

Burner solutions with a system
For industry and large buildings

elco

heating
solutions



Discover the solution

Wherever energy is required in large amounts ELCO has proven itself a reliable partner. Whether dealing with thermal process engineering, the production of process steam or thermal heat – we plan, construct and install a complete tailor-made solution to your specific needs all from one source.

Proficient consulting

Your contacts at ELCO are certified experts with long standing experience. Our support extends from design, through planning, development and project management to the start of operation and continuous customer support over the total lifespan of your facility.

First class products

ELCO's larger industrial burners enjoy a first class reputation. Whether durability against environmental conditions are required, such as those on an offshore platform in the Caspian Sea or whether the lowest pollutant levels in a Swiss production facility are sought, well-known boiler and facility manufacturers have faith in our products and have decided on the tailor-made technology of ELCO.

Comprehensive system competence

Our know-how spans the complete scope of burner technology. We offer you in addition to combustion technology, the entire measurement, control and regulation technology for an efficient, safe and continuously trouble-free operation of your combustion plant. All from one source and perfectly coordinated.

Unique service

As an ELCO customer you can depend on the reliable operation of your facility. We guarantee this with a service which sets standards in the industry.



CONSULTING
PRODUCTS
SYSTEMS
SERVICE

heating
solutions

Consulting

Our know-how makes the difference

On the way to success with ELCO

When constructing large thermal facilities the course is set at the beginning, as this competent consulting is of great importance. With 80 years experience and with our own research and development we have access to the know-how that you need for the design, planning and realisation of your project. You need not exclusively depend on the technical knowledge of our specialists. At your request we can take over the project management and provide for an efficient development from design on up to start of operation. We offer you the following benefits.

• Assets and needs analyses

We analyse the thermal processes in your production chain. Based on your wishes, the production requirements and the results of our analyses, we compile a precise job specification which enables us to develop an optimum solution.

• Profitability analyses

In complex tasks there are always several paths that lead to the final goal. We compile and compare different designs and find the solution which most efficiently meets your needs.

• Planning support

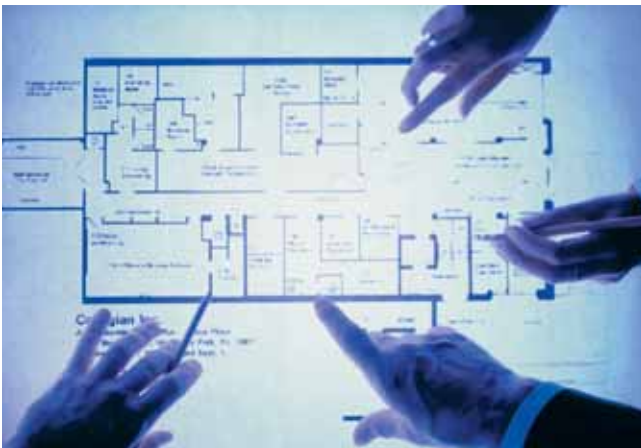
At your request we will support you in the initial design and planning. Your advantage: distinctive, tailor-made structures which guarantee a high cost-benefit ratio.

• Project management

Our experienced project engineers keep a close eye on the costs in every phase of the project. We provide an economical total-solution that optimises your long-term return through measured investments and operating costs.

• Reduction of pollutants

Combustion plants from ELCO fulfil all national laws covering emissions. We guarantee a solution which in the long run, falls well below all critical limits concerning emitted pollutants.



Over 80 years of experience in development, production and maintenance of burners and combustion plants for home, business and industry



Products

The most advanced combustion technology for energy in an extra large format

High capacity in a compact form

ELCO's large industrial burners are available for oil, gas or dual-fuelled operation and, at request, for bio-fuels, special gases or waste materials (e.g. animal fat). With a maximum output of 60,000 kW they meet even largest energy demands. They find their best use in thermal process plants in diverse industries and in the heating needs of large buildings such as exhibition halls, airports or production halls. Thanks to the compact, modular construction ELCO's larger industrial burners take up little room and greatly simplify service and maintenance.

EK 6 „F2“ Monoblock Industrial burner 408 kW - 2,833 kW

The new open flame combustion head "F2" sets standards in the area of environmental preservation with its combustion technology. Thanks to its innovative design the combustion head manages with moderate energy consumption in its fan and can be operated with the lowest level of excess air and ideal efficiency. With the combustion head, fan and burner control constructed as a single unit, the EK 6 makes planning and assembly extremely simple.

E 10 Monoblock Industrial burner 1,715 kW - 14,000 kW

The outstanding construction characteristic of this new monoblock burner is the division in the supporting frame and a separate air duct housing. For example, the weight of the E 10 gas burner with 14 MW is only 550 kg. That includes everything that makes the burner a functional unit: combustion head, supporting frame, fan with heavy-duty reaction wheel and motor, air intake housing, gas valve and control cabinet. This holds the complete burner control - wired ready for connection and factory-tested.

Dual-block burner RPD 900 kW - 60,000 kW

The RPD burners with their separate fan and pump units stand out with their wide range of use. These burners are normally used with thermal oil boilers, water tube boilers or air heaters with high technical requirements for the combustion plant. Using oil the burners have a control range up to 1.5, with natural gas up to 1.8. By changing the intensity of the spin of the secondary air, the form of the flame is adjusted. The RPD burners can also be optionally equipped with a mechanical or electronic cam regulation.



EK 6 „F2“ Monoblock Industrial burner



E 10 Monoblock Industrial burner



Dual-block burner RPD



Systems

Increased value by using a total solution from a single source



ELCO System technology

ELCO builds and delivers more than burners. In line with a total solution we offer you a wide selection of system technology.

- System control
- Automatic firing devices
- Control cabinets
- Control engineering
- Controls and instruments
- Pumps
- Combustion fans

Extremely flexible

No matter what task you put before us - on the basis of our proved and tested standard burner programme we configure a total solution from suitable components, a solution which optimally meets your specific requirements concerning power, efficiency and emission values.

The modular construction of our system solutions guarantees the highest flexibility. An example in process control engineering: If desired we will integrate the control electronics from the manufacturer of your choice. The same is true for all other components.

Trouble-free retrofitting and refitting

You profit from our system expertise when optimising, retrofitting or refitting existing plants. In whatever environment we find ourselves in - we guarantee the compatibility of our solution. In many cases the optimisation takes place while the plant is in operation, without any interruption of the production or energy supply. The same is true when performing a refitting operation - when gaseous in addition to liquid waste materials are to be burned in thermal disposal and used for energy production.

The suitable solution for every application

System solutions from ELCO are used in the following industries and application areas:

1. Boiler: steam, hot water, warm water, thermal oil, salt
2. Hot air producers (dryers)
3. Food industry
4. Paper manufacturing
5. Refuse incineration
6. Waste gas treatment
7. Chemistry, petrochemistry, asphalt
8. Construction materials industry
9. Ferrous and nonferrous processing
10. Ore dressing
11. General thermal process technology



Service

Continuous security and operating efficiency

Installation and starting operation

Who is better suited to install and put a facility into operation than those who constructed it? Here the entire manufacturing know-how comes into play and guarantees that the facility is correctly tuned and runs at maximum efficiency.

In the worst possible case immediately on the spot

In Germany ELCO has a country-wide network of customer service technicians and sales engineers at hand, who all are specially trained in the technology of the facilities. They are available 24 hours a day, 365 days in the year. If need be, our service technicians are immediately ready to come to your site. In addition our customer service has a diagnosis vehicle available for measuring emissions in combustion plants. Using computer supported evaluations we develop suggestions for optimisation which guarantee you, as the plant operator, an economical and environmentally safe operation on a continual basis.

Individual service and maintenance contracts

We offer individual service and maintenance packages that are specially tailored to industrial combustion plants. All inclusive, from start-up of operations, trouble shooting to periodic maintenance. Evolved over a period from up to 15 years these all-round worry free packages guarantee uninterrupted service at clearly measurable costs.

Tailor-made training and testing opportunities

We offer operators of large combustion plants, plant-specific operator training and burner demonstrations on site. In addition our Testing Centre for Large Burners in Pirna offers the possibility for testing your specific ELCO burner solution in real plants.

ELCO REMOTE INDUSTRY - maximum safety due to fault reporting in real-time

ELCO REMOTE INDUSTRY is the WEB based software solution for the visualisation and remote monitoring of large combustion plants. In the event of a fault your personnel or the ELCO service are immediately informed by SMS, fax or email and can promptly take the necessary measures. Expensive interruptions in production or breakdowns of the heating system can be limited or completely avoided. Moreover ELCO REMOTE INDUSTRY, opens up the possibilities for an efficient, location independent management of several plants by virtue of the bi-directional connection via a server.

- cost-effective plant visualisation
- continual monitoring of plant efficiency
- alarm management with escalation mechanisms
- remote maintenance / remote diagnosis
- low installation costs
- low administration costs





ELCO delivers a 16 MW heating solution for the exhibition centre in Stuttgart

A project of superlatives

The new exhibition centre at the gates of Stuttgart is presently the most modern exhibition centre in Europe. Only a few minutes by foot from the nearby airport and one is there among the exhibitors and visitors in 7 halls each with 10,000 m², a presentation hall with 25,000 m² and a convention centre with 5,000 m².

Special demands require creative solutions

At the exhibition centre times of extreme activity alternate with times of less intensive setting up and taking down the exhibits. What was needed was a heating solution which combined high flexibility with an absolute supply guarantee. In line with an innovative energy design a tailor-made solution from ELCO was decided upon. Two environmentally compatible, highly controllable dual fuelled burners each with a capacity of 6.0 MW and a further 3.5 MW facility generate the necessary energy. In order to guarantee the availability at any point in time, the organizers in Stuttgart rely on the remote monitoring system ELCO REMOTE SOLUTION. That way the operators are informed at all times about the most important operating parameters, faults are immediately registered and can be remedied at once.

New Exhibition Centre Stuttgart data:

- Total exhibition area: 100,000 m²
- 7 Halls each 10,000 m²
- 1 Hall with 25,000 m²
- 1 Hall in the convention center with 5,000 m²

Technical solution from ELCO:

- 3 pollutant reduced dual fuel burners:
 - 2 EK DUO 2.700 GL-EUF
(each with nominal output 6.0 MW)
 - + 1 EK DUO 2.550 GL-EUF
(nominal output 3.5 MW)
- Digital burner management system BCS 300
- A load-dependant speed control and optimisation of residual oxygen for more economical use of electrical energy and low CO₂ emissions
- Innovative boiler control for the exact adjustment of meeting heating needs of the areas
- Optimal operating safety thanks to remote monitoring with ELCO REMOTE SOLUTION



ELCO delivers process heating for the manufacture of high quality cooking oils

A complex restructuring task

The firm SABO founded in 1845 and situated in Manno/ Tessin is the present Swiss market leader for bio and special cooking oils. The processing energy of 11,600 MWh is generated by a steam and thermal oil boiler. A further gas heating boiler serves for heating the building. Due to tighter limits on emissions, the facility had to be completely restructured in 2006.

ELCO convinces with innovative burner technology

Thanks to a convincing total design ELCO was able to successfully compete against other contractors for the replacement of the burner. As a new innovation and appearing for the first time in the Swiss market, the steam boiler received the latest development in the proved and tested ELCO open flame technology, which has shown itself to have the lowest emissions and possess a further improved flame stability. The demanding task of suppressing emissions in the thermal oil boiler was solved by a top-fired boiler with external recirculation. As required by the operators, the assembly and beginning of operation took place without interrupting the production.

Expectations exceeded

The final inspection of the facility by the officials showed that over the entire load range the limits of the Swiss clean air regulations were not exceeded. "The limits were not just barely cleared, but filled very well, as evident in the measurement reports", the technical director of SABO summed up.

Sabo data:

- 100 Tonnes daily production of high quality cooking oils
- Production energy needs 11,600 MWh per year

Technical solution by ELCO:

Steam boiler, saturated steam 16 bar for production

- ELCO dual fuel burner EK 8.700 GL-EF2, nominal capacity 5,500 kW
- Digital burner management system Etamatic OEM
- A load-dependant speed control for the burner fan
- An optimisation of residual oxygen for more economical use of energy and low CO₂ emissions

Thermal oil boiler, thermal oil 325° C for production

- ELCO dual fuel burner EK 4.175 GL-ROY, nominal capacity 1,250 kW
- External exhaust gas recirculation to reduce emission of pollutants

Warm water boiler 90° C for heating:

- ELCO Gas burner EGC 140 R2
- Burner capacity 95 kW
- Low pollution mixing mechanism for compliance with LRV (Swiss clean air regulations)



ELCO reduces heating costs in the Free University Amsterdam with a burner that switches fuels "on the fly"

A challenging task

The Free University of Amsterdam ranks among the most renowned centres of learning in the Netherlands. With 12 faculties they offer a capacity for 16,000 students. Among others a water pipe boiler with a 25 MW capacity, built in 1970, serves to heat the college buildings. In 2005 this boiler was replaced during a complete refurbishment of the burner facility.

Large demands from the operators

For the future the facility was to not only to supply the heating of the college but also the emergency needs of the local district heating of Amsterdam. Furthermore it had to be able to quickly exchange fuels between heating oil and natural gas in order to deal with fuel price fluctuations. A reduction of pollutant emissions was also required.

ELCO offers a custom-made solution

To meet the tasks two environmentally compatible dual-fuel double block burners of the RPD 60 GL-EU type were offered and installed by ELCO. A load-dependant speed control reduces the electrical demands of the fan, the exhaust values clearly fell short of the Dutch limitations. A special air and fuel mixture control enables the alternation of oil and natural gas firing without interrupting the operation of the burner.

Free University Amsterdam data:

- 16,000 students
- 12 faculties
- 2 water pipe boilers each with 25 MW (one of which was modernised in 2005 with an ELCO burner facility)
- 3 three-pass boilers each with 7 MW

Technical solution from ELCO:

- 2 environmentally compatible ELCO dual-fuel burners RPD 60 GL-EU, nominal output 13 MW, arranged on top of each other on the water pipe boiler
- Air supplied by a common fan
- Load dependant speed control of the fan to save electricity
- Switching of fuels "on the fly" by means of a digital air and fuel mixture control VMS



ELCO burner technology improves air quality in Linz

Refurbishing a district heating plant

Increased demands in the quality of air required a refurbishment of a district heating plant in the centre of Linz, Austria. In 2006 a peak load boiler, built in 1989 was successfully converted from heavy fuel oil combustion to a dual-fuel combustion with natural gas and heating oil. The modern burner technology from ELCO played an important role.

Large demands on the reduction of pollutants and control of the burner

In using natural gas as the main fuel, the operators required the lowest emissions possible. In addition, the burners were to be used in combination as well as being able to be singularly controlled. It had to be taken into consideration that the change from heavy heating oil to natural gas was to be made possible without an interruption of the burner's operation.

ELCO satisfies with a custom-made solution

In line with the reconstruction provisions the combustion was renewed with four environmentally compatible ELCO dual-fuel double block burners. The air supply came via separate speed controlled fans. Due to the combustion management system FMS, an operation of a single unit and a change of the fuel without interruption was made possible.

Central Linz district heating plant data:

- Yearly electricity output: 600 Mio. kWh
- Yearly generation of heat: 570 Mio. kWh
- Energy source: natural gas, heavy heating oil, biomass

Technical solution from ELCO:

- 4 environmentally compatible ELCO dual-fuel burners RPD 70 GS-EDU, each with nominal output 17 MW
- Load dependent speed control of the fans to save electricity
- Change the fuels "on the fly" without interrupting the operation of the burner with electronic combustion management system FMS5
- Large output modulation of the combustion due to a highly modulated burner and cascaded control via control technology
- Steam atomisation of the heavy heating oil by means of superheated steam



ELCO provides for a pleasant warmth in the European Parliament

A building complex of gigantic dimensions

In the European parliament 785 delegates represent the interests of no less than 492 million European citizens. The floor space of the building in Brussels is over 372,000 m² - distributed over 2,600 offices and 78 conference halls. Additionally, there were buildings of associated institutions like the Berlaymont building of the European Commission, which was reopened in 2004 after extensive renovations.

ELCO burners provide 45 MW heating output

ELCO was set special challenges in generating the heat for the large buildings in Brussels. The completion of the individual buildings was drawn out over a long period of time. Furthermore the independent heating supply of the individual building complexes was to be guaranteed. Despite the long running time of the project, ELCO was able to repeatedly prevail with its solutions - a sign of the high customer satisfaction. In all 22 ELCO burners with a total nominal output of 45 MW serve as central heating facilities for the European Parliament and the European Commission.

European Parliament data:

- Building complex spread over an area of 3.5 hectares
- 372,000 m² floor space
- 2,600 offices
- 78 conference halls

Technical solution from ELCO:

European Parliament

2 x EK6.350 G-RO, nominal output for each 2,900 kW
1 x EK6.350 G-RU, nominal output 2,600 kW
9 x EK5.280 G-RO, nominal output for each 2,000 kW
1 x EK5.280 G-RU, nominal output 2,500 kW
2 x VG06.1600 DUO PLUS,
nominal output for each 1,500 kW
4 x VG05.1000 DUO PLUS,
nominal output for each 890 kW

European Commission

3 x EK7.450 G-RU2, nominal output for each 3,800 kW



Globally sought-after: ELCO burners on steam and hot water boilers as well as heat generators

Operator/Location	Branch/Description	Type of Burner/Power/Fuel	Start of Operation
Clinique Bel-Air ch. du-Petit-Bel-Air 2 CH-1225 Chêne-Bourg	Health care, hot water production for district heating and hot water processing	EK 7.350 GL-EF2, 3,500 kW, open flame technology, environmentally compatible according to LRV, for natural gas and heating oil.	2007
Schiettinger Voll- und Wellpappe Schiettinger 3 D-95682 Brand	Paper industry, steam boiler for process heating	2x EK DUO 3.750 GL-EU, each 7,500 kW, environmentally compatible operating with gas, for natural gas and heating oil.	2007
E.ON Avacon AG BHKW Gommern Magdeburger Chaussee D-39245 Gommern	Electricity works, 2 hot water boilers for district heating	2x EK 7.350 GL-EF2, each with 3,100 kW, environmentally compatible with new open flame technology, here utilising a reverse chamber for heating oil and natural gas.	2006
Heizkraftwerk Pfingstweide D-67063 Ludwigshafen	Thermal power station, 2 steam boilers for district heating	2x EK 9.850 GL-EUF, each with 8,320 kW, environmentally compatible with open flame technology, for heating oil and natural gas.	2006
Heizkraftwerk Ortenberg D-35039 Marburg	Thermal power station, 2 steam boilers for district heating	2x E 10.12000 GL-EUF, each with 10,100 kW, environmentally compatible with open flame technology, for heating oil and natural gas.	2006
Lötschberg Basistunnel Versorgungstollen CH-3916 Ferden	Tunnel construction, Portal heater to prevent icing	2x EK 5.150 L-ROT, each with 1,200 kW, 2x EK 3.40 L-ZOTA, each with 360 kW, environmentally compatible according to LRV, for heating oil.	2006
Nestlé SA Frisco Findus Blumenfeldstrasse 15 CH-9401 Rorschach	Food industry, Steam generation for ice cream production	EK 6.240 GL-EF2, 2,000 kW, open flame technology, environmentally compatible according to LRV, for natural gas and heating oil.	2006
Schweizerische Bundesbahnen Zentralwerkstätte Industriestrasse 153 CH-Olten	Public transport, Steam production for workshop and carriage cleaning	EK 8.700 GL-EF2, 5,800 kW, open flame technology, environmentally compatible according to LRV, for natural gas and heating oil.	2006
Allianz Arena München Stadion GmbH Werner-Heisenberg-Allee 25 D-80939 München	Football stadium, 2 hot water boilers for heating and processing water	EK 6.300 G-EU2, 2,200 kW, EK 7.450 G-EU2, 3,300 kW, environmentally compatible for natural gas.	2005
Klinikum Am Europakanal 1 D-91056 Erlangen	Clinics, 3 steam boilers for heating	1x EK DUO 3.750 GL-EU, 7,500 kW, 2x EK 6.300 GL-EU, each with 2,450 kW, environmentally compatible with gas operation, for heating oil and natural gas.	2004
Hilcona AG Bendererstrasse 21 FL-9494 Schaan	Food industry, steam for production process	EK-DUO 4.1300 GL-EUF, 13,000 kW, environmentally compatible according to LRV with open flame technology, for natural gas and heating oil.	2004
BAVARIA Grünwald Bavaria Filmplatz D-82031 Geiseltal	Media industry, Warm water boiler for heating	6x EK 5.220 GL-RO, each with 2,100 kW for natural gas and heating oil.	2002
Futtertrocknung Lamerdingen Lindensteige 11 D-86862 Lamerdingen	Agriculture, gas heating generator for drying	RPD 50 G-E, 11,500 kW for natural gas.	2002
Futtertrocknung Amberg Kiellohe 2 D-92256 Hahnbach	Agriculture, gas heating generator for drying	RPD 60 G-R, 15,500 kW for natural gas.	1999

Globally sought-after: ELCO burners on thermal oil boilers

Operator/Location	Boiler Power/Medium	Type of Burner/Power/Fuel	Start of Operation
Backery Jowa Gossau Switzerland	Heater S/25-H1-13 1,500 kW Thermo oil 285 °C	EK 6.240 GL-EF2, monoblock dual-fuel burner for natural gas and heating oil. Compliance with the Swiss emission limit values LRV through an open flame combustion head .	2007
Lintai 2 (Linde) Mai Liao Taiwan	Heater CHI 2,880 kW Thermo oil 305-340 °C	RPD 30 G-EUY, 3,200 kW, double block dual-fuel burner with external exhaust recirculation for fuel NOC fuel gas and propane. Burner model with ex-protection, special surface protection, special voltage 110V-60 Hz.	2007
Tabriz II Iran	Heater CHU 1,6/25 1,490 kW Gilotherm ALD	EK 6.300 GL-E GL-R, 3,020 kW, monoblock dual-fuel burner for natural gas and heating oil. Ex-protection, special coating and outfitting for external location, special voltage 110 V.	2006
Tabriz Iran	Heater CHU 2.0/25 2,600 kW Gilotherm ALD	EK 7.350 GL-R, 3,020 kW, monoblock dual-fuel burner for natural gas and heating oil. Ex-protection, special coating and outfitting for external location, special voltage 110 V.	2006
Gusto Kaspic Sea (Offshore) Turkmenistan	Heater CHH 2.0/25 1,700 kW water/glycol 105-130 °C	RPD 20 GLR, 1,900 kW, double block dual-fuel burner liquid gas and heating oil. Special coating and outfitting for external location.	2005
ORION GLOBAL Vilnius Lithuania	Heater BNFV 592.13 3x9,000 kW DowthermA 305-340 °C	2x RPD 60 GL-RU/1 x RPD 60 G-RU, 10,000 kW, double block (dual-fuel)burner for natural gas and light fuel oil. Combustion air 216 °C with offline intermixture of gas to remove impurities.	2005
SQM Chile	Heater BNFV 592 2x5,400 kW KNO3 376-411 °C	2x RPD 40 GS-R, 6,000 kW, double block dual-fuel burner for natural gas and heavy fuel oil. Combustion air 260 °C. Special coating and outfitting for external location, special voltage 110 V.	2005
BASF S1-U Schwarzheide Germany	Heater KV 4.0/25 SO 5,000 kW Marlotherm SH 280-310 °C	RPD 40 GL-EDU, 5,650 kW, double block dual-fuel burner with steam atomiser and O ₂ optimisation. Natural gas as main fuel. A mixture of glycol, butanliol 1.4, hexanliol and water is used over a lance with steam atomisation as liquid fuel (to remove impurities).	2005

Internationally successful

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