



ENERGETIKA
CELJE

ENERGETIKA CELJE,
public company, d.o.o.



ENERGETIKA CELJE, PUBLIC COMPANY, D.O.O



- The founder of the company is [Municipality of Celje](#), with 100 percent ownership
- The company was founded in 1996

WHERE WE ARE?



1. Smrekarjeva cesta 1

The Management Board
Sector Gas distribution
Sector District heating

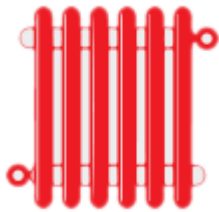


2. Kotna ulica 10

Sektor Thermal waste
treatment



MAIN ACTIVITIES OF ENERGETIKA CELJE



**1. DISTRICT
HEATING -**
manufacturer
and distributor
of heat



**2. DISTRIBUTION
OF NATURAL GAS**
- distribution
system operator
and supplier



**3. THERMAL
TREATMENT OF
WASTE -**
mandatory state
service with
cogeneration

**ENERGY
CONTRACTING-
RENOVATION OF BOILER
ROOMS, FACADES**

**FILLING STATION
FOR CNG**



1. DISTRICT HEATING



PRODUCTION AND DISTRIBUTION OF HEAT IN CELJE

- widespread in areas of Celje with a high density of heat consumption, mostly in the eastern, western and northern part of the Celje;
- thermal energy obtained from **clean fuels**: the main source of heat is the Celje Heating Plant, other sources are Merkscha veneer factory and natural gas.
- **structure** of heat depends on the winter – in warmer winters the share of heat from the Heating Plant is increased and the share of gas is reduced; for customers, this means lower bills for the heating.

2. NATURAL GAS



THE DISTRIBUTION SYSTEM OPERATOR AND SUPPLIER OF NATURAL GAS

- Energetika Celje with the expansion of the pipeline network in the municipality of Celje care for economical, cheaper and clean energy and for a healthier life in the city. To this objective also help with non-reimbursable financial incentives.
- Gas network in Celje is supplied from the main Slovenian pipeline by the three main MRS's in northern-west part of the town.
- The length of the pipeline network: 250 km
- 8,600 customers



3. HEATING PLANT CELJE

THERMAL TREATMENT OF WASTE AND COGENERATION OF HEAT AND ELECTRICAL POWER

- Heat generated during thermal treatment or by **reducing the amount of waste and sludge from the wastewater treatment plant** is utilized for the **production of thermal and electrical energy**.
- Is **the first** such facility in Slovenia.
- Built according to strict EU standards and 70% co-financed by EU funds.
- Operation provided 24 hours/day, up to 8000 hours/year



HEATING PLANT CELJE

Thermal treatment of residues of mixed municipal waste (LF) and dehydrated sludge from wastewater treatment plants

Cogeneration of heat and electricity in a steam boiler

Thermal energy production at two hot water gas boilers



THE MAIN REASONS FOR CONSTRUCTION OF HEATING PLANT CELJE



1. **Reducing the volume of waste** and from this meeting the requirements concerning the content of biodegradable carbon in the waste deposited
2. **Disposal of sludge** from central wastewater treatment plant
3. Thermal processing of waste with an energy recovery to cover part of the **energy needs** in Celje



GENERAL INFORMATION ABOUT CELJE HEATING PLANT



- **STEAM BOILER SYSTEM** – Thermal treatment of waste

Capacity of the system: (LF + SWTP): **40,000 t / year**

Environmental permit: (LF + SWTP): **30,000 t / year**

Steam parameters: **20t / h, 400 °C and 28 bars**

Thermal power of the steam boiler: **15 MW**

Electrical power of the steam turbine **2 MWe**

- **Gas boilers - two hot water boilers on natural gas**

The thermal power of
hot water gas boilers:

HWB 1: **10 MW**

HWB 2: **16,5 MW**



WASTE THERMAL TREATMENT PROCESS

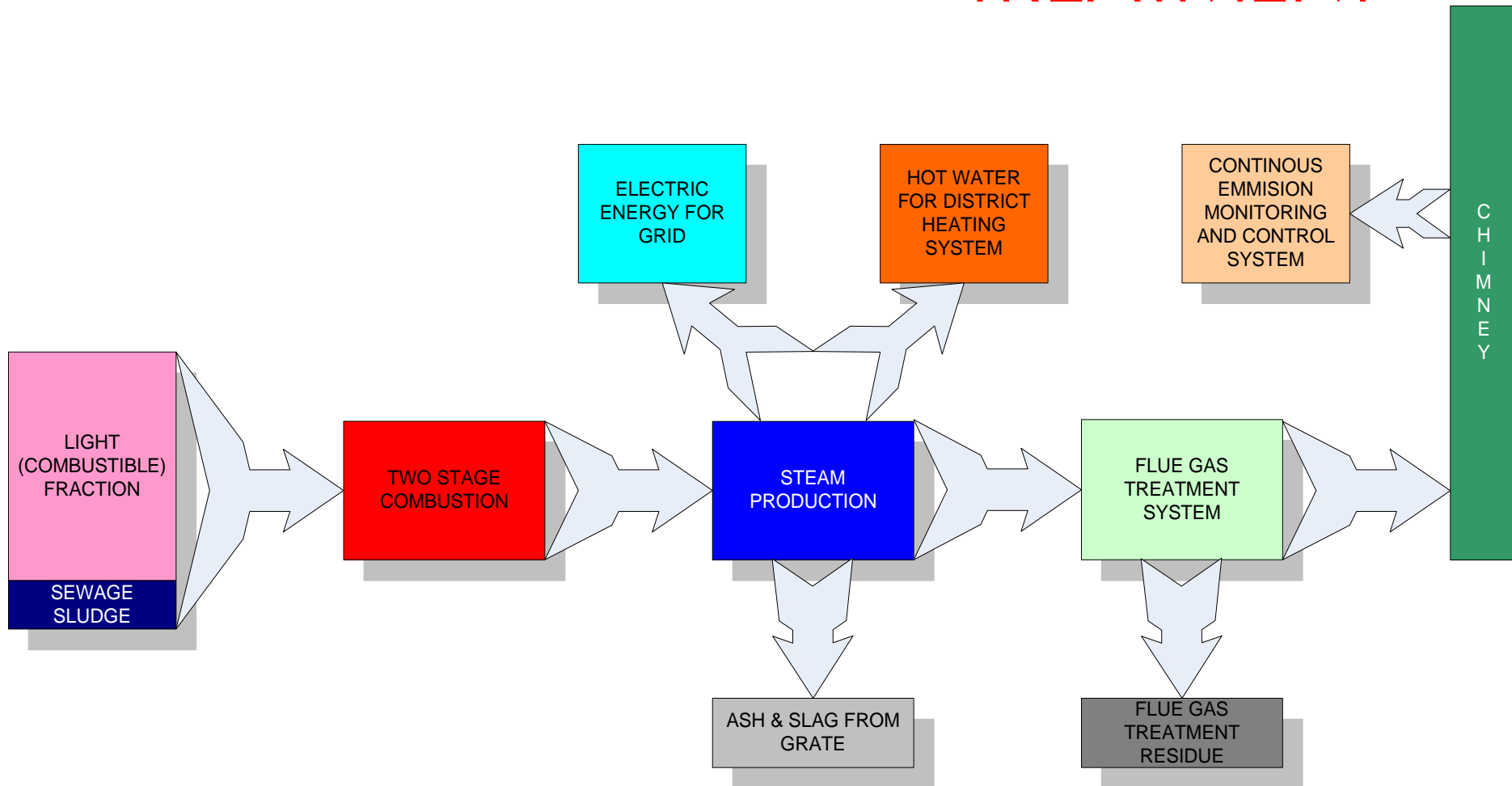


In technological process of thermal treatment of waste entering yearly up to 30.000 t of mixture of LF and SWTP:

- Combustable fraction of pretreated municipal waste in the form of a light fraction (LF) from the MBT process with a calorific value **from 16 to 24 MJ/kg**
- Sludge from wastewater treatment plants (SWTP) with a maximum of 25% of the dry matter, and with a calorific value around **1 MJ/kg**.

The total calorific value of the mixture has on average about **16 MJ/kg**.

SCHEMATIC PRESENTATION OF THERMAL WASTE TREATMENT

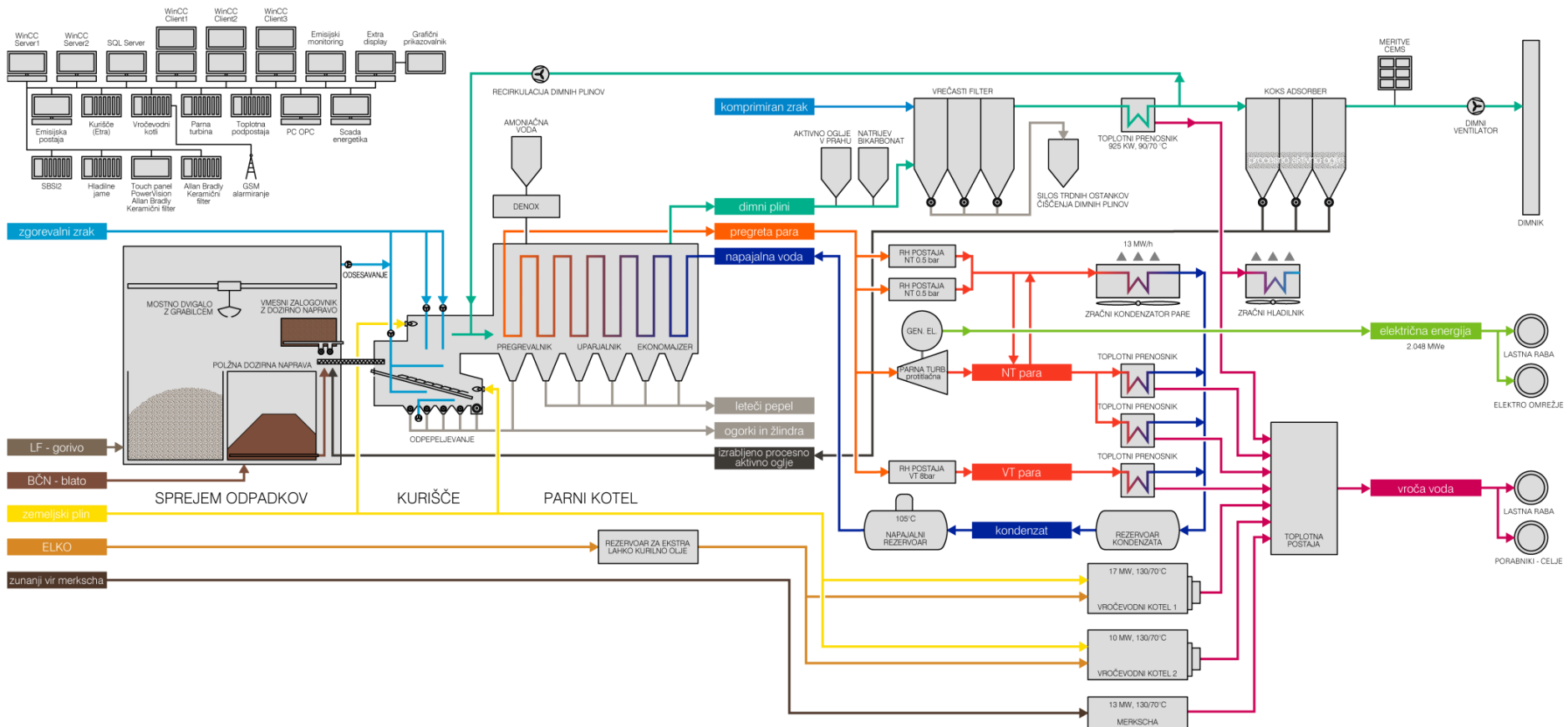


SCHEME OF TECHNOLOGY



TOPLARNA CELJE

Termična obdelava odpadkov in kotlovnica s toplotno postajo



COMBUSTION PROCESS



The primary chamber:

Combustion on multi-cone static and hydraulically movable grate;

- Pyrolytic-gasification process takes place at a temperature between 650 °C and 850 °C;
- The proportion of primary air is about 70% of the stoichiometric needed amount of air.

The secondary chamber:

- Temperature up to 1200 °C,
- The residence time of over 2 seconds,
- A minimum oxygen content of 6 vol.%.

PROCESS OF CLEANING FLUE GASES



This cleaning system is designed in three stages:

1. Reducing NO_x (DeNO_x):

- recirculation of partially purified and cooled flue gases;
- spraying ammonia solution into the hot flue gases (SNCR process).

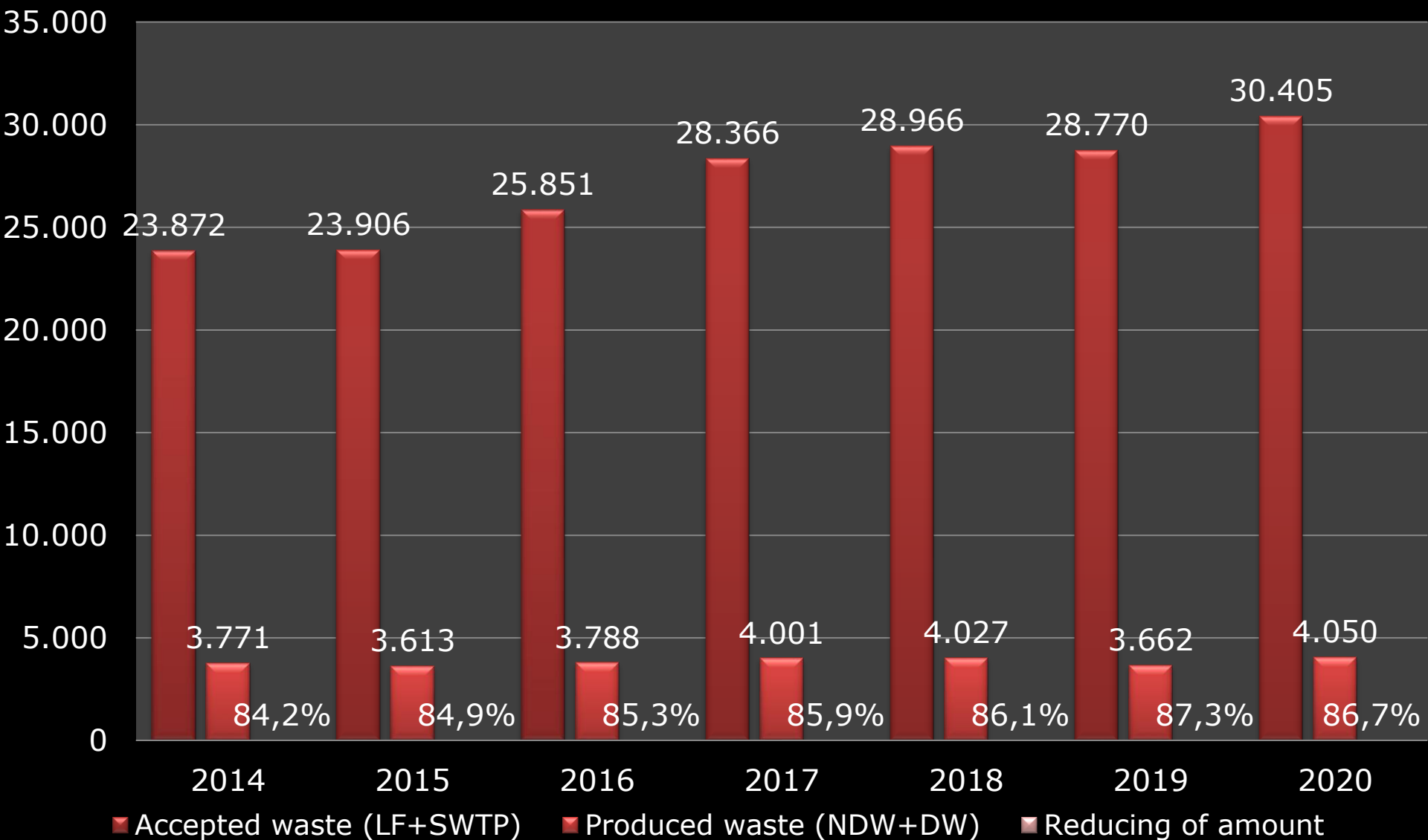
2. The elimination of acid gases and organic substances

- dry process of absorption with sodium bicarbonate for extraction of acid gases (SO_x, HCl, HF), and adding of activated carbon for adsorbing organic compounds and heavy metals;
- a bag filter for extraction of particulate matters (filter dust);

3. Polishing of waste gases

- coke adsorber for additional elimination of organic substances (PCDD / F), acid gases and possibly present heavy metals (eg. Hg).

TOTAL QUANTITY OF ACCEPTED AND PRODUCED WASTE (in tonnes) AND PERCENTAGE OF REDUCING THE AMOUNT OF WASTE



POSITIVE EFFECTS ON THE ENVIRONMENT



- **Thermally treated on total up to 30,000 tones of LF and SWTP / year.**
- **Significantly reduced the overall quantity and the volume of waste deposited at the landfill**
- **Heat generated by combustion is utilized in cogeneration for the production of electricity and heat.**
- **Large savings in the use of fossil fuels for district heating system (natural gas)**
- **Per year on average delivered:**
 - 7,000 MWh of electricity
 - 36,000 MWh of heat
- **Reduced emissions of green-house gases due to:**
 - Mechanical and biological pre-treatment of mixed municipal waste
 - Thermal treatment of waste
 - Waste deposited in a landfill containing less than 3% TOC



Thank you for your
attention !