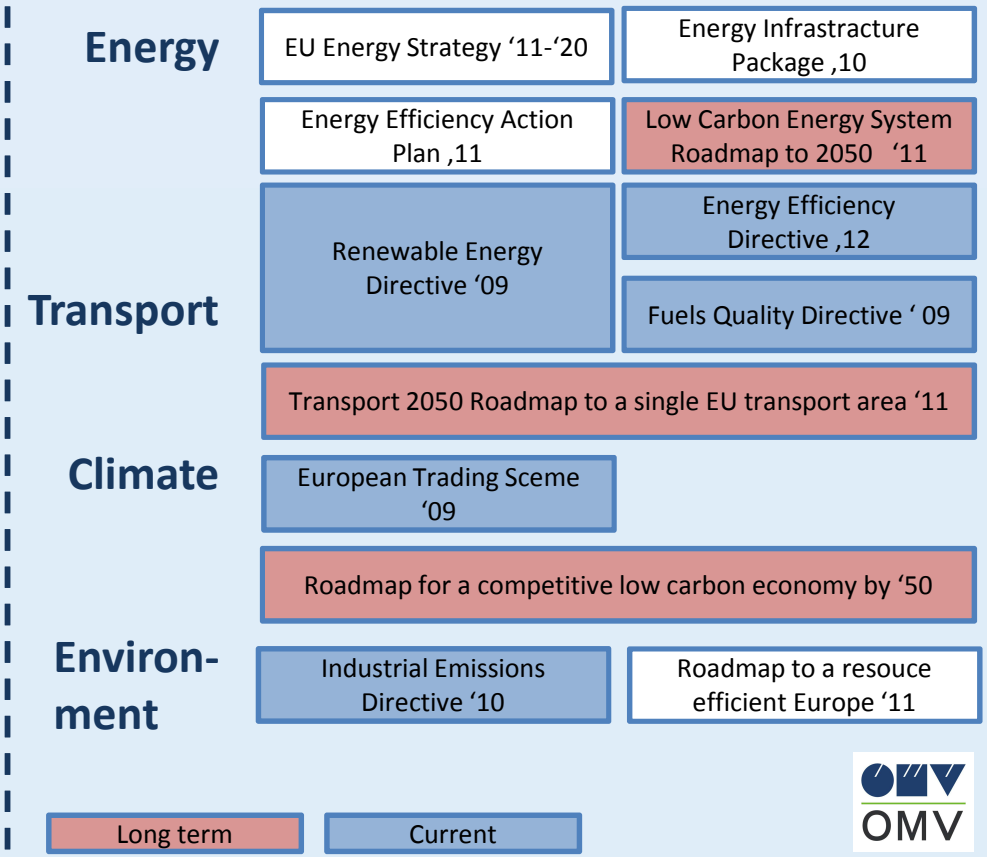
The Legal Landscape for European Refineries is Quite Unfavourable for Global Competitiveness

- **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.**



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source: European Commission, EUROPIA 2012

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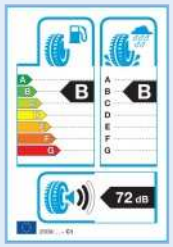
The 20-20-20 Targets Drive the Energy Efficiency Legislation in Europe and their Member States

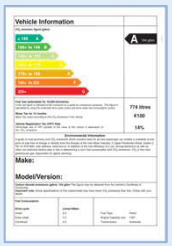
- **EU Target 2020 are**
  - 20% reduced CO_2 emissions
  - 20% share of renewable energy
  - **20% improved efficiency**
- Several **product related** directives were enforced. The **consumer** has to be **informed** about **energy efficiency.**
- **Evaluation** of achieved efficiency targets and established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

Energy Efficiency Directive (EED) in 2012

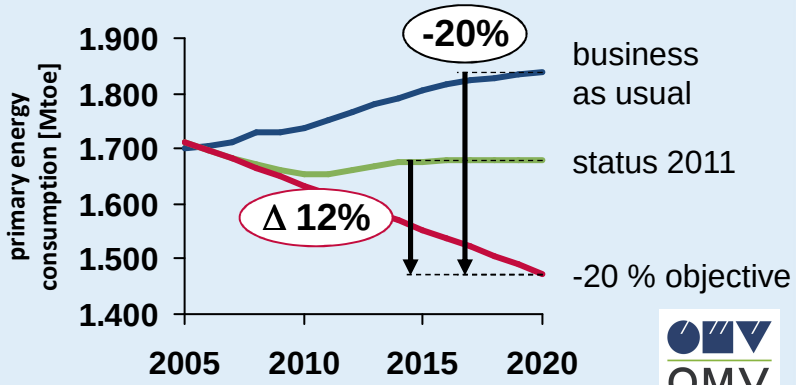
Product related efficiency information



tyre label


car label

EU Commision gap analysis



source: European Commission 2011

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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.**

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source: European Commission 2012

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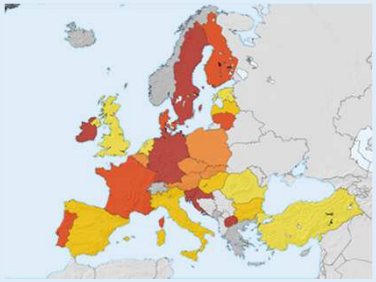
Energy Costs and Energy Taxes are rather Diverse even in the EU Member States

- **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 .

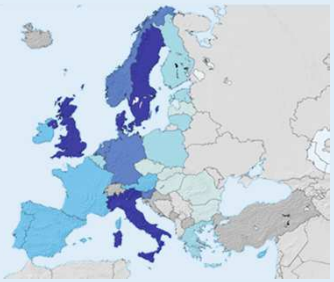
Energy efficiency is one key to global competitiveness

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

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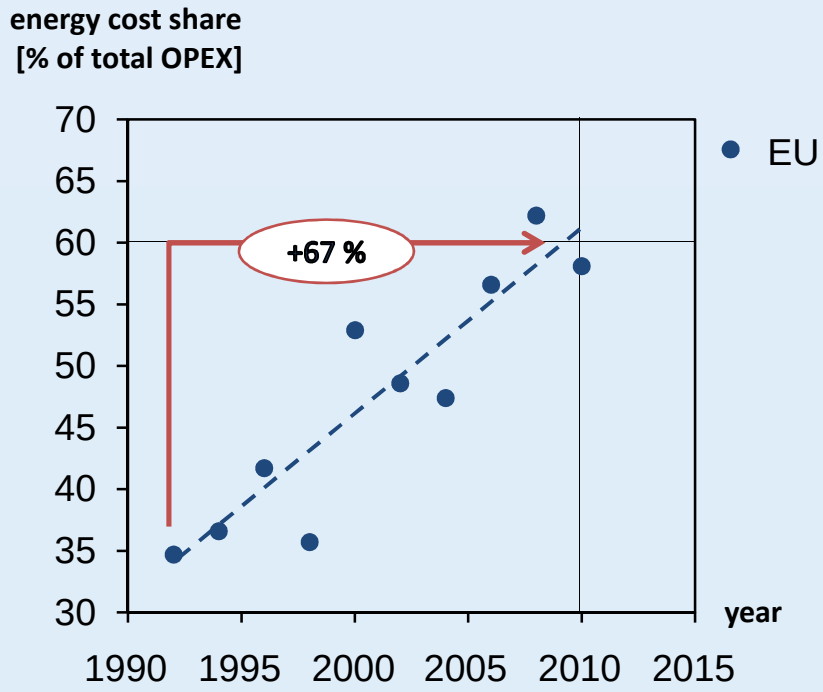
For European Refining Industry Energy Costs are 60 % of Total Operating Costs

- **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

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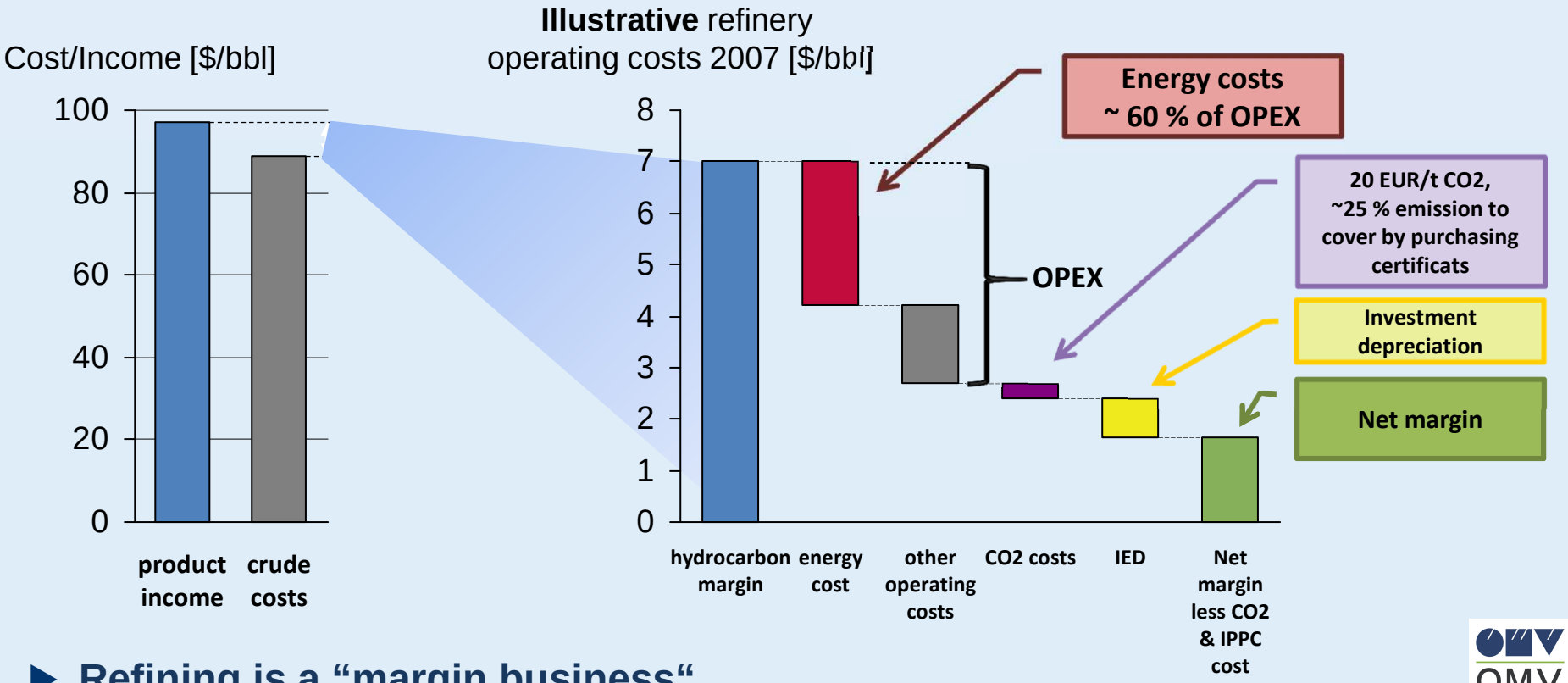
Due to global competition and legislative burden, EU refining margins are very low



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

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source: Platts, CONCAWE, EUROPIA 2007 & 2012

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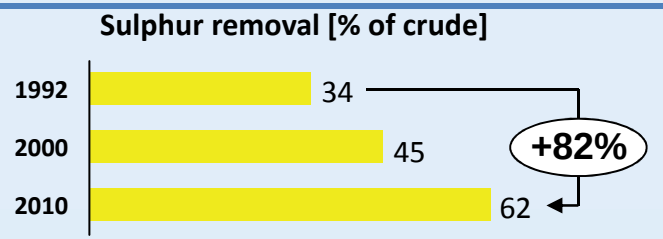
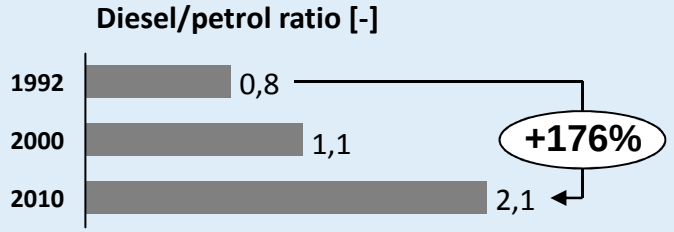
Resource Efficiency, Environmental Protection, and Energy Savings are a combined Challenge

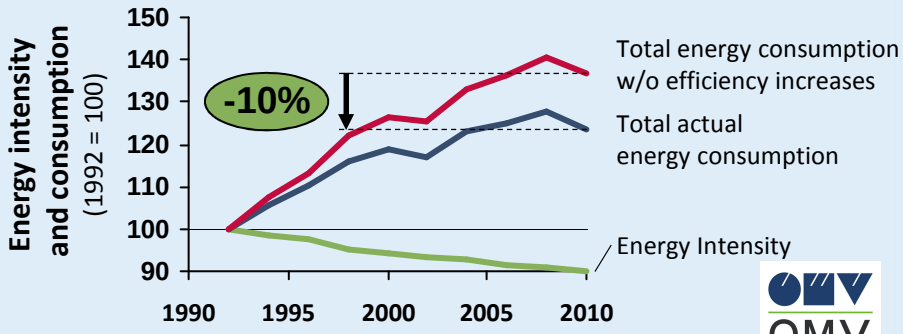
Increasing sulphur removal – e.g. in diesel to 10 mg/kg – and tightened air quality limits (NO_x, SO_x, VOC, PM)



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.



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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

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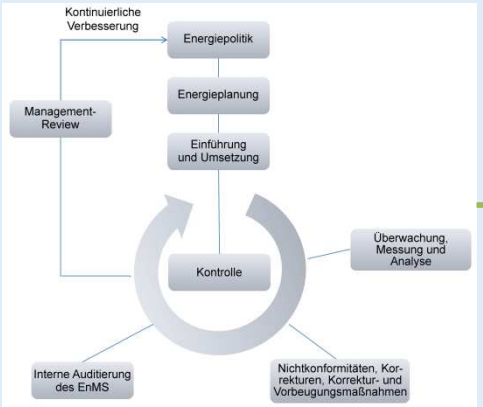
OMV is the First Company in Austria with ISO 50001 Compliance

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**.

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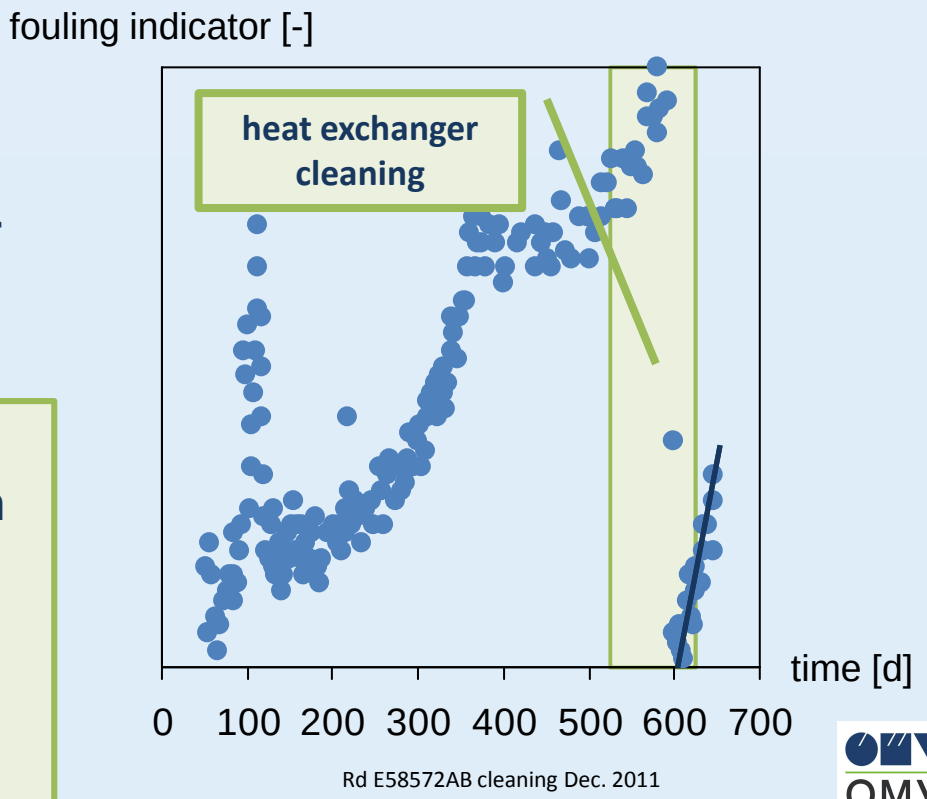
One Example of Energy Efficiency Measures:

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.



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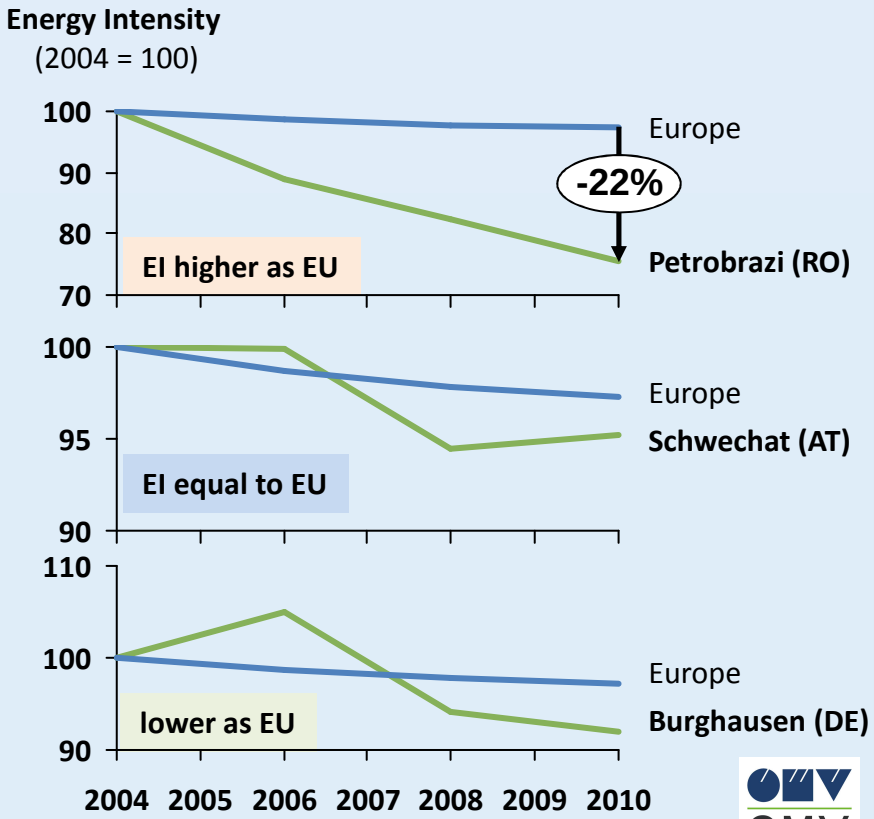
OMV Suceeds to Increase Energy Efficiency Faster than European Average

- **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

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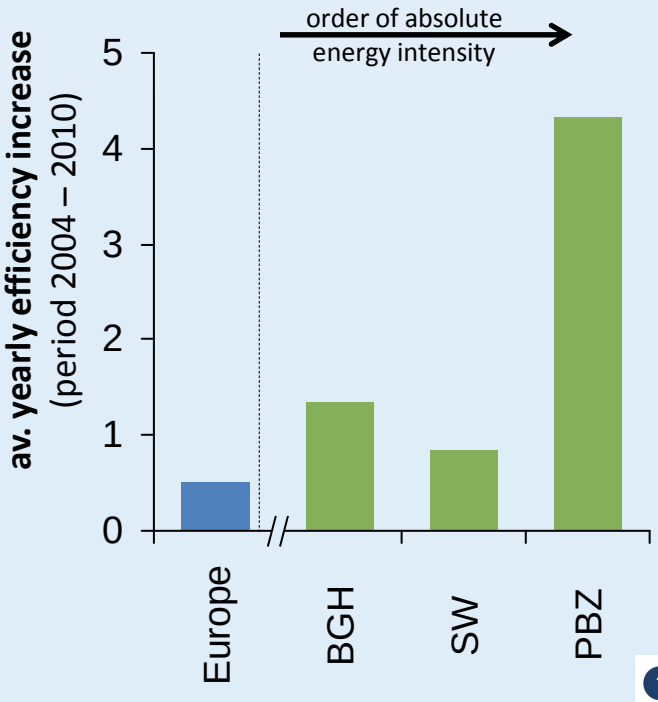
Energy Efficiency is Our Core Competency, but Contradictive Legislation Hinders Competitivness

- **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

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Thank you for your attention!

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