

TOPLARNA CELJE

THE CELJE HEATING PLANT

rCerocelje
REGIONALNI CENTER
ZA RAVNANJE
Z ODPADKI CELJE

*REGIONAL WASTE MANAGEMENT
CENTRE CELJE*



PROJEKT DELNO
FINANCIRA
EVROPSKA UNIJA
IZ KOHEZIJSKEGA
SKLADA



PROJEKT
DELNO
FINANCIRA
REPUBLIKA
SLOVENIJA



INVESTITOR:
MESTNA
OBČINA
CELJE

Toplarna Celje

Toplarna Celje predstavlja zaključno fazo obdelave odpadkov, ki bodo predhodno obdelani in pripravljeni v Regionalnem centru za ravnanje z odpadki Celje. V preteklosti so se gradile sežigalnice, ki so bile namenjene izključno odstranjevanju nepredelanih odpadkov različnih vrst. Danes v toplarnah govorimo o postopkih termične obdelave z namenom proizvodnje energije.

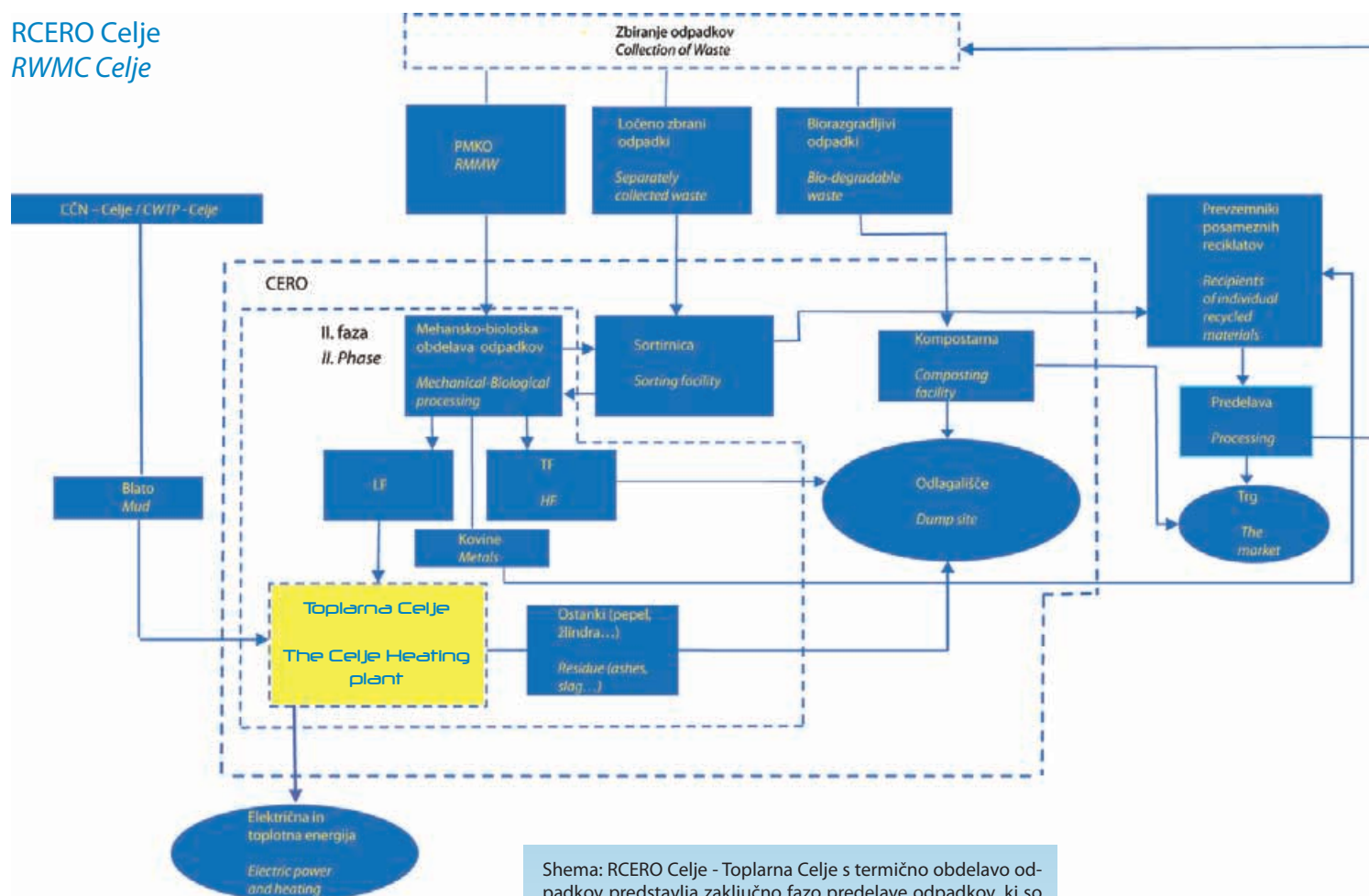
Toplarna Celje je locirana na severovzhodnem robu mesta Celja, na območju, ki je v planskih dokumentih določeno za industrijsko cono. Zgrajena površina toplarne meri 2.000 m², površina zemljišča, na katerem stoji objekt toplarne z vsemi pripadajočimi napravami, pa je 1,5 ha.

THE CELJE HEATING PLANT

The Celje heating plant for the Municipality of Celje presents the final stage in the treatment of waste. The waste will be pre-processed and thus made ready to use by the Celje Regional Waste Management Centre. In the past, incineration plants were built, intended solely for the elimination of non-processed waste of various types. Modern-day heating plants allow us to carry out thermal treatment that serves as a source of energy.

The Celje heating plant is located on the north-eastern rim of the town of Celje. In the urban planning documentation, its location is earmarked as an industrial zone. The built surface of the heating plant measures 2,000 m² while the site of the plant including all the peripheral infrastructure and related machinery covers 1.5 ha.

RCERO Celje RWMC Celje



Shema: RCERO Celje - Toplarna Celje s termično obdelavo odpadkov predstavlja zaključno fazo predelave odpadkov, ki so predhodno obdelani in pripravljeni v Regionalnem centru za ravnanje z odpadki Celje.

PMKO: preostanek mešanih komunalnih odpadkov

LF: lahke frakcije

TF: težke frakcije

MBO: mehansko-biološka predelava

CČN: Centralna čistilna naprava

Schematic: RWMC Celje – The Celje heating plant, with its thermal treatment of waste, presents the final stage in the processing of waste that has been previously processed and made ready to use in the Celje Regional Waste Management Centre.

RMMW: The Remainder of the Mixed Municipal Waste

LF: Light Fractions

HF: Heavy Fractions

MBP: Mechanical-Biological Processing

CWTP: Central Wastewater Treatment Plant



POSTOPKI TERMIČNE OBDELAVE V TOPLARNI CELJE:

- transport in doziranje odpadkov ter blata v kurilno napravo v razmerju 4 : 1,
- dvostopenjsko zgorevanje in odvajanje pepela,
- izkoriščanje sproščene toplote s proizvodnjo toplotne in električne energije,
- čiščenje dimnih plinov glede na vsebnost škodljivih snovi v dimnih plinih.

V proces termične obdelave vstopa letno okoli 20.000 ton predhodno obdelanih odpadkov in 5.000 ton blata iz čistilne naprave, povprečne kurilne vrednosti do 16 MJ/kg.

Termična moč kurilne naprave znaša 15 MW, moč proizvedene električne energije pa 2 MW. Električna energija se bo dovajala v distribucijsko omrežje, toplotna energija pa se bo uporabljala v sistemu daljinskega ogrevanja vzhodnega dela mesta Celje.

Po termični obdelavi bodo ostali:

- pepel in žindra do 2.200 ton na leto,
- filtrski ostanki do 1.200 ton na leto,
- nasičeni koks do 120 ton na leto.

Pepel in žindra ne sodita med nevarne odpadke, zato bo njuno odlaganje možno na odlagališču ali pa se uporabita v gradbeništvu.

Filtrski ostanki predstavljajo produkt čiščenja dimnih plinov in vsebujejo povišane vrednosti kovin in soli, zato spadajo med nevarne odpadke. Za odstranitev bodo poskrbeli prevzemniki ali predelovalci odpadkov, ki so usposobljeni in pooblašeni za upravljanje storitev v zvezi z nevarnimi odpadki.

THERMAL TREATMENT PROCEDURES AT THE CELJE HEATING PLANT:

- The transport and dosage of waste and mud into the combustion installation in a 4:1 ratio;
- Two-step combustion and the extraction of ashes;
- Utilisation of the heat released for the production of heating and electric power;
- Treatment (purification) of the smoke gasses according to their content of harmful substances.

Each year, some 20,000 tonnes of pre-processed waste and 5,000 tonnes of mud from the waste treatment plant enter the thermal processing procedure, with the average calorific value reaching up to 16 MJ/kg.

The thermal power of the combustion plant is 15 MW, yielding 2 MW of electrical power. The electrical power will be routed into the distribution network, while the heating power will be used in the remote heating system for the eastern part of the town of Celje.

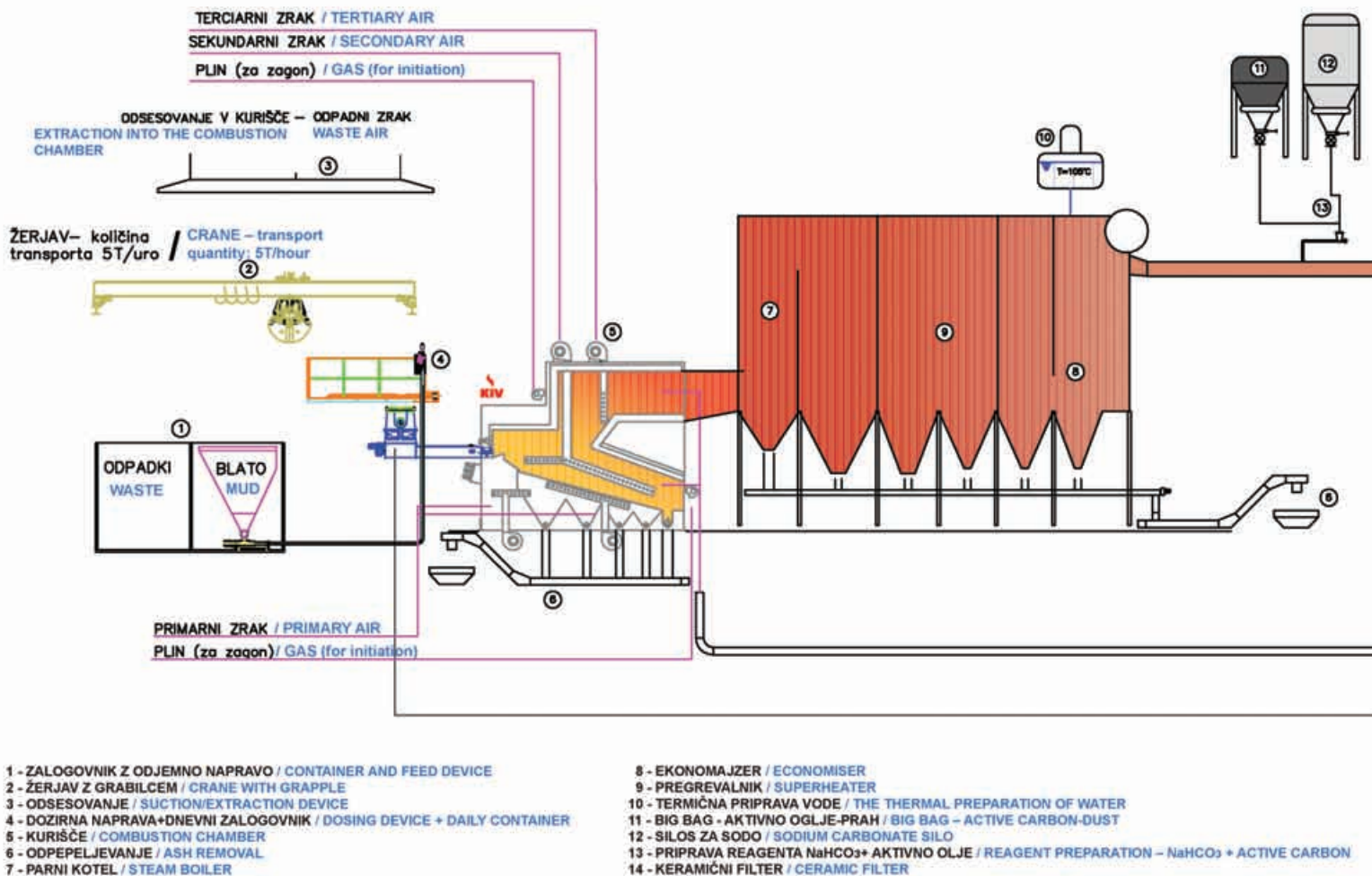
The residues after thermal treatment will include:

- Ashes and slag – up to 2,200 tonnes per annum;
- Filter residues – up to 1,200 tonnes per annum;
- Saturated coke – up to 120 tonnes per annum.

Ashes and slag are not considered dangerous waste material, therefore it will be possible to place them in a landfill or use them in construction.

Filter residue stems from purification of the smoke gas and contains increased quantities of metals and salts. It is therefore classified as dangerous waste. Its removal will be carried out by third parties trained and authorised to provide services in the area of dangerous waste management.





Čiščenje dimnih plinov

Pričakovani vplivi toplarne na obremenitev okolja so v skladu z okoljevarstvenimi standardi in zahtevami okoljskih predpisov za tovrstne naprave. Izbrano tehnologijo zgorevanja odlikuje zelo kontroliran proces zgorevanja in nizka emisija prahu v dimnih plinih, kar ugodno vpliva na zmanjšanje možnosti katalitičnih procesov nastanka škodljivih snovi med ohlajanjem dimnih plinov ter manjše količine ostankov po čiščenju dimnih plinov.

Čiščenje dimnih plinov zajema izločanje delcev, dušikovih oksidov, kislih plinov in morebitno/možno prisotnih organskih snovi ter težkih kovin.

Sistem čiščenja je zasnovan v treh stopnjah:

- suh postopek, adsorpcija, z natrijevim bikarbonatom,
- keramični filter za izločanje delcev,
- koks, adsorber, za izločanje organskih snovi in morebitno prisotnih težkih kovin.

Za zmanjševanje emisije dušikovih oksidov je predvidena recirkulacija dimnih plinov in razprševanje amoniaka v vroče dimne pline. S postopkom termične obdelave bo zagotovljena vsebnost organskega ogljika v pepelu in žlindri pod mejno vrednostjo za inertne odpadke - manj kot 3 %.

Termična obdelava nima vpliva na ostale lastnosti pepela, le-te so, odvisne od sestave goriva. Pepel in žlindra praviloma predstavljata inerten oziroma nenevaren odpadke, ki se lahko odloži na odlagališču za nenevarne odpadke.

Produkti čiščenja dimnih plinov sodijo zaradi povišane vsebnosti kovin in soli med nevarne odpadke. Prevzemali jih bodo tuji pooblaščen zbiralci nevarnih odpadkov, ki jih skladno s predpisi predelajo ali odložijo na odlagališčih nevarnih odpadkov izven Slovenije.

Nasičeni koks iz koks adsorberja se termično regenerira v kurilni napravi, dovaja se v primarno komoro, kjer pomešan z lahko frakcijo odpadkov zgori.

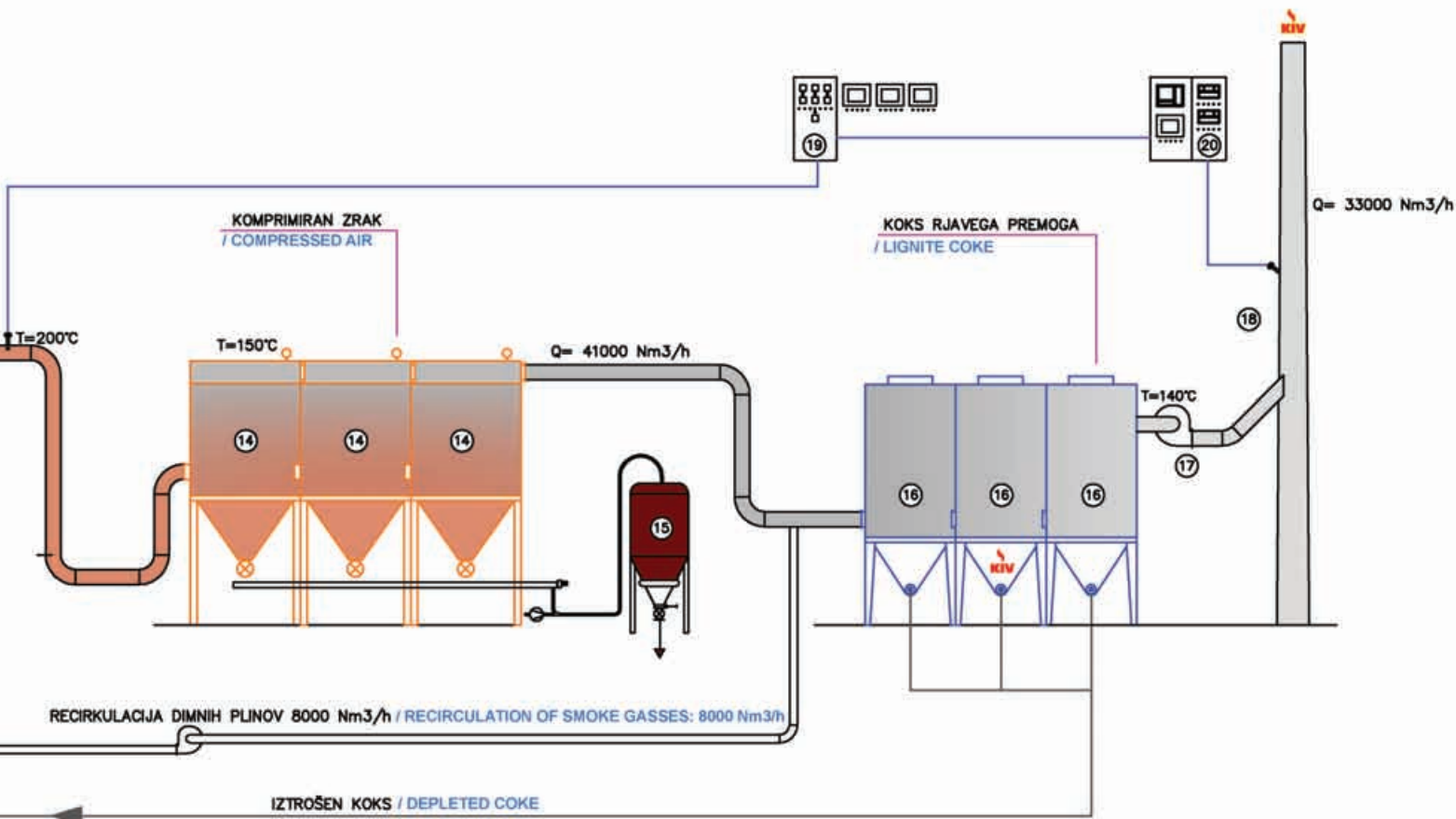
THE PURIFICATION OF SMOKE GASSES

The heating plant's anticipated impact on environmental strain will comply with the environmental standards and environmental regulation requirements for such plants. A considerable advantage of this combustion technology is the controlled combustion process and the low dust emissions in the smoke gasses, which positively affects the reduction of the catalytic processes of harmful substances being produced during the smoke gas cooling process, resulting in smaller quantities of residue after smoke gas purification.

The purification of the smoke gasses includes the separation of particles, nitric oxides, acid gasses and potentially present organic substances and heavy metals.

The design of the purification system consists of three stages:

- A dry process of adsorption with sodium bicarbonate;
- A ceramic filter for the separation of particles;



- 15 - SILOS FILTERSKEGA PEPELA / FILTERED ASH SILO
- 16 - KOKS ADSORBER / COKE ADSORBER
- 17 - DIMNI VENTILATOR / SMOKE VENTILATOR
- 18 - DIMNIK / CHIMNEY
- 19 - ELEKTROKRMILNI IN NADZORNI SISTEM / ELECTRIC CONTROL AND MONITORING SYSTEM
- 20 - NAPRAVE ZA KONTINUIRANO MERJENJE EMISIJ / CONTINUAL EMISSION MEASURING DEVICES

- A coke adsorber for the separation of organic substances and potentially present heavy metals.

In order to reduce nitric oxide emissions, the design proposes recirculating the smoke gasses and spraying ammonia into the hot smoke gasses. The thermal treatment procedure will ensure that the presence of organic carbon in the ashes and slag will not exceed the threshold value for inert waste – less than 3 %.

Using thermal treatment, one cannot affect all the other properties of ashes and slag, as they depend primarily on the content of the fuel. In principle, ashes and slag are inert or non-dangerous waste that can be dumped in a landfill for non-toxic waste.

The products of smoke gas purification, on the other hand, are considered dangerous waste due to their increased content of metals and salts. They will be collected by foreign companies authorised to collect dangerous waste and processed according to the regulations or dumped in dangerous waste landfill sites outside Slovenia.

The saturated coke from the coke adsorber will be thermally regenerated in the combustion plant and routed back into the primary chamber, where it will burn, mixed with a light fraction of waste.

The Celje heating plant enables us to implement the environmentally friendlier ambitious EU standards.



S Toplarno Celje uresničujemo okolju prijaznejše visoko zastavljene evropske standarde.

**INVESTICIJSKA VREDNOST PODPROJEKTA
RCERO CELJE, II. FAZA - TOPLOTNA OBDELAVA
KOMUNALNIH ODPADKOV, TOPLARNA CELJE
ZNAŠA 18,6 MIO EVROV NETO.**

**THE NET INVESTMENT VALUE OF THE RWMC
CELJE, PHASE II – THE THERMAL TREATMENT OF
MUNICIPAL WASTE, CELJE HEATING PLANT SUB-
PROJECT IS EUR 18.6 MILLION.**



Investitor projekta je Mestna občina Celje.
Izvedbo sofinancirata Evropska unija iz Kohezijskega
sklada in Republika Slovenija.

*The project investor is the Municipality of Celje (Mestna
občina Celje).*

*The implementation is co-financed by the European
Union Cohesion Fund and the Republic of Slovenia.*

Sofinancer/ Co-financer	Sredstva v mio €/ Funds in EUR million	Delež v %/ Share in %
Kohezijski sklad EU EU Cohesion Fund	13,0	70
Republika Slovenija The Republic of Slovenia	2,8	15
Mestna občina Celje The Municipality of Celje	2,8	15
SKUPAJ TOTAL	18,6	100

Vključeni v projekt izgradnje Toplarne Celje

Koncesijo za izvajanje obvezne državne službe sežiganja komunalnih odpadkov v Toplarni Celje je za dobo 15 let dobilo podjetje Energetika Celje, javno podjetje d.o.o., ki je bilo ustanovljeno leta 1995 in opravlja dejavnosti sistemskega operaterja distribucijskega omrežja zemeljskega plina, dobavo zemeljskega plina ter distribucijo toplote.

Projektant Toplarne Celje:
KIV Engineering, d.o.o.

Izvajalci Toplarne Celje:
KIV Engineering, d.o.o., CM Celje, d.d., Mollier d.o.o.

Nadzor in strokovno svetovanje:
IBJ d.o.o., ET Energotehna d.o.o., Navor d.o.o.

Več informacij o celotnem projektu RCERO Celje in o Toplarni Celje najdete na spletni strani www.rcero-celje.si

PARTNERS IN THE CELJE HEATING PLANT CONSTRUCTION PROJECT

The concession for implementing the obligatory government service of municipal waste incineration at the Celje heating plant has been granted for a period of 15 years to the company Energetika Celje, javno podjetje d.o.o., founded in 1995 and carrying out activities as the systemic natural gas distribution network operator, the supply of natural gas and the distribution of heating.

*Celje heating plant Project Engineering:
KIV Engineering, d.o.o.*

*Celje heating plant Contractors:
KIV Engineering, d.o.o., CM Celje, d.d., Mollier d.o.o.*

*Control and expert counselling:
IBJ d.o.o., ET Energotehna d.o.o., Navor d.o.o.*

Additional information on the entire RWMC Celje and Celje heating plant project can be found on the www.rcero-celje.si website.

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TOPEP



PROJECT
CO-FINANCED
BY EU FROM
COHESION FUND



PROJECT
CO-FINANCED BY
REPUBLIC OF
SLOVENIA



INVESTOR: THE
MUNICIPALITY OF
CELJE