



MINISTRY OF ECONOMY AND COMMERCE
CRAIOVA ENERGY COMPLEX



IMPROVING EFFICIENCY

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What happens now in energy area

- The dramatic oil and natural gas price rising;
- More and more restrictive limits at pollutant emissions – dust, CO₂, SO₂, NO_x, etc;
- A very big problem will be with carbon capture and storage;
- More and more energy demand, especially in Asia and in developing countries.



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Improving efficiency means:

- Reduction of specific fuel consumption;
- Primary fuel reserves preservation;
- Decrease of pollutant emissions;
- Decrease production costs;
- Cheap energy at final customer;
- Increase the competitiveness in a free market;
- Last, but not least technological progress, etc.



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Romanian energetic sector

- In Romania it is enough install capacity. The demand is less than 50 % from install capacity;
- More than 30 % from power generation is hydro;
- The level of pollutant emissions must be solved;
- In coal fired power plants it's use mainly lignite;
- Romanian lignite has more ash and low calorific value. There are reserve for 75-100 years.



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Romanian power plants:

- Most of them are old and very old;
- Efficiency is less than designed, usually less than 35 %, gross.
- SO₂ emissions are more than limits admitted by environmental laws.
- In the main lignite fired power plant the unit load is 330 MW in condensation mode, but there are two at 150 MW and more at 50 MW to, in cogeneration mode.



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Way to improve the efficiency:

- No extra-costs by operating measures;
- Small repairs with minimum costs;
- Rehabilitation programs;
- New technology at existing units;
- New units with classic technology;
- New units with new technology;
- Advanced technology with grate efficiency.



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Efficiency improvement with no extra-costs.

- vacuum improvement at the condensers;
- nominal values of live steam pressure;
- fuel storage and consumption monitoring;
- complete fuel combustion at boilers;
- operation at nominal load all time;
- all leakages elimination;
- operation in cogeneration mode.



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Existent units' rehabilitation.

- That is made to remake the design units performances;
- The turnover of investment in 3-5 years of operation;
- This action means:
 - major repairs at the main and auxiliary equipments;
 - modernization of automation and control installations;
 - physical and moral used equipments replacement;
 - pollution emissions reduction.
- In this way, in Romania the efficiency was spectacularly improved;



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Existing units' refurbishment.

- Rehabilitation lead to unit performances improvement bringing them to a superior level from those of design;
- The turnover of investment reclaiming been realized in 10-15 years of functioning;
- This action consists in modern equipment introduction instead of old ones;
- Supplying possibility of system technological services;
- Endurance increasing, the units been able to loading and unloading big loads in short time;
- This performances improvement confers to the units the requested qualities by the liberalized market.



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Realizing of new units.

- Perform technical requests imposed by the free market;
- The best solution to improve the efficiency;
- There was already made units that have obtained over 50% efficiency in condensation mode;
- It was obtained efficiency over 80% at the cogeneration units that lead to considerable decreasing of pollution;
- There was obtained better parameters than initial ones, by using some materials with improved performances, for temperatures and pressures.



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New technology

- Fluidized bed combustion;
- Combined cycle gas – steam turbine;
- Cogeneration;
- New material for pipe and equipments;
- New turbine with higher efficiency;
- Trigeneration;
- Coal gasification;



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Capital for investments:

- own source;
- bank loans;
- privatization;
- adhere financial arrangements.

Improving efficiency is the way to progress.