

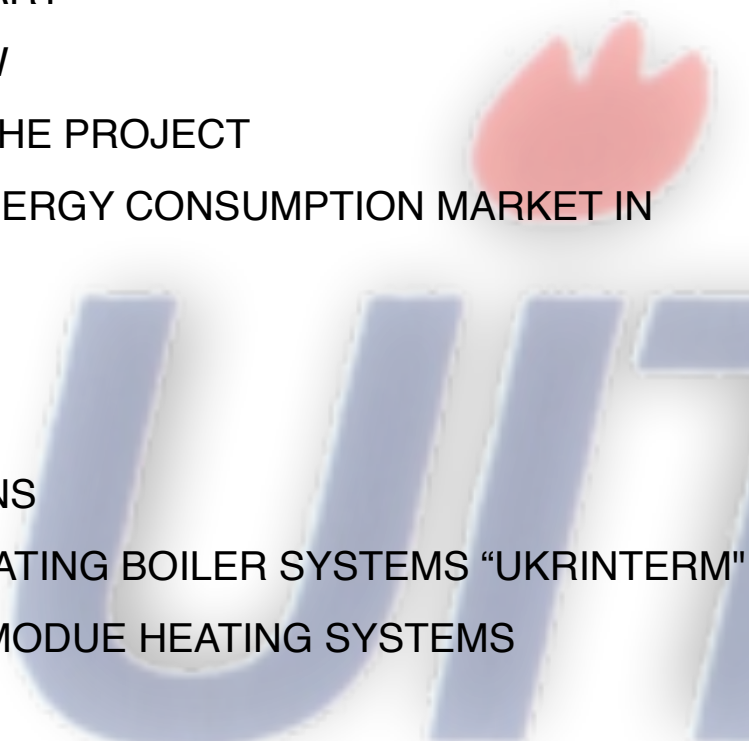
## INVESTMENT PROJECT

Organization of serial production of heat pumps, heat substations, advanced heating modules for modernization of heat supply systems of housing and communal services

Implementation by:

**JV “UKRINTERM” COMPANY LIMITED**

# TABLE OF CONTENTS

- I. EXECUTIVE SUMMARY
  - II. GEERAL OVERVIEW
  - III. DESCRIPTION OF THE PROJECT
  - IV. REVIEW OF THE EBERGY CONSUMPTION MARKET IN  
UKRAINE
  - V. PRODUCTION
  - VI. HEAT PUMPS
  - VII. HEAT SUBSTATIONS
  - VIII. MODULE GAS HEATING BOILER SYSTEMS "UKRINTERM"
  - IX. TRANSPORTABLE MODUE HEATING SYSTEMS  
"UKRINTERM"
  - X. TRANSPORTABLE MODUE HEATING SYSTEMS  
"UKRINTERM" WITH SOLAR COLLECTORS
  - XI. FIANNCE PLAN
  - XII. PROJECT EFFICIENCY
  - XIII. SUMMARY
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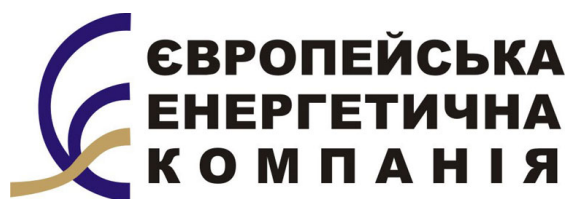
## EXECUTIVE SUMMARY

JV "Ukrinterm" is successfully operating on the market of Ukraine and near abroad for more than 20 years. During this period an extensive partner network of representative offices was created in Ukraine, Russia, Moldova and Belarus. Since the founding of the leadership strategy was chosen to the maximal approximation of high-tech heating equipment and service to the consumers in all regions of Ukraine.

WE established an extensive partner network of representative offices in which about 2375 specialists, opened offices in Russia, Belarus, Moldova. Their forces already installed more than 4650 modular boiler systems.



WE are the first company among manufacturers of heating equipment in Ukraine who introduced System of the Quality Management according to the requirements of international standard ISO 9001 and Environmental Management system according to ISO 14001.



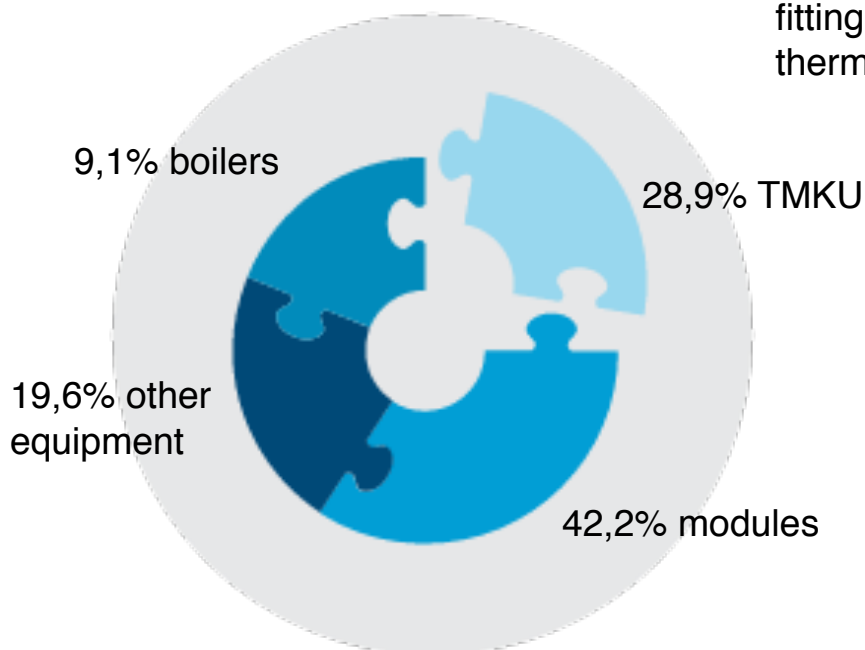
JV "Ukrinterm" and companies - regional representatives united into the corporation "European energy company" for mobilization of financial, scientific, production and personnel potential for the purpose of designing, manufacturing and maintenance of energy-efficient heat generating equipment.



## GENERAL OVERVIEW

The most important activities of “JV “Ukrinterm” are the production and sales of the equipment for heating and hot water supply - module heating boiler systems, transportable heating plants (TMKU), gas boilers, water heaters, gas regulating and heat substations.

WE also sale the other products: gas leak detectors, electromagnetic valves, accessories for heating and hot water supply systems - sanitary items, stop valves, expansion tanks, pipes and fittings, radiators, automatic systems, thermostats, etc.



“UKRINTERM” products meet requirements of European standards



## DESCRIPTION OF THE PROJECT

### SCOPE OF USE

- HEAT PUMPS are used for heating and hot water supply of industrial, residential, communal buildings and constructions providing the replacement of the traditional energy resources with alternative ones.
- SOLAR COLLECTORS
- HEAT SUBSTATIONS
- MODULE HEATING BOILER



### MAIN CONSUMERS

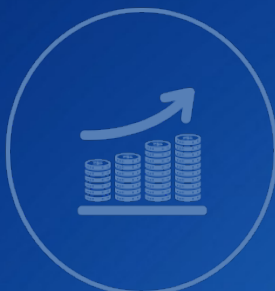
- ENTERPRISES AND ORGANIZATIONS which make renovation of buildings and heating systems in order to improve heating quality and reduce heat losses (offices, shops, hotels, schools, hospitals, etc.)
- BUILDERS (housing cooperatives, construction companies) of the residential and civil buildings, offices, shops
- PRIVATE PERSONS built houses or renovated the heating system in their apartments (off-line heating)



# REVIEW OF THE ENERGY CONSUMPTION MARKET IN UKRAINE

## PRESENT SITUATION

- OLD CAPITAL STOCK / DANGEROUS ENERGY EQUIPMENT
- HIGH CONSUMPTION OF THE PRIMARY FUEL RESOURCES
- HUGO LOSSES OF ENERGY DURNG PRODUCTION AND TRANSPORTATION



## UP-TO-DATE DEMANDS

- REPLACEMENT AND MODERNIZATION OF THE EQUIPMENT
- FINANCE MOTIVATION
- ENERGY SAVING TECHNOLOGIES
- ALTERNATIVE ENERGY SOURCES
- REDUCTION OF THE PRODUCTION ENERHY INTENSITY
- REPLACEMENT OF THE OLD DANGEROUS HEATING NETWORKS
- ENERGY SAVING EQUIPMENT

## PRODUCTION

### PRODUCTION PROCESS WILL PROVIDE:

- Mobilization of private capital investments for realization of the heat system modernization projects.
- Adaptation of the energy effective and energy saving technologies.
- 50% of primary energy resources economy at the expenses of structural and technological energy saving actions.
- Environmental safety.
- Safe heat supply to settlements.
- Investments in high technology and energy saving equipment for modernization and technical retooling of the heat supply objects.



## HEAT PUMPS

Heat pump (HP) - ecologically clean brine/water compact unit for house heating (ventilation) and hot water supply.

HP produces heat from low temperature energy sources.



### ADVANTAGES:

- EFFICIENT (heat pump uses energy more effectively than any boiler burning fuel)
- ENVIRONMENTALLY SAFE (no CO, CO<sub>2</sub>, NO<sub>x</sub> emissions)
- UNIVERSAL (heat pumps have reverse function; HP can pick out the heat from the house thus cooling it. Surplus energy may be used for the heating of the swimming pool water)
- SAFE (heat pumps are explosion-proof and firesafe equipment: no fuel, no open fire, dangerous gases or mixtures)

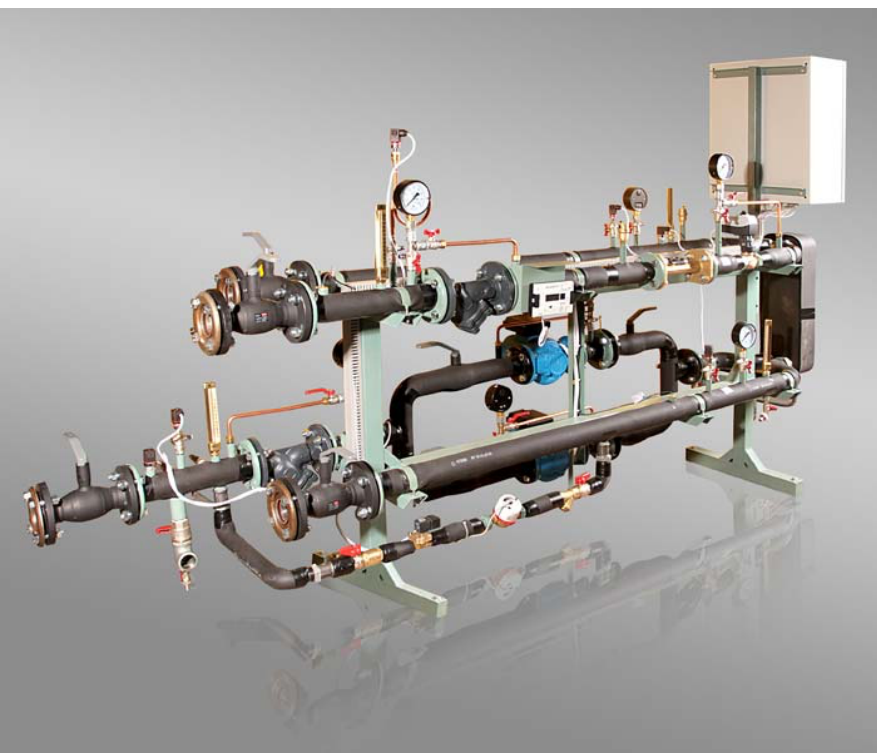


# HEAT SUBSTATIONS (MTP)

- Used for heat energy transfer from the external heat network to the heating systems of residential, communal and industrial buildings.
- MTP is the model unit mounted on the frame perfectly ready for operation.
- High power individual heat substations are transported as separate units to be assembled at sites.
- to install the individual heat substation the specialist must only connect it to the existing networks and start-up.

## UKRINTERM MTP SYSTEMS PROVIDES:

- Program temperature reduction at night and during weekend (in administrative buildings, schools, etc.).
- Control and calculation of heat carrier flow.
- Automatic limit of return water temperature.
- Control and indication of alarm situations.
- Hot water parameters maintenance according to the sanitary code.
- Frost protection.
- Circulation pump regulation.
- Dispatching and telemetry systems (option).



# HEAT SUBSTATIONS (MTP)



## MTP SPECIFICATIONS:

<b>TOTAL HEAT POWER</b>	30 - 10 000 kW
<b>HEAT POWER FOR HEATING</b>	15 - 7 000 kW
<b>HEAT POWER FOR HWS</b>	30 - 3 000 kW
<b>DIRECT AND RETURN LINES PRESSURE</b>	1,6 MPa
<b>DIRECT LINE TEMPERATURE</b>	to 150 C
<b>RETURN LINE TEMPERATURE</b>	to 95 C
<b>HEAT NETWORK TEMPERATURE CHART, C</b>	150/70, 130/70, 115/70, 105/70, 95/70
<b>HEAT SUPPLY SYSTEM TEMPERATURE CHART, C</b>	105/70, 95/70, 90/70
<b>HOT WATER SUPPLY SYSTEM TEMPERATURE CHART, C</b>	40 - 60 C
<b>AVERAGE MEAN TIME BETWEEN FAILURES</b>	75 000 hours
<b>AVERAGE LIFE TIME</b>	14 years



# HEAT SUBSTATIONS (ITPk)

## INDIVIDUAL HEAT SUBSTATION

- Provides heat supply of a separate flat (heating and hot water supply with maintenance of present temperature regardless of consumption), using heat carrier of the general three-pipe system of heating and water supply in building (supply line, return heating pipe and tap water supply).
- ITPk is ade as a compact unit (as cabinet) or on a frame for installing into niche for simplification of design and mounting works.
- ITPk allows to organize the assessment of the consumed heating and cold water by flat and also gives the ability to turn pff the heating and water supply ro non-payer's flats.



### SPECIFICATIONS:

- Maximal working pressure: 10 bar
- Heat carrier temperature range: 0 - 90 C
- Power of brazed heat exchanger: to 35 kW
- Connections: 3/4"
- Supply of electricity: 220V/50Hz



### THE MAIN FEATURES OF ITPk:

- heating regulation
- hot water supply
- heating assessment
- consumed tap water assessment
- centralized data transmission



# MODULE GAS HEATING BOILER SYSTEMS “UKRINTERM”



- Module gas heating boiler system (installation) “Ukrinterm” is intended for heating and hot water supply of the industrial, residential and communal buildings and constructions.
- Module gas heating boiler systems are assembled go the manufactured modules in quantity and mix ordered by a customer.
- May be arranged in built-in accommodations, additions, bulkheads and apart buildings in accordance with the current building code.
- Module gas heating boiler system consists of the defined by the specific project quantity of **heating modules MN** and may compound the following hot water supply modules and units, water softening units (manual and automatic), solar system for hot water preparing.

- HEATING MODULES MN ECO: the running water inertialess gas apparatus (water heater) in a cabinet version for water heating in the heating systems.
- We produce modules MN80ECO, MN100ECO and MN120ECO.



## MODULE GAS HEATING BOILER SYSTEMS “UKRINTERM”

Module gas heating systems “Ukrinterm” may include the condensations modules MN-240 replacing MN120ECO modules by power so as by overall and port dimensions.

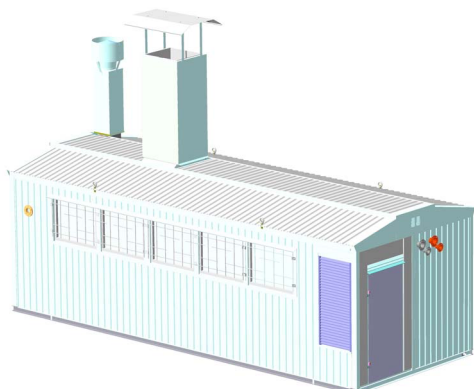
Condensation heating modules MN-500 and MN-100 are made on the basis of heat exchanges DUO 240 kW and TRIO 500 kW produced by Giannoni (France).



### ADVANTAGES:

- Low harmful emissions  
Nix < 20 mg/m<sup>3</sup>  
CO < 50 mg/m<sup>3</sup>
- High efficiency (factor): in custom heating mode (80/60 C) - 96%; in condensation heating mode (50/30 C) total season efficiency factor - up to 110%
- Power modulation range: 9 - 100%
- Gas saving by 30% as a result of the condensation technology and low temperature heating system
- Less weight and overall dimensions in comparison with the ordinary boilers of the same productivity

# TRANSPORTABLE MODULE HEATING SYSTEMS “UKRINTERM’ (TMKU)



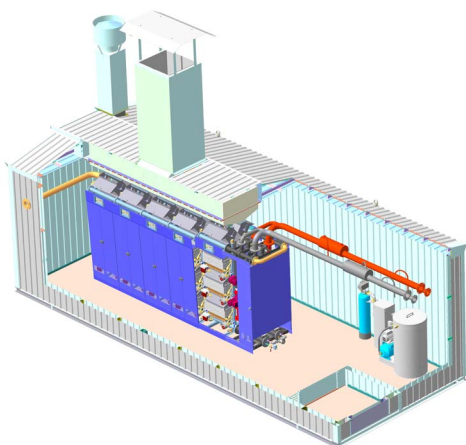
- Used for heating and hot water supply of working areas, residential and communal buildings and constructions.

- TMKU are made on the base of the heating modules (MN80ECO, MN120ECO, MN240, MN500 and MN1000) in containers with overall dimensions for truck transportation.

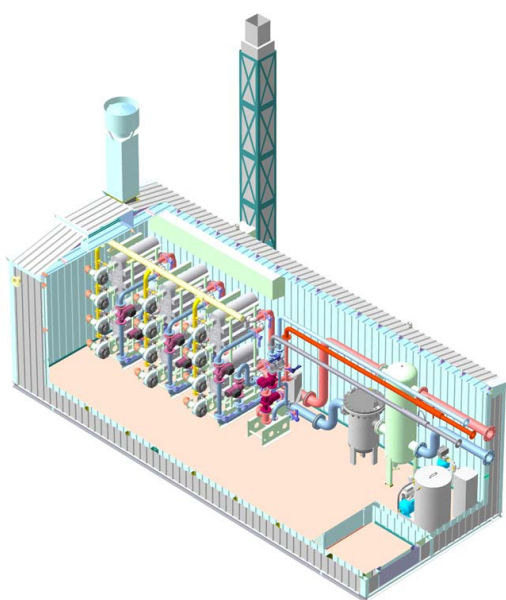
- TMKU may have from two to ten heating modules (160 kW - 4 MW), hot water supply modules, control devices for safe operation of the system, water softening units, etc.

- After installations and connection to water, gas and electrical networks TMKU are completely ready for heating and hot water supply.

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1 - TMKU-1200 WITH HEATING MODULES MN120

2 - TMKU-3000 WITH HEATING MODULES MN500

## TRANSPORTABLE MODULE HEATING SYSTEMS “UKRINTERM’ (TMKU) WITH SOLAR COLLECTORS

- Transportable module heating system with solar collectors includes: 2 - 5 solar collectors (area of one - 2 m<sup>2</sup>) and boiler of 300 - 800 l besides the standard TMKU equipment.
- Hot water is preheated with solar energy.
- In period from May till September the solar system provides domestic hot water preparing in full.



Natural gas will remain the most comfort fuel for the next 50 years especially together with renewable energy sources.

# FINANCE PLAN

TOTAL PROJECT AMOUNT

18,1 million EUR

FINANCE SOURCES AND TERMS:

35%

BORROWED FUNDS



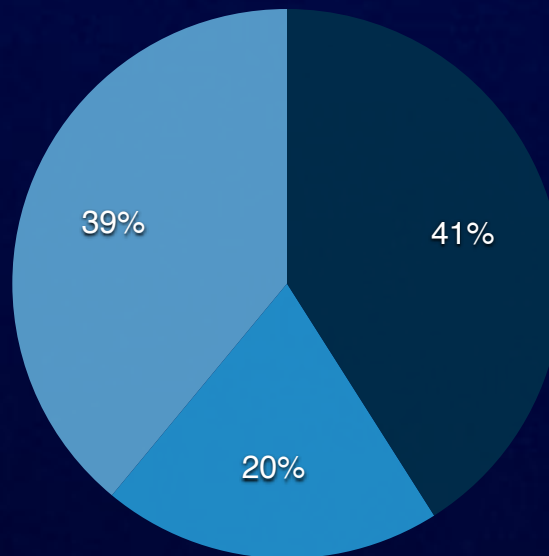
6,3 million EUR

OWN FUNDS



11,8 million EUR

innovation part of  
the project 2.4  
million EUR



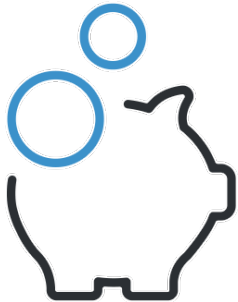
purchase of the  
process equipment 2.6  
million EUR

project day-to-day  
operation 1.3 million  
EUR

- PERIOD of the project execution:  
quarter III 2017 - quarter III 2018



# PROJECT EFFICIENCY



- INCOME FOR 3 YEARS: 2,8 million EUR
- PRODUCTS SOLD: 20,9 million EUR
- PAY-BACK PERIOD: 1,5 YEARS
- PROSPECTIVE FUEL AND ENERGY RESOURCE SAVINGS: 11,6 thousands tec 1,42 million EUR



- NO CHEMICAL AND HARMFUL SEWAGE POLLUTION
- LOW WASTE PRODUCTS
- REDUCTION OF NO<sub>x</sub> EMISSIONS
- HEAT LOSSES REDUCTION DURING HEAT TRANSPORTATION
- REDUCTION OF NATURAL GAS



- WORKERS' EMPLOYMENT BY THE PROJECT: 96
- TAXES, DUTIES AND PAYMENTS TO THE BUDGET AD NON-BUDGETARY FUNDS: about 1 million EUR



- HIGH QUALITY OF THE HEATING AND HOT WATER SUPPLY SERVICES
- SUPPORT OF THE NATIONAL MANUFACTURES
- JOB CREATION
- MODERNIZATION AND EXPANSION OF THE PANT

## SUMMARY

The main purpose of the project will be achieved as a result of the project implementation: serial production of the heat generating equipment used renewable energy sources (heat pumps) and advanced module heating boiler systems.

Expansion of “Ukrinterm” production will make possible to reduce natural gas consumption per production of the heat energy unit and develop brand new approach of the evolution of the energy efficiency of the heat generating equipment in Ukraine.

# COOPERATION WITH UKRINTERM ENSURES:



PROFICIENCY



INNOVATION



CUSTOMERS' SATISFACTION



SUCCESS



ETHICAL APPROACH