



The Sludge Disposal Issue and
INEVA approach for the
problem

'DEDICATED EXPERTISE FOR THE ENVIRONMENT'

Do You Remember The Movie 'Matrix' ?

Is there any one
who remembers
famous scene of
the 1st movie?



The question is...



Morpheus offers
the chance to
know the truth or
keep on
sleeping...

Do you want to know if there is sludge problem or not?

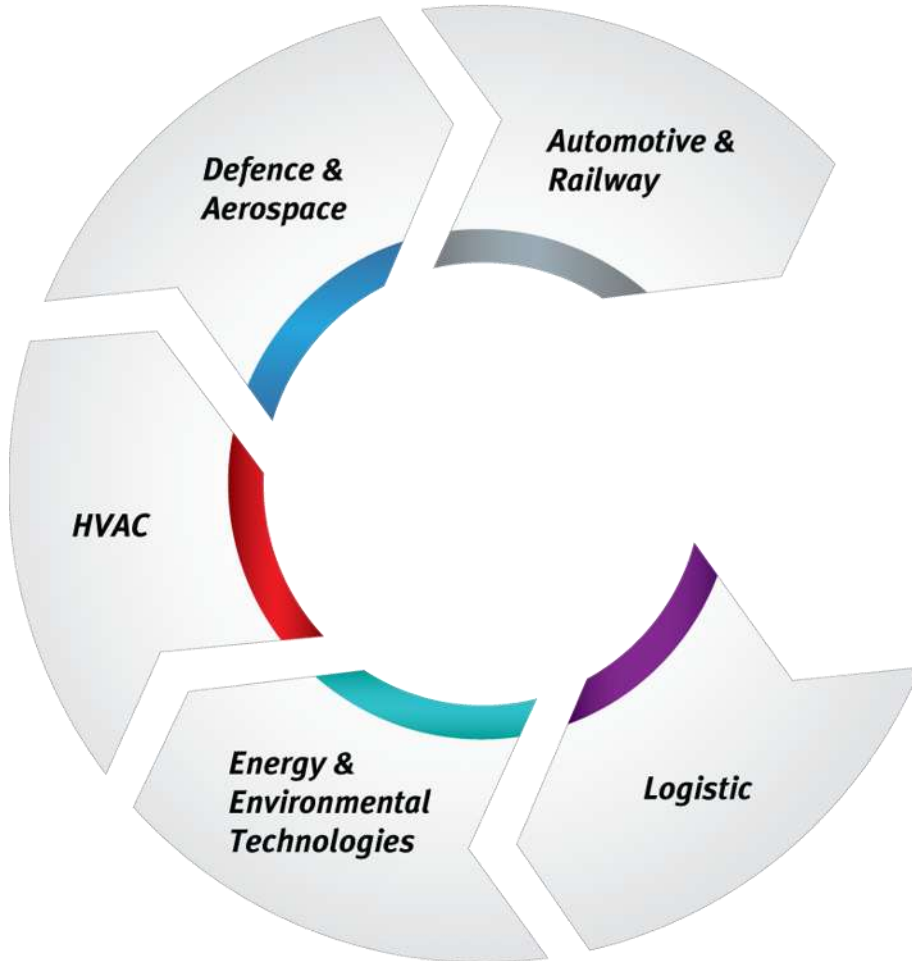
There are two types of answers:

No, there is no
problem at all!



Yes, there is!





Establishment : 1950

14 companies

8 different sectors

3200 employees

Approx 300 mio € turnover(2015)

INEVA provides permanent and sustainable solution for sludge disposal problem;
✓ Single stage sludge incineration technology:
no necessity for pre-drying of sludge



Establishment : 2004

Production Plant: 4.000 m²

Target Markets : Eastern Europe Countries

Number of Employees: 70

Main Activity: Turnkey plant design and
build projects for Sludge Disposal
and Energy Recovery

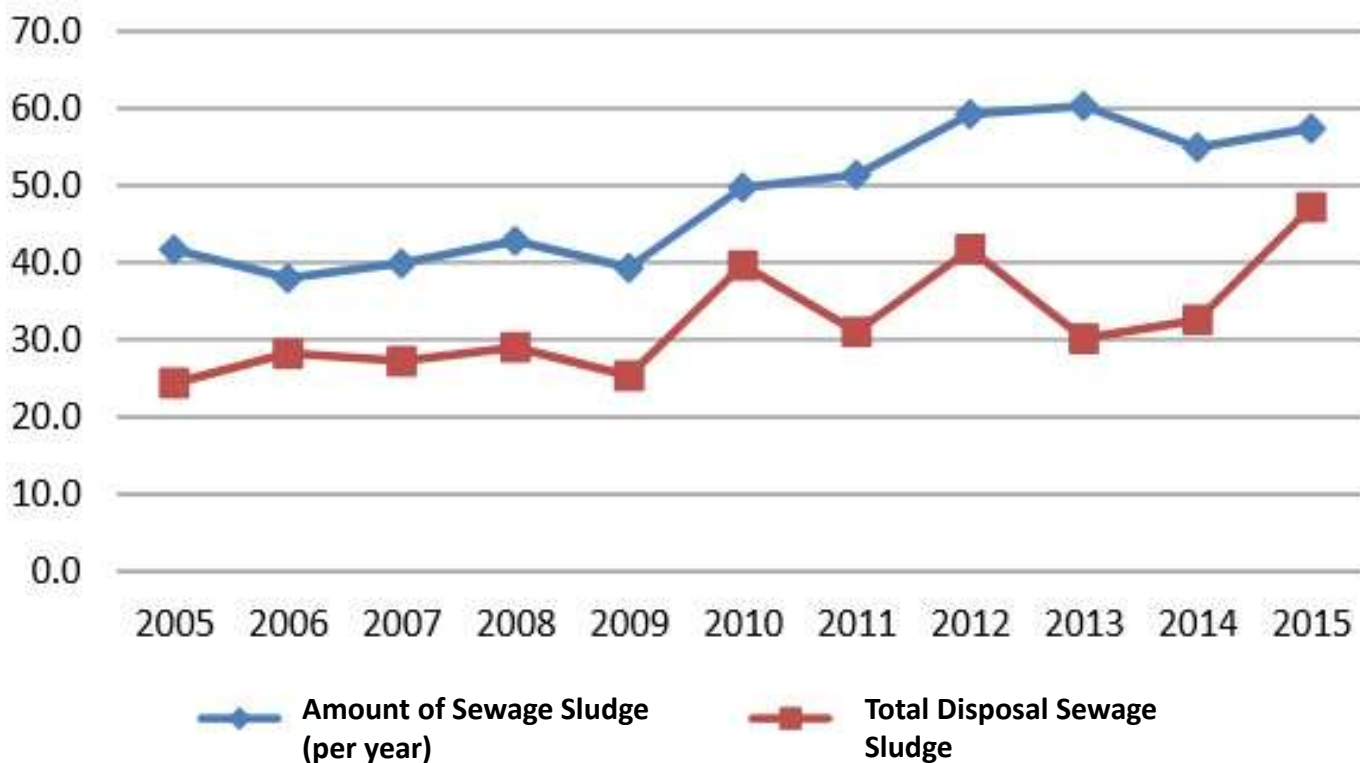
‘Our target is to be the most preferred brand among sludge to energy technology suppliers.’ ✦



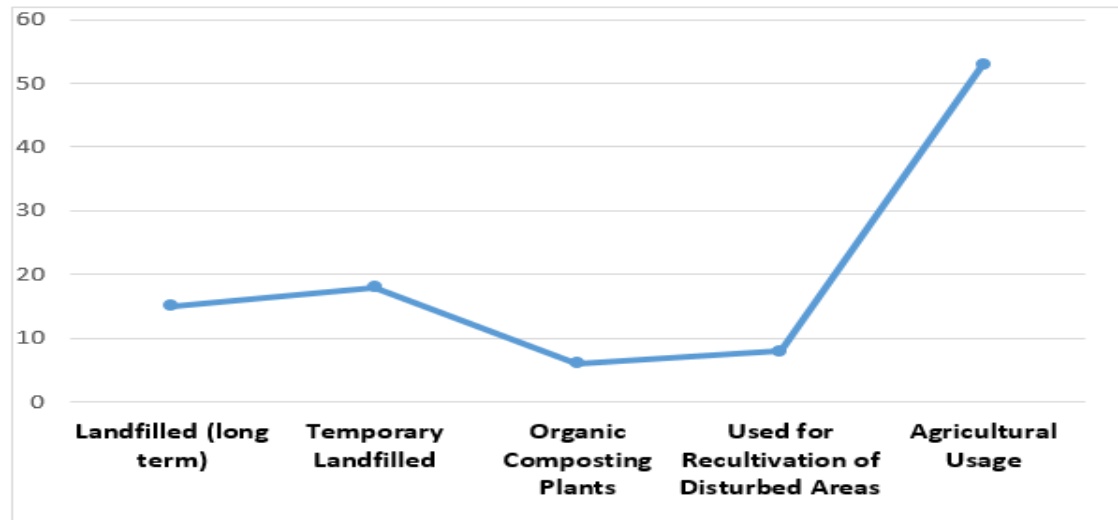
INEVA cares about future generations by making;

- ✓ Productive
- ✓ Efficient
- ✓ Innovative
- ✓ Inspiring works

ANUAL REPORT FROM EXECUTIVE ENVIRONMENT AGENCY ON (2015-BULGARIA)



EXECUTIVE ENVIRONMENT AGENCY ANNUAL REPORT (2015-BULGARIA)



According to Directive 2008/98/EC of the European Parliament
0 Sludge landfilling by 2020

- ✓ Agricultural usage?
- ✓ Drying and co-firing?
- ✓ Direct incineration?



When there is no alternative solution;

- ✓ Wild dumping
- ✓ Open discharge to rivers
- ✓ Open discharge to deep sea.



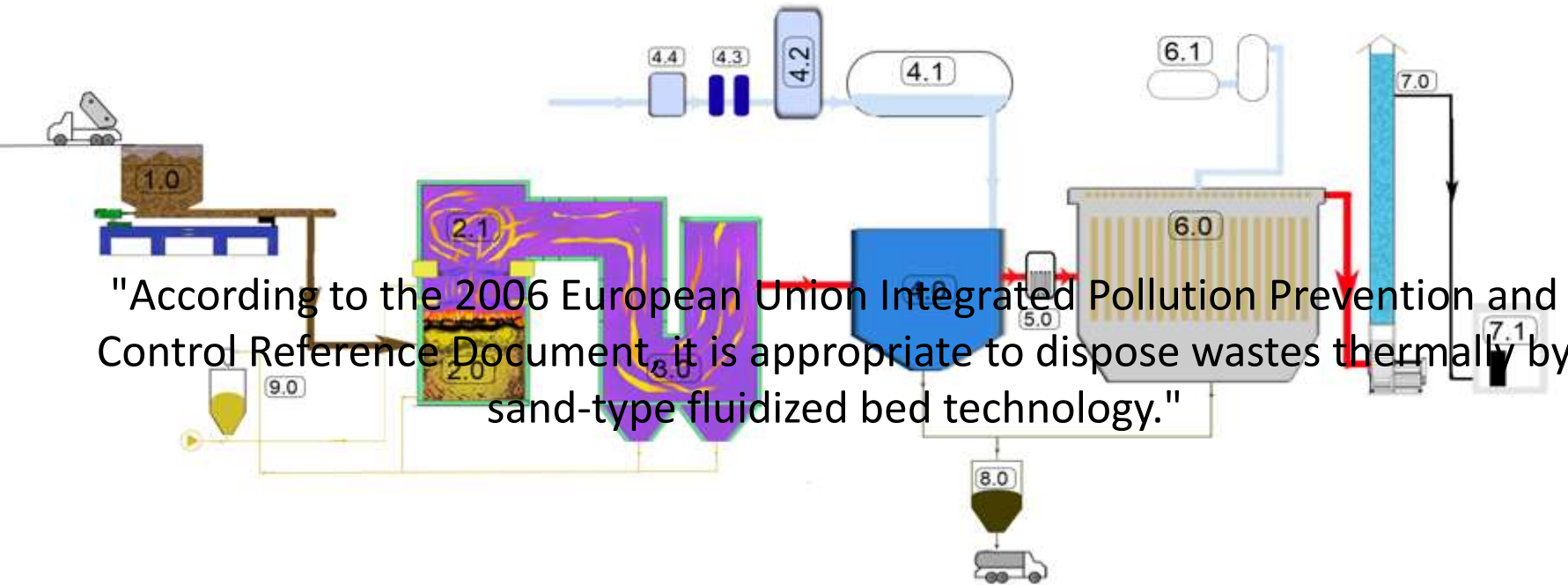
Sewage sludges can be recovered to economy as energy through appropriate thermal processes.



- ✓ *Downsizing huge sludge amounts,*
- ✓ *Using waste heat as output of Incineration process for steam production:
Thermal Energy!*
- ✓ *Conversion of thermal energy into electricity energy!*



"According to the 2006 European Union Integrated Pollution Prevention and Control Reference Document, it is appropriate to dispose wastes thermally by sand-type fluidized bed technology."



- 1.0 : Çamur Besleme Sistemi (Sludge Injection Unit)
- 2.0 : Reaktör (Reactor)
 - 2.1 : Freebord (Freeboard)
- 3.0 : İkinci Yanma Odası (Second Burning Room)
- 4.0 : Buhar Kazanı (Steam Bolier)
 - 4.1 : Degazör (Dearator)
 - 4.2 : Kondens Tankı (Condense Tank)
 - 4.3 : Su Yumuşatma Sistemi (Water Softening Unit)
 - 4.4 : Giriş Su Tankı (Enterence Water Tank)

- 5.0 : Ekonomizer (Economizer)
- 6.0 : Filtre (Filter)
 - 6.1 : Hava Kompresörü (Air Compresor)
- 7.0 : Baca (Chiney)
 - 7.1 : Sürekli Emisyon Ölçüm Sistemi (Continuous Emission Measurement System)
- 8.0 : Kül Toplama Sistemi (Ash Collection System)
- 9.0 : Kum Sirkülasyon Sistemi (Sand Circulation System)



- ✓ *Volume downsizing of the sludge cake decreased by 95%,*
- ✓ *High incineration efficiency provides %99 organic degradation,*
- ✓ *Continuous process: High availability and low energy consumption due to non-stop operation,*
- ✓ *Flexibility: Modular structure provides multi reactors run in parallel.*
- ✓ *Public health:*
 - ✓ *Pathogens are completely destroyed.*
 - ✓ *Destroys or reduces toxins.*

- ✓ Disposal-on-site: No need to transfer sludge, no transfer costs are necessary.
- ✓ 1 operator per shift: easy to operate with full automotion.
- ✓ Low maintenance costs: Easy to maintain& fix.
- ✓ Alternative fuels: flexibility to combine high CV wastes with sludge



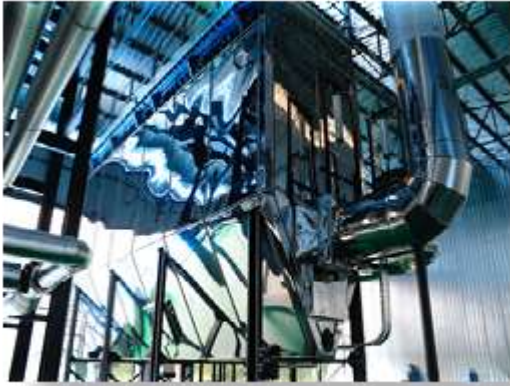
‘Plants’ emission values are always under the EU Limits and monitored around the clock by the authorities.’

EMISSION RESULTS		
PARAMETRELER	LIMIT VALUE	MEASURED VALUES
Atmospheric Pressure (mbar)	-	998
Temperature (C)	-	147,23
O ₂ Concentration (%)	-	13,55
Gas Speed (m/s)	> 4	11,66
CO (%11 ref O ₂) (mg/Nm ³)	100	6,4
SO ₂ (%11 ref O ₂) (mg/Nm ³)	200	3,3
NO ₂ (%11 ref O ₂) (mg/Nm ³)	400	57,3
HF (mg/Nm ³)	4	0,041
HCl (mg/Nm ³)	60	0,262
TOC (mg/Nm ³)	20	4,35
Dioxine (PCDDs) (ng/Nm ³)	0,1	Very low. Couldn't measured (~ 0,00015)
Furan PCDFs (ng/Nm ³)	0,1	Very low. Couldn't measured (~ 0,00019)
Dust Concentration (%11 ref O ₂) (mg/Nm ³)	30	6,3



Ineva Technology offers:

- ✓ By disposing of each 1-ton waste, minimum 1,5-tons steam energy is obtained.
- ✓ Electricity energy production can be achieved by adding steam turbine to the system.
- ✓ Apprx. 1 MW/ h electricity energy can be generated by 4 tons/ h sludge incineration.



TURKEY'S FIRST LICENSED PLANT Demirtaş
Organized Industrial Zone Fluidized Bed
Sludge Disposal and Energy Recovery
Facility First Licensed Sewage Sludge
Disposal Plant

- **Capacity:** 93 Ton / day
- **Sludge Dry Solids Content:** 25%
- **Steam Production:** 6000 kg / h
- **Thermal Disposal Heat:** 850-900 ° C
- **Facility Floor Area:** 850 m²



FIRST FACILITY PRODUCING ELECTRICAL ENERGY IN TURKEY
Kocaeli Municipality İzmit Water Works
Başiskele (Kullar) and Gebze Treatment
and Disposal Plant and Energy Recovery
Plant

- **Capacity:** 190 Ton / Day * 2
- **Sludge Dry Solids Content:** 22 %
- **Electricity Production:** 1920 KWh
- **Thermal Disposal Heat:** 850-900°C
- **Facility Floor Area:** 2000 m²



START-UP OF THE FIRST RUBBER INCINERATION PLANT IN TURKEY
Turkish Armed Forces 1st Main
Maintenance Central Command 30 Tons
/ Day Rubber Disposal Facility

- **Capacity:** 30 Ton / Day * 2
- **Sludge Dry Solids Content:** 22 %
- **Steam Production:** 6000 kg / h
- **Thermal Disposal Heat:** 850-900°C
- **Facility Floor Area:** 700 m²



БЛАГОДАРЯ!...

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