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Lappeenranta **University of Technology**



# **EMIR - Exploiting Municipal and Industrial Residues**

**Nov 2012 – Oct 2014**

# PARTNERS



Lappeenranta University of Technology



SPb STUPP

SCA Hygiene Products Russia  
Polysan  
CTS Engtec Oy



JSC Ecotrans

- paper mill  
- scientific Pharmaceutical Firm  
- consulting company in the process industry



SPbSUE

# Overall objectives

Project objectives are to

- improve the environmental situation in Leningrad Region and St. Petersburg,
- improve management of industrial and municipal wastewater sludge treatment processes,
- promote utilization of biodegradable waste fractions,
- reduce nutrient load to the rivers and Baltic Sea,
- reduce greenhouse gas emissions,
- reduce toxic emissions to water systems,
- improve understanding and knowledge exchange in environmental issues between Finland and Russia and
- increase environmental business and innovations in both countries.

# Specific objectives

- To find the most sustainable and suitable solutions for the treatment and utilization of the wastewater sludge and de-inking residue of SCA Hygiene Products Svetogorsk factory.
- To find possibilities to multiply and to disseminate experiences of the project on the sludge utilization and wastewater purification.
- To implement a new effective and energy efficient wastewater treatment system (pulsed corona discharge (PCD) technology) in the wastewaters of the plastic waste treatment process of JSC Ecotrans company.
- To establish the effectiveness of PCD technology for the wastewater of the pharmaceutical industry, i.e. Polysan company.
- To improve the knowledge transfer between Russian and Finnish experts and enterprises on municipal and industrial wastewater and sludge treatment by developing a *professional training course*.

# Example: Development of sludge treatment and utilization in Leningrad region

Current challenges in Leningrad region:

- Huge amounts of sludge are generated and landfilled nowadays
- Most common sludge treatment method, prior to sludge landfilling, is aging
- Landfilling causes leaching of nutrients to the water system, formation of methane
- Landfills are close to their maximum capacity

# Example: Development of sludge treatment and utilization in Leningrad region

## EMIR –project seeks solutions by

- Studying already applied sludge utilization techniques via literature studies
- Comparing of literature review data with SCA sludge analysis results
- Finding possible sludge utilizers on both sides of the border
- Life Cycle Assessment (LCA) study of the environmental impacts of different utilization possibilities
- Comparing of the feasibility of different options
- Studying the possibilities to multiply the possible solutions in Leningrad Region

# UTILIZATION POSSIBILITIES

## Energy recovery:

- Incineration;
- Co-combustion;
- Anaerobic digestion;
- Pyrolysis;
- SCWO.

## Material recovery (fibrous component):

- MDF;
- Millboard.

## Material recovery (inorganic part):

- Cement;
- Ceramics;
- Expanded clay aggregate;
- Insulating material.