

Calorific Mining®

**Special concept of a CM-CFB/CM-GAS plant
for production of energy and syngas in the context of
remediation projects of the oil industry**

***A new approach to an economic, sustainable and
climate friendly remediation***

ENVIROTHERM

Experienced and qualified engineering company-
developing and applying proprietary technologies
- acquired from Lurgi



relevant for CM-
CFB / CM-GAS
technology and
plant

CLEAN ENERGY

Modern
Gasification Technologies
CM-GAS



Multi-Purpose
Combustion Technologies
CM-CFB



CLEAN AIR
(Air Pollution Control - APC)

Highly Efficient
Flue Gas Cleaning
Technologies



Production and Distribution of
Honeycomb SCR Catalysts



baufeld®

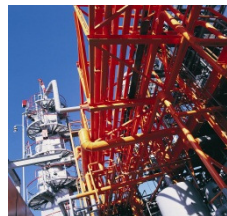
experienced and qualified engineering partner-
practised projects with proprietary technologies in
a strong group of companies



relevant for CM-
CFB /CM-GAS
technology and
plant

**USED OIL
CHEMISTRY & WASTE WATER**

Services
for Used Oil Collection,
Recycling of Oil, Water, Sludge



Recycling
of Chemical Wastes and
Alternative Combustible Fuels



**REMEDIATION -
CALORIFIC MINING**

Environmental Engineering
Project Management
Remediation Technologies



Calorific Mining
Energetic Use
of Acid Tars/Oil residues



Advantages of the CM-CFB/CM-GAS concept



Social and sustainable

The contaminated sites are clean and ready for future use – without waste.

Sustainable remediation with maximum acceptance among public stakeholders and maximum reuse of sites – municipal or industrial.

Creation of job opportunities for the installation and operation of the plant.

An EU supported funding for public infrastructural and waste management projects seems feasible.



Our approach is the combination of state-of-the-art technologies for recovery of waste streams for the production of Clean Energy in connection with the development of urban and industrial infrastructure with a maximum of social awareness and environmental benefits.

Intension and Goal of Calorific Mining® with Extension of CFB Technology (CM-CFB, CM-GAS)



Acid tar lagoons and comparable oil contaminated upstream/downstream sites of the oil industry worldwide need to be cleaned-up; products from remediation must be used in an economical and environmentally friendly way.



Often no way of usage of waste derived products is available - Stabilization and landfilling are in conflict with EU landfill directive and cause future risks for the sites. CM-CFB/CM-GAS Technology is evaluated as an effective variant for a most sustainable remediation.



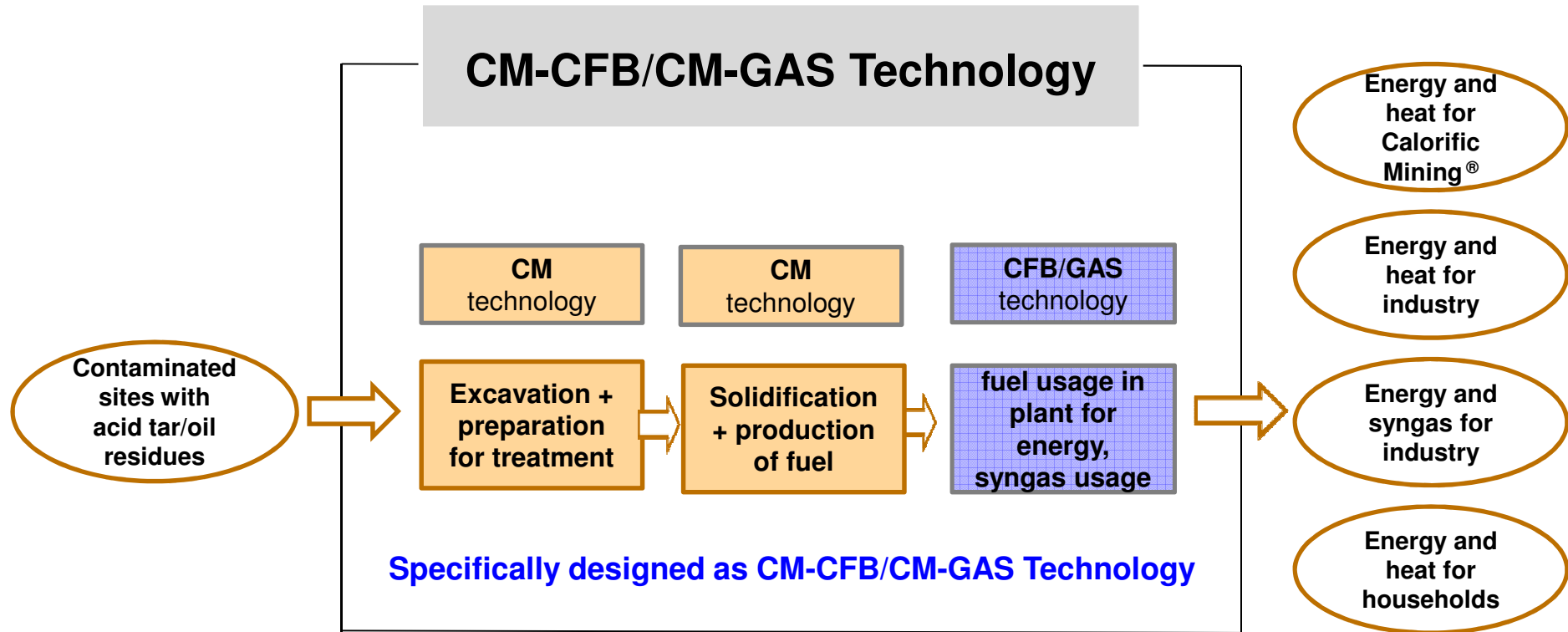
The CM-CFB /CM-GAS Technology can be optimized for the combined and subsequent use of waste products from oil industry, domestic and industrial waste.



This very efficient technology is innovative, robust + flexible, for continuous waste management, the system produces clean energy and heat.

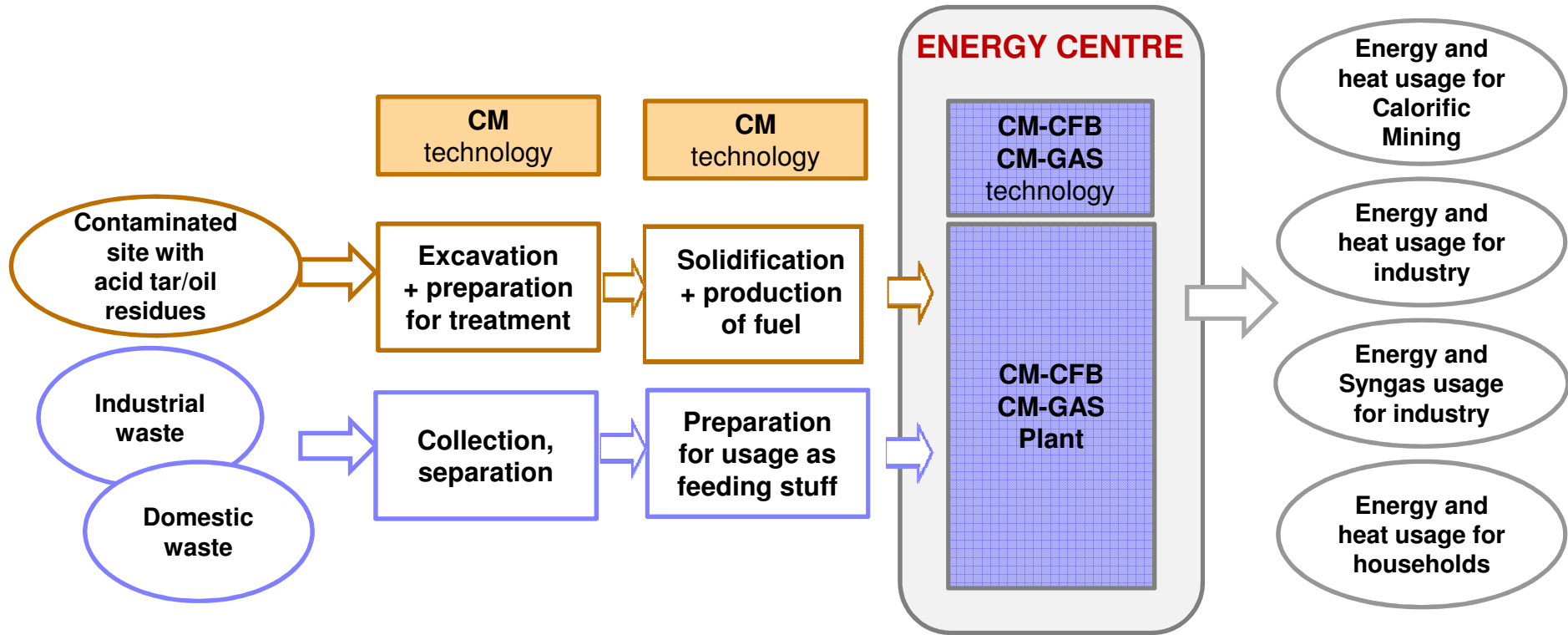


Due to application for various wastes and as renewable energy producing system funding from the EU is feasible - the set up of an Energy Centre is an economical and environmentally friendly solution for infrastructural and waste management demands.



The CM-CFB / CM-GAS technology is based on BAUFELD’s experience in treatment of acid tars/oil residues and production of the fuel and on Envirotherm’s experience in utilization of this kind of fuels.

CM-CFB/CM-GAS-Technology in combination with application for other waste derived fuels



The CM-CFB/CM-GAS plant operating within an innovative Energy Centre can be flexibly used for various waste derived fuels. The energy/heat/syngas production can be provided continuously and in a volume independent of single fuel availability.

CM-CFB Plant (Design model)

Input

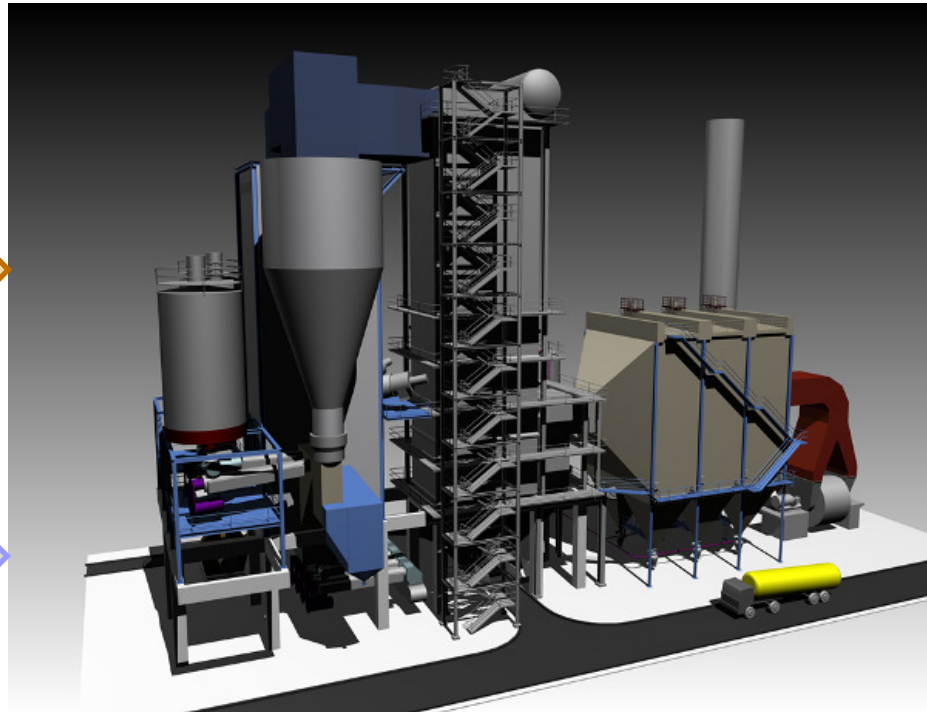
→ 7,500 operating hours/a →

Output

75,000 t/a secondary fuel (15 MJ/kg)

- Special designed for acid tar/oil residues
- Robust flexible system
- Corrosive environment
- Practiced / Proven

- Products derived from industrial and household waste with different calorific values.



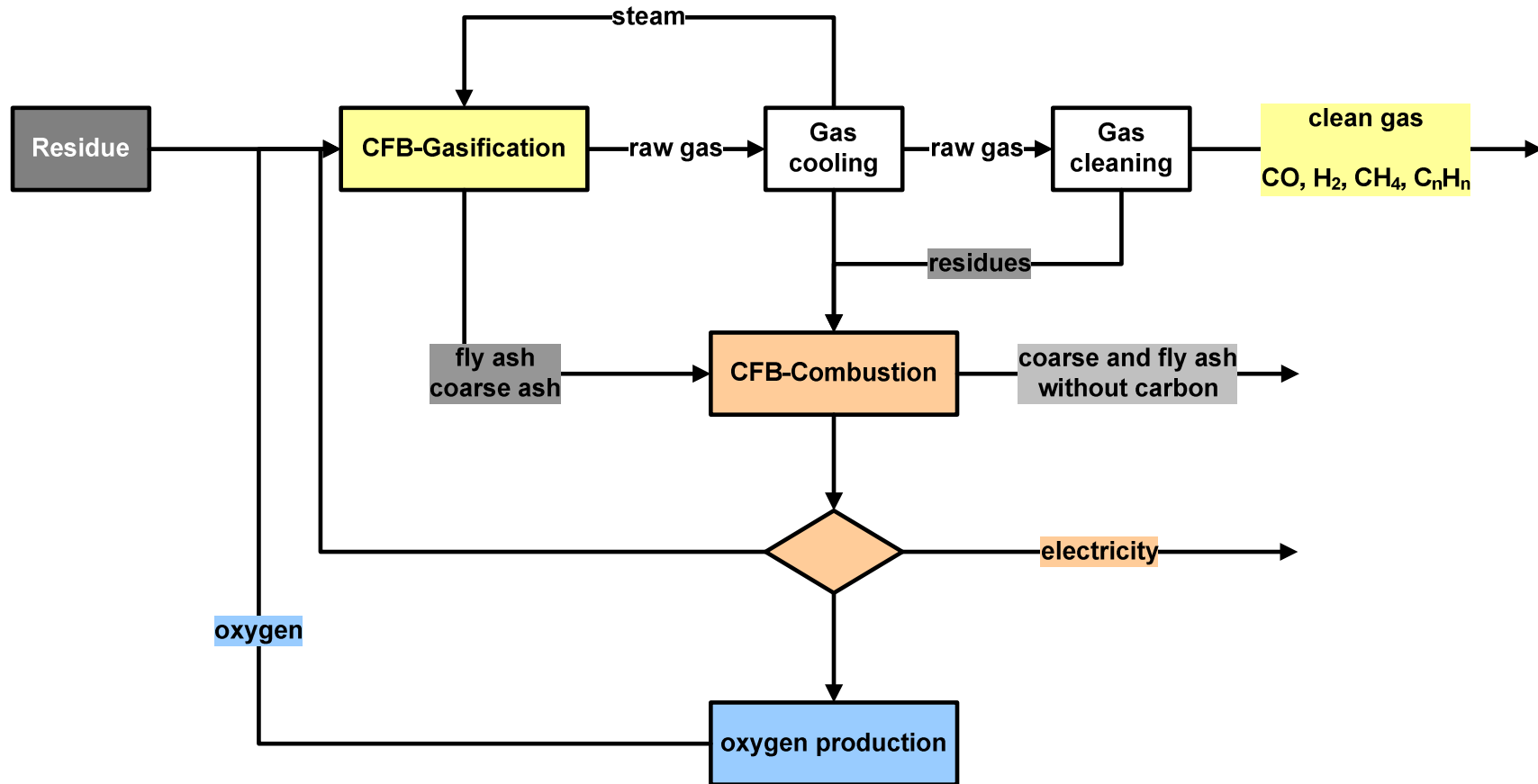
9,000 MWh/a electric power

40,000 t/a coarse and filter ash

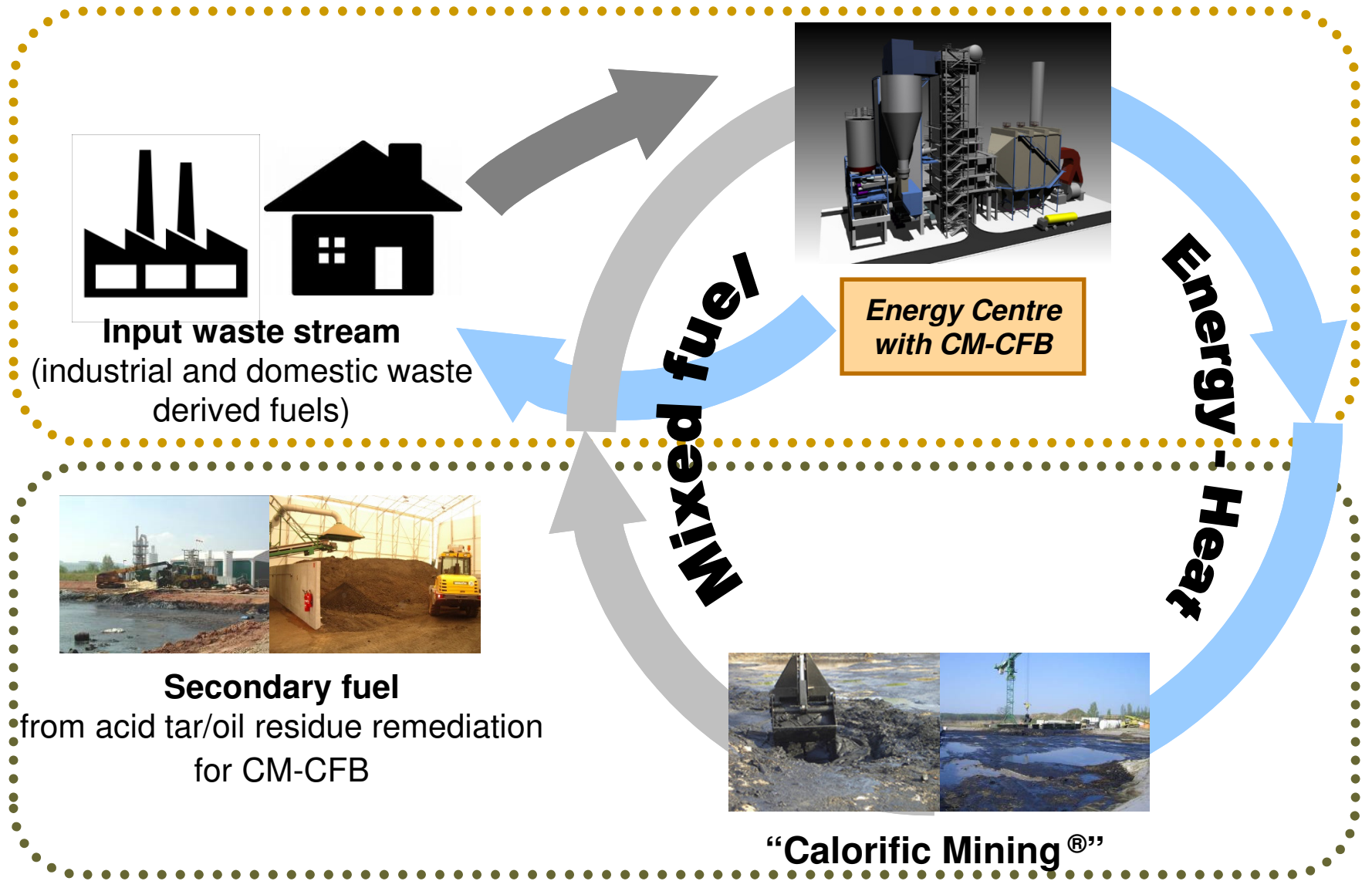
Investment 35 MIO €, ROI 9 years, planning/implementation 3 years

Funding support option by EU, due to waste management and infrastructural projects

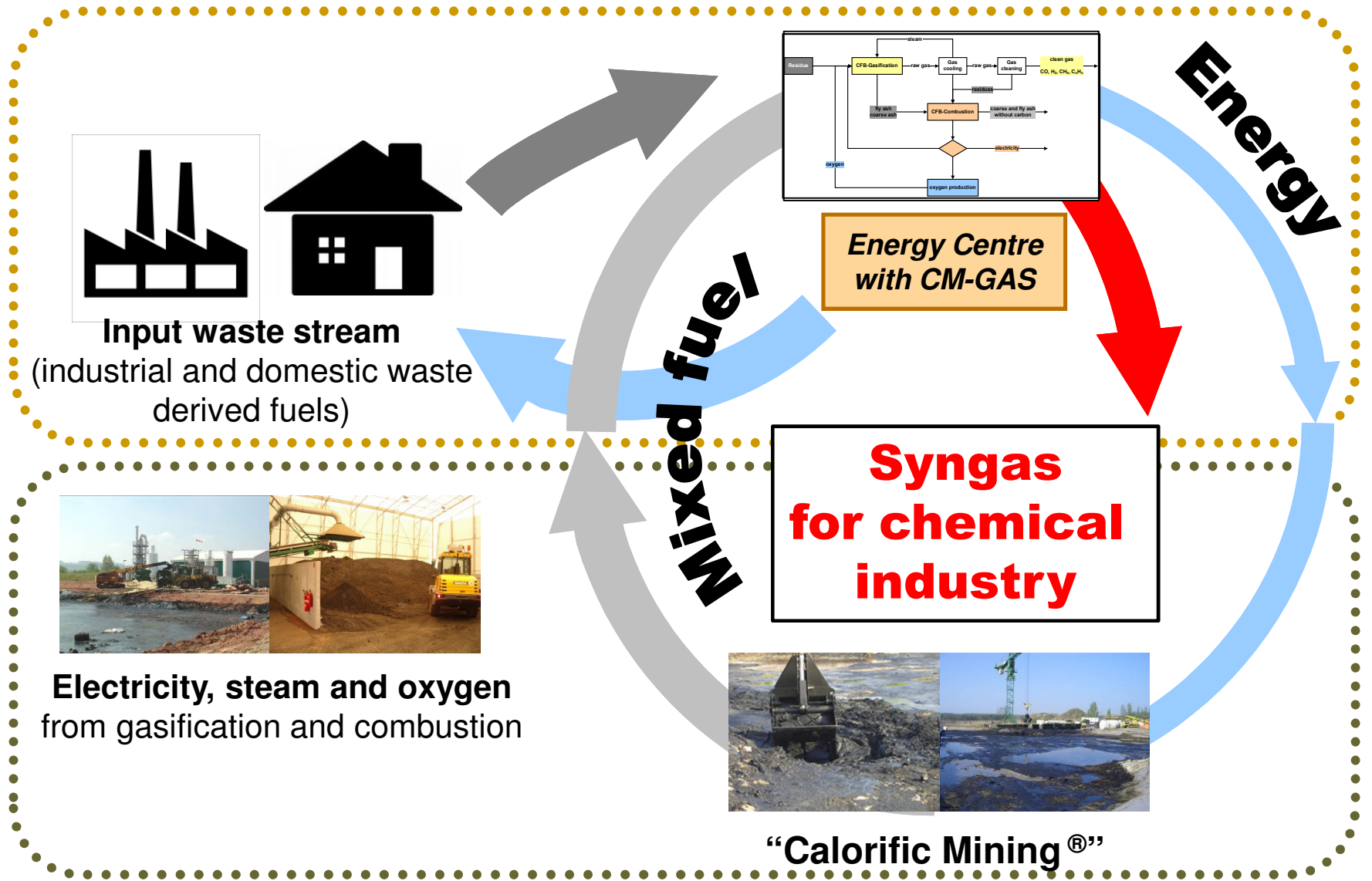
CM-GAS Plant (process)



Energy-Heat Loop of CM-CFB-Process



Energy-Syngas Loop of CM-GAS-Process



Summary



An CM-CFB/CM-GAS based Energy Centre is a sophisticated, economical and ecological solution for the clean-up of major contaminated upstream/downstream sites of the oil industry for maximum reuse of sites for municipal and industrial reuse.



Due to it's flexible and proven technology the special designed CM-CFB /CM-GAS -plant can be included into the specific waste management concepts of refineries, as it can be fed with different products that are derived from industrial and domestic waste.



The electric power and heat can be used for industrial and/or residential areas. The syngas can be used by chemical industry.



Social and sustainable remediation with maximum acceptance among public stakeholders and a maximum of social awareness and environmental benefit.



Funding by EU-institutions for public infrastructural and waste management projects feasible.

Actions to be recommended



Request of status of acid tar/oil residues remediation projects of oil industry and status of waste treatment concepts of industries and municipalities.



Status of investment options for CM-CFB/CM-GAS plant for combustion of acid tar/oil residue products together with other waste derived products.



Cost benefit analysis of plant investment - investigation of accessible waste volumes to be used.



Task description of engineering works for an overall plant and waste management concept.



Organization of waste streams and establishment an Energy Centre with CM-CFB/CM-GAS plant.

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