



Service for the Future

Remediation



Remediation of environmental burdens

We offer the remediation of

- old municipal landfills
- industrial landfills and hazardous waste
- contaminated soil
- contaminated groundwater
- buildings and other technological complexes

- We use our own proprietary technologies, meeting the parameters of BAT (best available technology)
- Friendly to the environment, we manage technologies for the reprocessing of waste for disposal (energy appreciation, secondary raw materials, certified reclamation, materials, etc.)
- Offering the best available and most modern technologies, as well as developing new ones, we are closely cooperated with universities and other private entities
 - Research & Development projects.

Scope of interest



Contaminati-
on survey



Risk
assessment



Project
preparation



Implementa-
tion of reme-
diation



Main methods/services

A Remediation of contaminated ground



Biological decontamination

Use of microorganisms such as bacteria, yeast, or fungi to break down hazardous substances into less toxic or nontoxic substances. Bioremediation can be used to clean up contaminated soil and water, esp. to decontaminate soil polluted by non-polar hydrocarbons from oil spills or by products from pyrolytic treatment of the coal and chemical industry (aromatic, polyaromatic hydrocarbons, phenols).

References

- Aircraft Industries, a.s. - III.stage, Kunovice; Czech Republic
- Jihočeské dřevařské závody Soběslav, a.s.; Czech Republic
- PARAMO, a.s. Pardubice - site Kolín, Pardubice, Časy; Czech Republic
- ŠKODA AUTO, a.s. Mladá Boleslav - main plant; Czech Republic
- Walter, a.s. Stará Boleslav; Czech Republic
- HEXION Specialty Chemicals, a.s. Sokolov; Czech Republic

Stabilisation / Solidification

Reduces the mobility of hazardous substances and contaminants in the environment through both physical and chemical characteristics. Contaminants are tied with the ashes into a stable hydrated shape after mixing waste with additives, their extractability (maceration capacity) is reduced to the minimum value.

References

- Aircraft Industries, a.s. - III. stage; Czech Republic
- PARAMO, a.s. Pardubice - lokalita Kolín, Zdechovice, Pardubice, Časy; Czech Republic
- Jihočeské dřevařské závody Soběslav, a.s.; Czech Republic
- REKKA s.r.o. České Budějovice; Czech Republic

Our activities

Certification

We are a holder of a series of important certificates ISO 9001, ISO 14001 and OHSAS 18001. All remediation procedures are in accordance with these norms.

Experience

Established in 1996, cooperation with companies specialised in hydrogeology, engineering geology, building founding, groundwater

protection, mathematical simulation, special remediation technologies.

Realized projects in Czech Republic, Slovakia, Romania, Bulgaria, Croatia, Hungary, Poland, Austria

Technologies/methods

We use a variety of special techniques to maximize the resulting effect, some of which have been patented.



Main methods/services

B Processing and recovery of petroleum refining waste



Production technology of alternative fuel

Mixing of substances (petroleum and tar sludge, sorbent - dried powdered coal, lime) in a technological plant in such proportions that the resulting product is a solid-phase mixture. The produced alternative fuel may be incinerated in thermal power plants designed with a desulphurisation system or in cement factories.

References

- PARAMO, a.s. Pardubice - site Kolín, Zdechovice, Pardubice, Čásky; Czech Republic



D Remediation of contaminated groundwater



Groundwater pumping and treatment by gravity separation and stripping method

Contaminated groundwater is pumped and after purification is emitted into a water course, canalization etc. **For pumping:** equipped drills, remediation unit infiltration drainage and other techniques are used. Remediation pumping and infiltration can create hydraulic barriers with the objective of preventing contamination from spreading.

References

- Východoslovenská energetika, a.s., Košice - site Poprad, Prakovce, Krompachy, Bardejov, Spišská Nová Ves, Lubeník, Krompachy; Slovak Republic
- Slovenské elektrárne, a.s. „SE“ - site Vojany EVO I,II; Slovak Republic
- Slovnaft a.s., Bratislava - site Rača, Horný Hričov; Slovak Republic
- MEP Postřelmov a.s.; Czech Republic

C Disposal of old contaminated plants

References

- Aircraft Industries, a.s. - III. stage; Czech Republic
- ŠKODA AUTO, a.s. Mladá Boleslav - main plant, plant Kvasiny, Czech Republic
- Pozemstav Prostějov, a.s.; Czech Republic



Demolitions, sorting, crushing, recycling

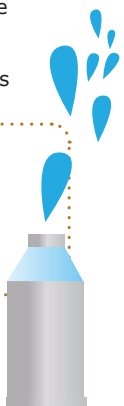


Air sparging

Reduces the mobility of hazardous substances and contaminants in the environment through both physical and chemical characteristics. Contaminants are tied with the ashes into a stable hydrated shape after mixing waste with additives, their extractability (maceration capacity) is reduced to the minimum value.

References

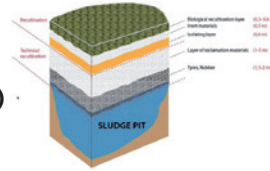
- Slovnaft a.s., Bratislava - site Rača, Horný Hričov; Slovak Republic
- Východoslovenská energetika, a.s., Košice - site Lubeník; Slovak Republic



Special methods/services

Reclamation of thixotropic sludge lagoons

Example
Mydlovary DIAMO (CZ)



Used technologies

Cover layer technology, biodegradation, stabilisation.

Construction of an elastic layer formed by alternating layers of whole tyres and layers of shredded tyres interlaid with certified reclamation material.



Before 2005

After 2012

Remediation of site highly contaminated by oil substances

Example
Koramo Kolín (CZ)

Used technologies

Alternative fuel production, biodegradation, stabilisation.



Before 2005

After 2012

Other services

Collection, processing and exploitation of sewage sediments

(wastewater treatment plants)

Production of reclamation substrates, reclamation filling materials and industrial composts using mobile and stationary equipment.



References

- Slovnaft a.s., Bratislava - site Rača, Horný Hričov; Slovak Republic
- Východoslovenská energetika, a.s., Košice - site Lubeník; Slovak Republic



References

Sampling sludge - wastewater treatment plants

- Severomoravské vodovody a kanalizace Ostrava a.s.; Czech Republic, • Ostravské vodovody a kanalizace a.s.; Czech Republic, • Vodovody a kanalizace Kroměříž, a.s.; Czech Republic, • Vodohospodářská společnost Benešov, s. r. o.; Czech Republic, • Šumperská provozní vodohospodářská společnost, a.s.; Czech Republic, • Vodovody a kanalizace Hlučín s.r.o.; Czech Republic, • Vodovody a kanalizace Hradec Králové, a.s.; Czech Republic

Sludge Skimming

- Pražské vodovody a kanalizace, a.s.; Czech Republic, • Vodovody a kanalizace Kroměříž, a.s.; Czech Republic, • Ostravské vodovody a kanalizace a.s.; Czech Republic, • Severomoravské vodovody a kanalizace Ostrava a.s.; Czech Republic, • Úpravna vody Mostiště, Vítkovice a.s.; Czech Republic, • ČEZ Group - Elektrárna Dukovany; Czech Republic, • ArcelorMittal Ostrava a.s.; Czech Republic, • Vodovody a kanalizace Hradec Králové, a.s.; Czech Republic, • BRANO a.s.; Czech Republic, • Trenčianske vodárne a kanalizácie a.s.; Slovakia, • Fruta Podivín, a.s.; Czech Republic

Production of reclamation substrates

- AWT a.s.; Czech Republic, • ŽDB Bohumín; Czech Republic, • Vítkovice a.s.; Czech Republic, • ČEZ Group - Elektrárna Chvaletice; Czech Republic

The use of sludge from wastewater treatment plants in agriculture

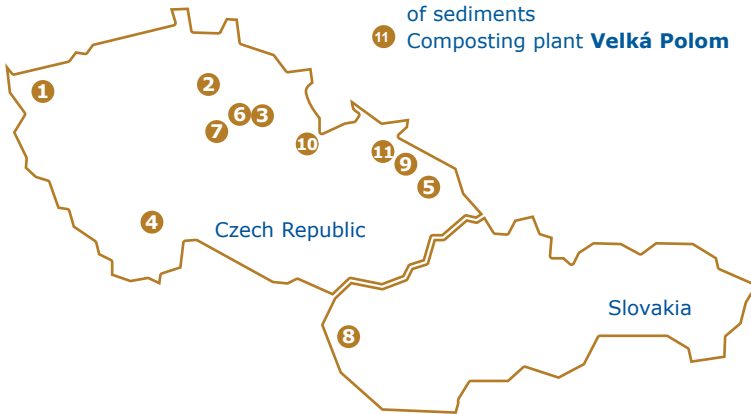
- Regions in Czech Republic: Haná, Central Bohemia, North Moravia

Other services

- Biocel Paskov a.s.; Slovakia (preparation of alternative fuel)

Map of FCC Environment CEE remediation facilities

- 1 Biodegradation area **Tisová**
- 2 Biodegradation area **Žerčice**
- 3 Biodegradation area **Dolní Přím**
- 4 Biodegradation area **Hůrka** - Biodegradation and + stabilizing device Hůrka
- 5 Biodegradation area **Sviadnov**
- 6 Solidification and stabilization unit **Lodín**
- 7 Line **Kolín** – alternative fuel production
- 8 Biodegradation area **Zohor**
- 9 Handling and production area – **Odval Hrabůvka**
- 10 **Field midden Srnov** – temporary disposal site of sediments
- 11 Composting plant **Velká Polom**



Contact

- » FCC Environment CEE is a part of the Spanish FCC Group (www.fcc.es) and employs almost 4.000 people in 7 CEE countries.

FCC Group acts in 30 countries with 59.000 employees and having more than one hundred years of experience.



Service for the Future

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