

# Calorific Mining

Special concept of a CM-CFB plant  
for energetic utilisation in the context of  
*remediation projects of the oil industry*

October 2013

**ENVIROTHERM**

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



relevant for CM-  
CFB Technology  
and plant

**CLEAN ENERGY**

Modern  
Gasification Technologies

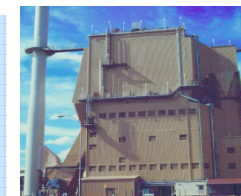


Multi-Purpose  
Combustion Technologies  
CFB



**CLEAN AIR  
(Air Pollution Control - APC)**

Highly Efficient  
Flue Gas Cleaning  
Technologies



Production and Distribution of  
Honeycomb SCR Catalysts



**baufeld®**

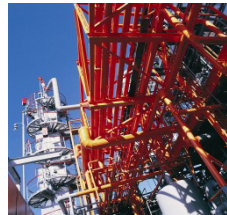
**experienced and qualified engineering partner-  
practised projects with proprietary technologies in  
a strong group of companies**



relevant for CM-  
CFB 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



**REMEDIAION -  
CALORIFIC MINING**

Environmental Engineering  
Project Management  
Remediation Technologies



Calorific Mining  
Energetic Use  
of Acid Tars/Oil residues



## Intension and Goal of Calorific Mining with Extension of CFB Technology (CM-CFB)



**Acid tar lagoons and comparable oil contaminated 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 Technology is evaluated as an effective variant for a most sustainable remediation.**



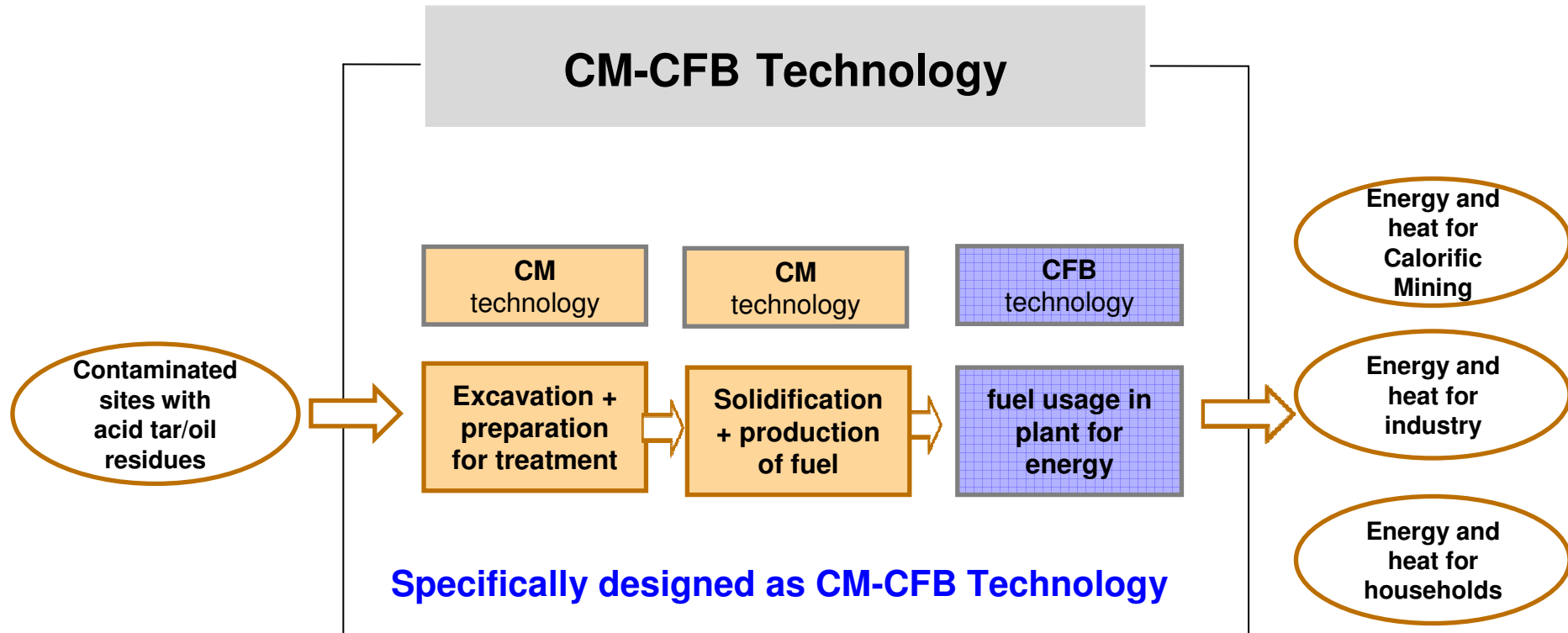
**The CM-CFB Technology can be optimized for the combined and subsequent use of waste products from oil industry, domestic and industrial waste.**



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

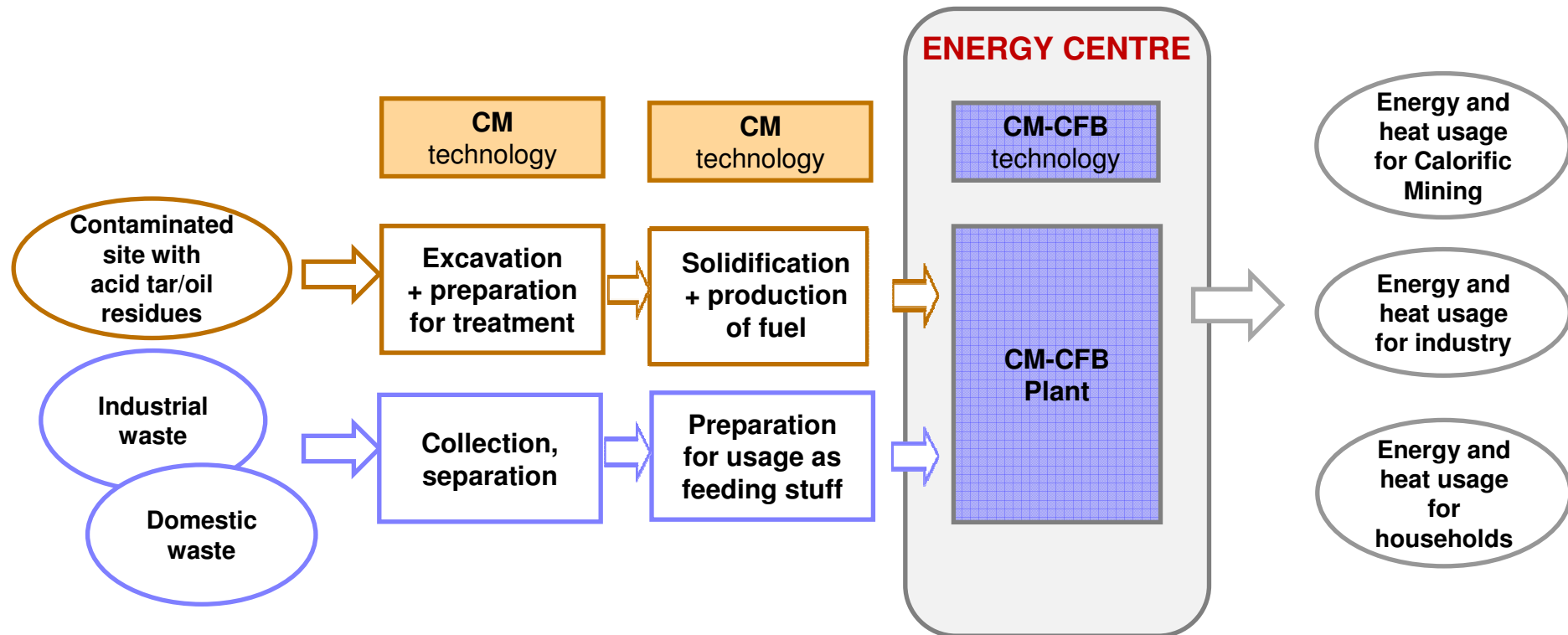


**Due to application for various wastes and as renewable energy producing system funding from the EU is feasible - the set up of an Energy Centre is an economical and environmentally friendly solution for infrastructural and waste management demands.**



The CM-CFB 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-Technology in combination with application for other waste derived fuels**



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

# CM-CFB Plant (Design model)

**Input**

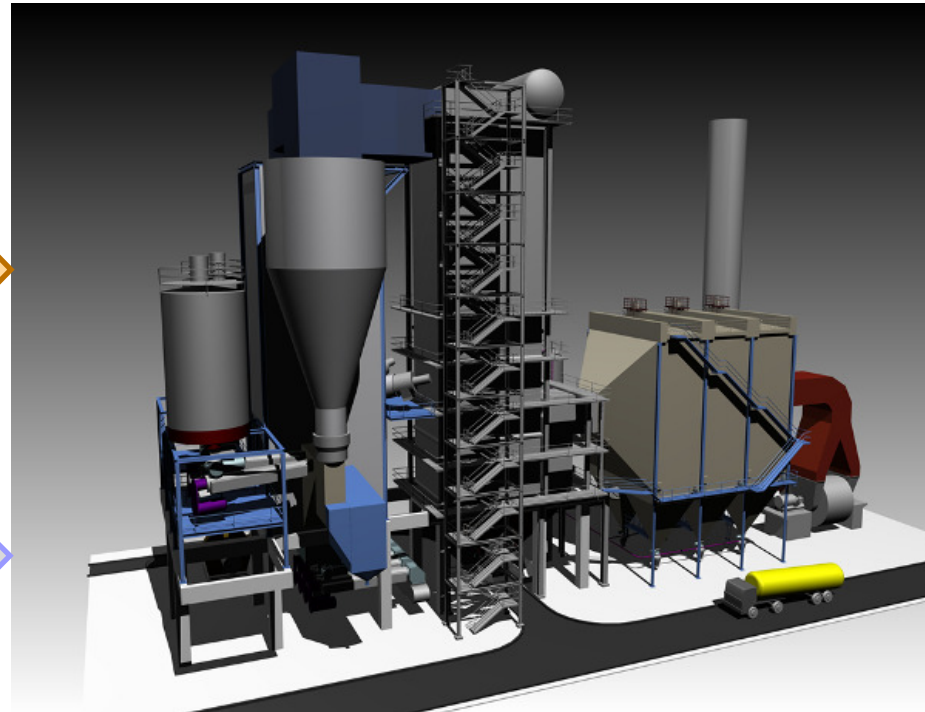
→ 7,500 operating hours/a →

**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.



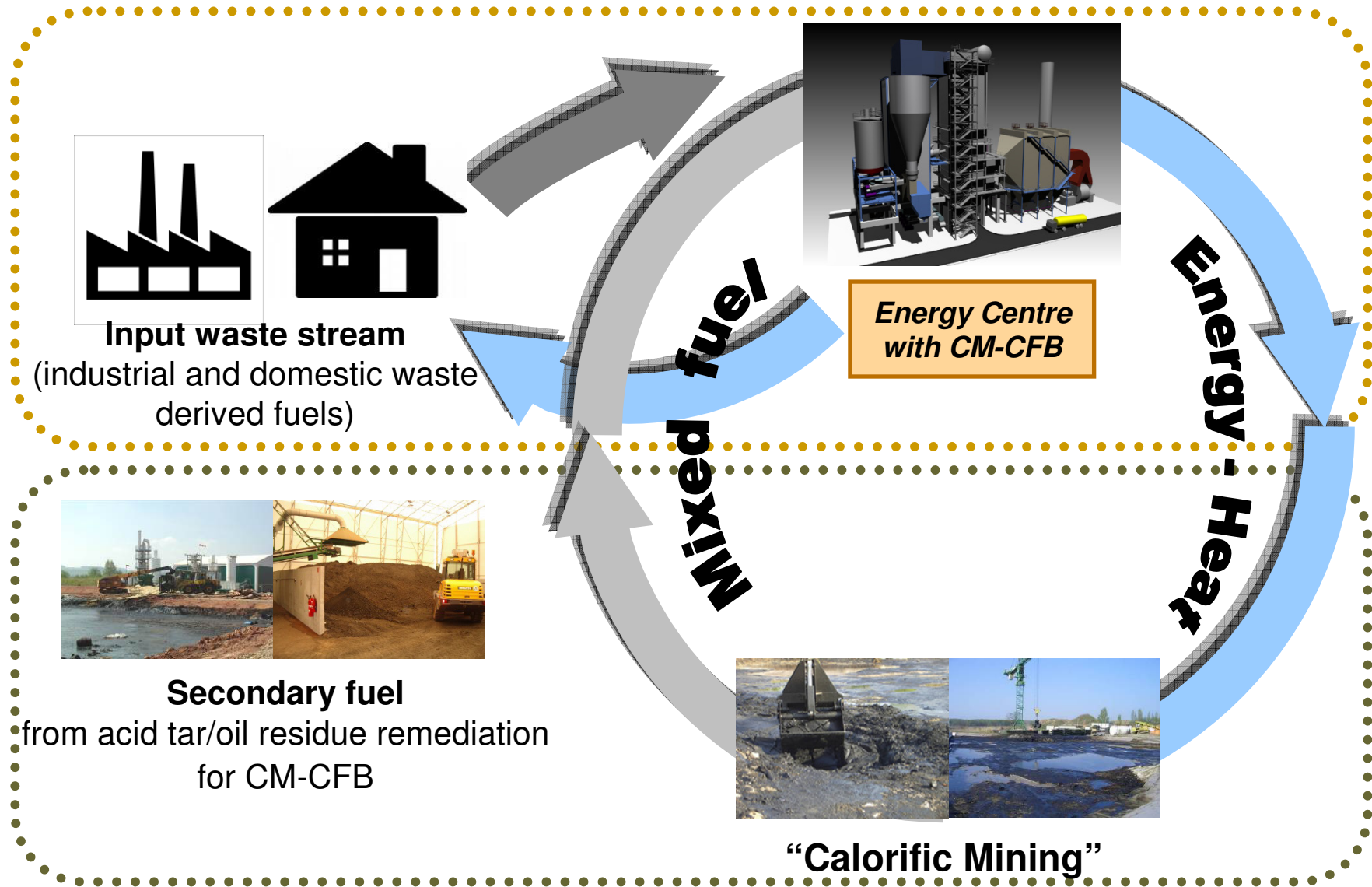
9,000 MWh/a electric power

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

### Energy Loop of CM-CFB-Process





## Summary



An CM-CFB based Energy Centre is a sophisticated, economical and ecological solution for the *clean-up of major contaminated sites of the oil industry*.



Due to its flexible and proven technology the special designed *CM-CFB-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*.



Sustainable Remediation with *maximum acceptance among public stakeholders and maximum reuse of sites*.



Funding by EU-institutions for infrastructural and waste management projects seems 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 the oil industry/country.**



**Status of investment options for CM-CFB 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 plant.**

## Contact

BAUFELD-UMWELT-ENGINEERING GmbH  
Chemnitzer Strasse 3  
09123 Chemnitz

contact: Dr. Ditmar Gruß (Managing Director)  
e-mail: [ditmar.gruss@baufeld.de](mailto:ditmar.gruss@baufeld.de)  
Web: [www.baufeld.de](http://www.baufeld.de)  
[www.calorific-mining.com](http://www.calorific-mining.com)



ENVIROTHERM GmbH  
Ruhrallee 185  
45136 Essen

contact: Dr. Andreas Brors (Head of Business Development)  
e-mail: [andreas\\_brors@envirotherm.de](mailto:andreas_brors@envirotherm.de)  
Web: [www.envirotherm.de](http://www.envirotherm.de)

