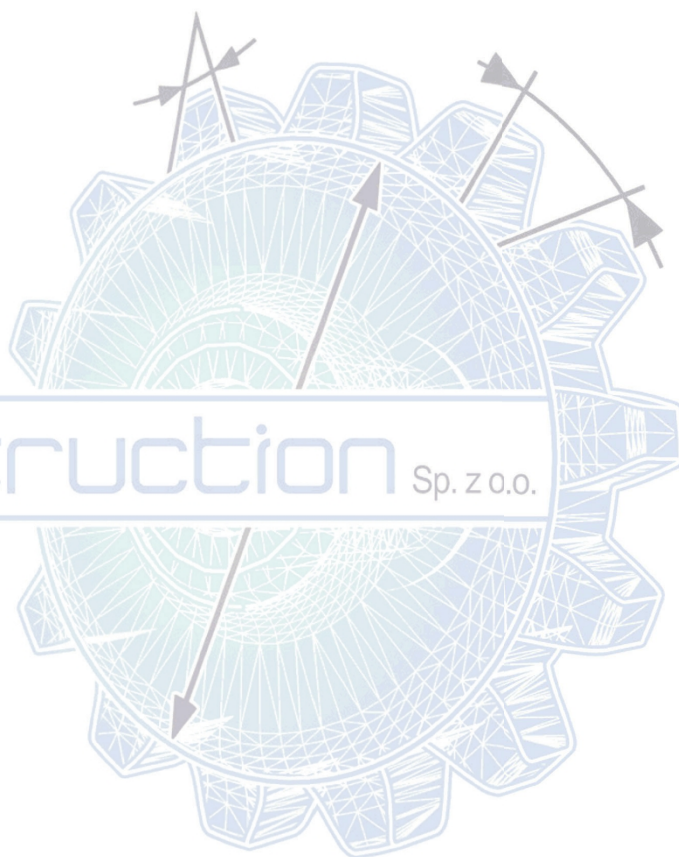




KG construction Sp. z o.o.



KG Construction Sp. z o.o. is a family-owned company that has been on the market since 2012. During this time we have carried out many contracts related to mining, revitalisation of industrial facilities as well as the energy sector.

For several years, we have expanded our range to include products from the renewable energy sector, which can be successfully installed at private and institutional customers.

Our range of products includes:

1. Modern photovoltaic installations based on microinverters, composite construction and top-class solar panels, reinsured by major European financial institutions such as LLOYD's, PICC, RE MUNICH
2. Composite structures
3. Air conditioners for domestic, institutional use and industrial air conditioning and refrigeration systems
4. PANASONIC heat pumps - Authorised Distributor
5. PEREKO induction and sonic ovens - Authorized Distributor
6. Wind turbines
7. Water turbines

We are a certified business partner of the Schiessel Group, which for our customers means that we offer them products from brands such as LG, Panasonic and HiSense, i.e. the leading companies in the air conditioning and comfort market.

Why are our Installations better than our competitors? Durability Sp. z o.o.

We are the only company in Poland, and one of the first in the world, to offer a complete installation system for the

The system is based on profiles made of UV-resistant glass-fibre reinforced composite material. We call this system NKG. This solution, which is becoming increasingly popular in the construction industry, offers many advantages. First and foremost, the mechanical parameters of NKG profiles are far superior to those of steel or aluminium profiles and, in addition, composite structures have a carbon footprint ten times smaller than that of galvanised metal structures, which makes this type of solution preferable in the EU.

Secondly, our profiles are resistant to corrosion, acids and alkalis. Independent testing bodies have confirmed that KG Construction profiles will retain their mechanical properties to a level of 90% after 50 years of use. These values are unattainable for steel constructions. In addition, composite profiles are characterised by a fourfold lower weight of the structure with higher strength parameters than steel and aluminium.



MICROWAVES - THE FUTURE OF PV INSTALLATIONS

Why?

Hoymiles microinverters are currently the most efficient solution for small and medium-sized photovoltaic installations (up to 1 MWp). Due to their compact design and state-of-the-art technology, they have an impact on the operation of the entire photovoltaic installation, enabling 10% to 30% better photovoltaic yields than installations based on chain inverters. In addition, the 12-year warranty is testimony to the very high quality of the product.



Ensuring maximum safety

In a photovoltaic installation based on microwaves, there is a DC voltage up to a maximum of 60V and an AC voltage up to a maximum of 253V, i.e. safety voltages.

In photovoltaic installations based on daisy-chain inverters, the DC voltage can be as high as 1,000V or 1,500V, which can result in very serious consequences - for the health and lives of people, for the outbreak of potential fires and for firefighters who give up extinguishing such a photovoltaic installation at such high voltages.



Optimisation of plant operation

Any shading of the photovoltaic modules (through dirt, leaves, clouds) results in a decrease in their performance and efficiency, and thus a loss of potential yields from the entire photovoltaic installation. The operation of the microinverters is based on the fact that they start working earlier when shading occurs, but also switch off individual modules that are not working, so that the rest of the installation can work at 100% of its capacity under the given weather conditions. Such characteristics mean that the entire PV system can operate 10% to 30% more efficiently than PV systems based on string inverters.



Extension of installations

In the case of photovoltaic systems based on microwave inverters, the expansion of the system does not pose any problem. We do not have to think about oversizing a string inverter at the initial stage of investment or buying two string inverters in case of expansion. We simply add more microwave inverters and photovoltaic modules once we have decided to expand the photovoltaic system, and the whole system works on a plug-in basis.

Also, it is not a problem to connect different types of photovoltaic modules within one photovoltaic installation - we can connect different types of photovoltaic modules to each microwave.



Monitoring

Unlike photovoltaic installations based on string inverters, installations based on microwave inverters provide a complete picture of the operation of the entire photovoltaic installation, including information on how each photovoltaic module is performing. This makes it possible, first and foremost, to collect full data on how the installation is working, but also to quickly diagnose a problem with the correct operation of the photovoltaic installation and thus quickly eliminate it.



Cost

Photovoltaic systems based on microwave inverters do not have to be more expensive than photovoltaic systems based on string inverters. And if we also take into account their greater efficiency and performance, it is all the easier to opt for a state-of-the-art photovoltaic system. The market in Poland is still in the process of educating itself in this area, but there are countries (USA, France, UK or the Benelux countries) where photovoltaic installations based on microwave inverters account for the majority of small and medium-sized photovoltaic installations. Thus, it is safe to say that microwaves are a very interesting alternative to modern photovoltaic installations.

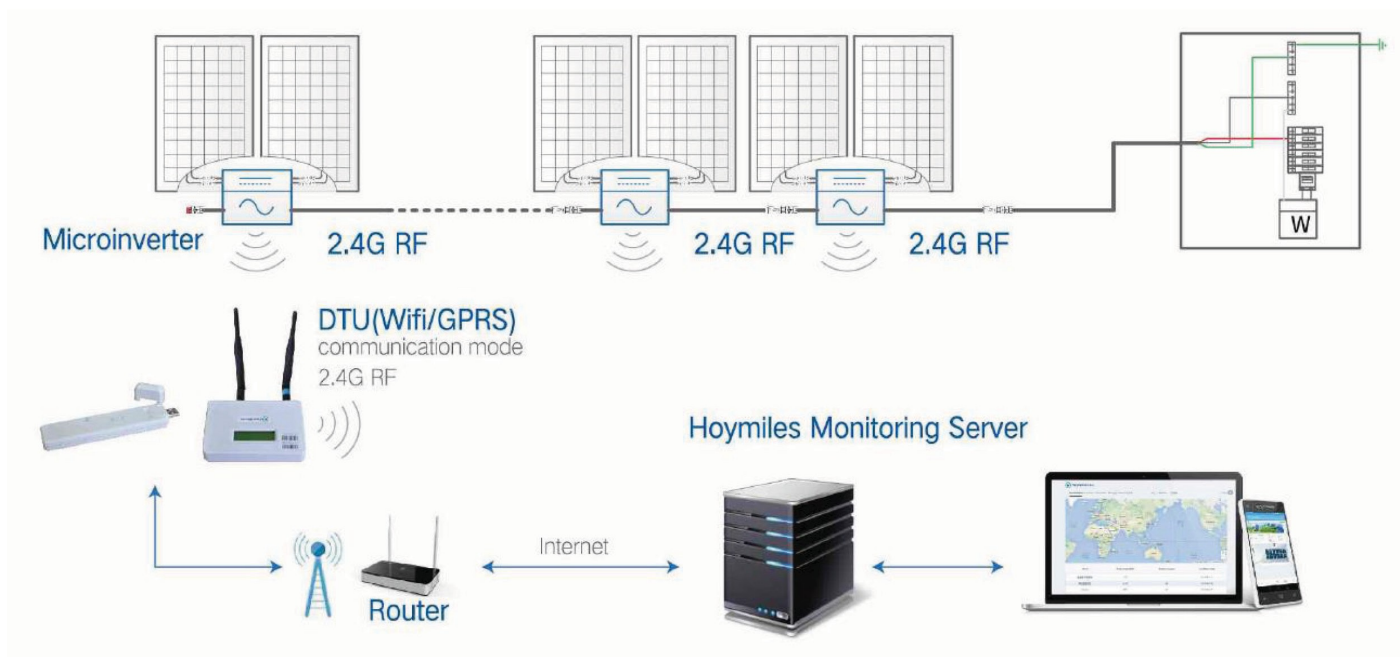
Our product range includes **microwave ovens** from the company:



The range includes the following units:

1. HM-1200 (HM-1000 or HM-1500) - one microwave for max. 4 photovoltaic modules;
2. HM-600 (HM-700 or HM-800) - one microwave for max. 2 photovoltaic modules;
3. HM-300 (HM-350 or HM-400) - one microwave for max. 1 photovoltaic module;
4. DTU-MI-PRO communication module

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Features of photovoltaic installations equipped with microwave inverters compared to photovoltaic installations equipped with string inverters

Feature	PV installation equipped w microwaveable Hoymiles	PV installation equipped in the SolarEdge system	PV installation equipped with a string inverter
Efficiency of the installation	10-30% higher than an inverter-based installation chain	5-10% higher than an installation based on a chain inverter	Lower
Impact of shading / contamination on the installation	Within one module	Within the entire module chain - so called optimisers (additional cost of investment)	Within the entire module chain - so called optimisers can be used (additional cost investment)
Ease of installation design	High design flexibility	High design flexibility	Low design flexibility
Extension of installations	Modular expansion	Extension related to inverter replacement chain	Extension related to inverter replacement chain
Operation of the installation	Each module individually	Module chain with the possibility of optimising module operation	Chain of modules
The way the modules are connected in the installation	Parallel	In series	In series
Types of modules to be connected to the installation	Meaningless	Within the chain, the same type/type of module	Within the chain, the same type/type of module
Ageing of modules and the efficiency of the installation	Low impact	A significant impact, particularly in the case of disproportionate ageing modules	A significant impact, particularly in the case of disproportionate ageing modules
Security	DC voltage up to 60V; AC voltage up to 230V	DC voltage up to 1,000 / 1,500 V - when the inverter is switched off up to 1V DC	DC voltage up to 1,000 / 1.500 V
Guarantee	From 12 years to 25 years	From 12 years to 25 years	From 5 to 10 years
Leakage class	IP 67	IP 65	IP 65
Compliance standards	Fulfilled	Fulfilled	Fulfilled

KG Construction Sp. z o.o. has the expertise of the Prosumer Energy Centre at the Silesian University of Technology in Gliwice, which confirms :

- fire safety of photovoltaic installations based on microinverter technology
- protection against degradation of photovoltaic panels through the use of microinverter technology
- 10%-30% higher energy production compared to standard installations
- trouble-free expansion of the installation at any time

- reactive power control of the installation
- cooperation with energy storage facilities

COMPOSITE STRUCTURES

Pultruded profiles

What is pultrusion - is a method of manufacturing composites introduced in the mid-20th century in the USA.

Using pultruders, this method allows the relatively rapid production of long pieces, profiles of various shapes. It consists of pulling fibres soaked in a suitable resin system through a system of moulds, giving the required shape, and then thermosetting. A characteristic property of these products is the orientation of the fibres in one direction. The main products manufactured using this method are various types of sections, open and closed profiles, rods and tubes. The unquestionable advantage of this method is the production of components with virtually unlimited lengths.



KG construction Sp. z o.o.



As a manufacturer of profiles made from glass-fibre-reinforced composite material, we offer equivalents for most metallurgical profiles, i.e. hollow tubes, channels, I-sections, angles and many others. We call this system NKG - New Mining Composite - because, as a company with its roots in Silesia and the heavy industry, it was in the mining industry that we first applied solutions based on our material.

Due to our customers' technical requirements, we are able to offer several versions of our material: a conductive version (certified for use in hazardous areas) and a dielectric version. The conductive version is certified for use in Ex zones and has been successfully implemented in many such zones.

The non-conductive version is far more suitable for use in the construction of photovoltaic farms, marinas, pedestrian bridges and urban infrastructure. This solution, which is becoming increasingly popular in the construction industry, offers many advantages:

1. mechanical parameters of NKG profiles significantly exceed those known from steel profiles or aluminium
2. 4 times lighter than steel and 40% lighter than aluminium
3. the material is dyed in the mass
4. maintenance-free - no corrosion

Independent testing bodies have confirmed that profiles manufactured by KG Construction will retain their mechanical properties to a level of 90% after 50 years of use. These values are unachievable for steel constructions.

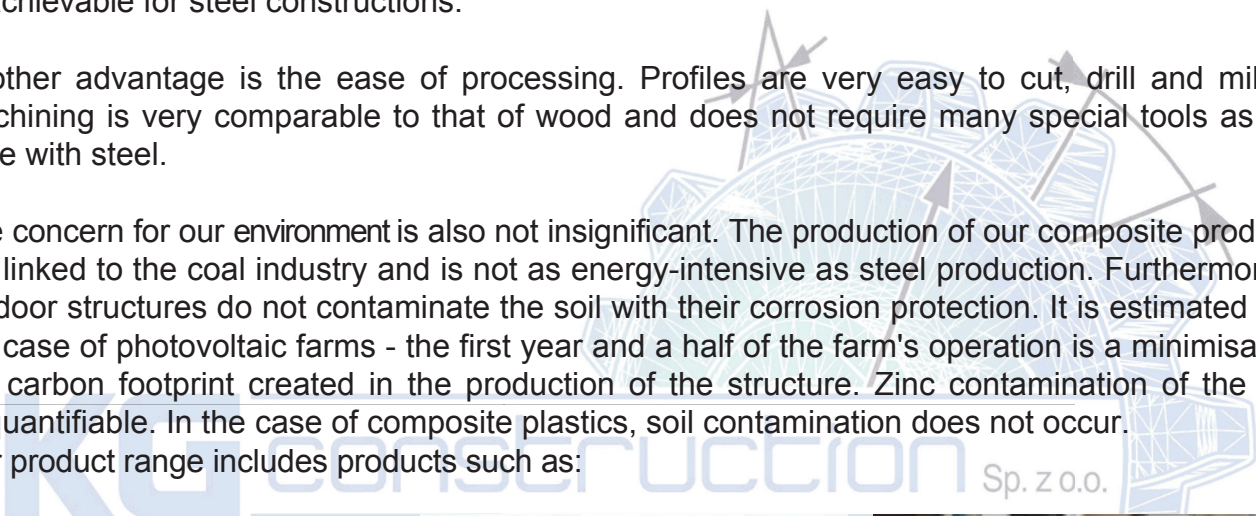
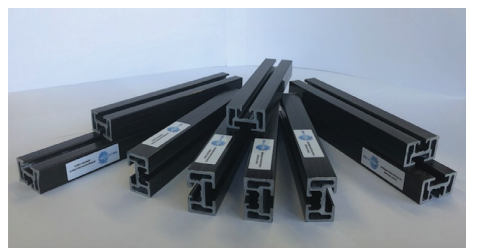
Another advantage is the ease of processing. Profiles are very easy to cut, drill and mill. The machining is very comparable to that of wood and does not require many special tools as is the case with steel.

The concern for our environment is also not insignificant. The production of our composite products is not linked to the coal industry and is not as energy-intensive as steel production. Furthermore, our outdoor structures do not contaminate the soil with their corrosion protection. It is estimated that in the case of photovoltaic farms - the first year and a half of the farm's operation is a minimisation of the carbon footprint created in the production of the structure. Zinc contamination of the soil is unquantifiable. In the case of composite plastics, soil contamination does not occur.

Our product range includes products such as:

Our product range includes products such as:

1. constructional profiles
2. ladders
3. safety barrier systems
4. grilles - floor, covered, Surfacing



AIR CONDITIONERS AND HEAT PUMPS

For several years, there has been a steady increase in the number of proponents of obtaining energy from natural sources. It is ecological, efficient and, with the right choice of equipment, very cost-effective. The installation of heat pumps is very popular, and in the near future they may be used in the majority of buildings under construction.

These devices extract low-temperature energy (from water, air or the ground) and then, heat it to the appropriate temperature and deliver it to the receiving source. A heat pump uses natural energy deposits and extracts heat from them. This method is increasingly efficient and consequently very cost-effective, as it will save a considerable amount of money in a year or more - the reduction in heating costs can be (under the right conditions) as much as 75%. They will not only allow the air in the facilities to be heated, but also the hydrau- gen plant, heating the water used.

We can divide heat pump installation into three subgroups:

WATER Using ground sources we can achieve a very efficient installation. However, suitable land on which the building is located is required.

This system is very often chosen because of the less invasive nature of the work (no deep excavations or boreholes are needed). This system can be located partly or entirely outside the building and is often also chosen for domestic water heating.

EARTH The system is installed approx. 1.5m below ground, below the freezing zone. The quality of the soil is an important factor - dry land stores energy less well than wet land. The installation also involves the installation of a special collector.

We also offer modern SPLIT air conditioners

The task of modern air conditioning is to ensure thermal comfort in the room, both when the air conditioners are operating in cooling and heating mode. Modern splits additionally make it possible to maintain a balance between the temperature of the air in the room and its degree of humidity. Modern split air conditioners have an air purification function, so that the air we breathe is free of dust, harmful microorganisms and other pollutants and odour particles.

Flexible working and personalisation - LG, Hisense and Panasonic air conditioning

Modern splits must comply with stringent energy and environmental standards, which guarantees the high efficiency of the units and, thanks to the use of low-GWP R32 refrigerant, a reduced environmental impact. The units can be operated in individual programmes/modes in daily and weekly cycles. The control of most models is via WiFi modules, which increases the possibility of individual settings programmed remotely. It is also possible to integrate the units into an intelligent facility management system using motion, temperature and humidity sensors.

Split air conditioners - applications

Inverter split air conditioners are used in a wide range of different applications. They are suitable for flats, single-family houses, as well as smaller shops and catering establishments. The more powerful wall-mounted air-conditioners fit perfectly into modern offices, conference rooms and large residential premises. For customers looking for functional and elegant solutions, we recommend models for year-round use (even in the case of low outdoor temperatures) and continuous operation dedicated to server rooms.

We offer Hisense, Panasonic and LG air conditioners.

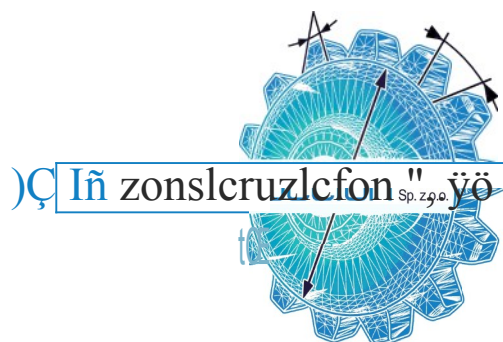
Hisense **Panasonic**  **LG**

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Lp	Index/Name	Dimensional Drawing
1	KGC-PS-393908 Profile 39x39x8	
2	KGC-PS-4023 Profile 40x23	
3	NKG C100508 Channel section 100x50x8	
4	NKG RK50505 Square tube 50x50x5	
5	KG-00-6 Foot for NKG RK 50505	
6	KG-00-2 Profile end cap 40x40 - external - grey	
7	KG-00-3 Profile end cap 50x50 - internal - grey	
8	KG-01-12 Profile connector 393908 - 40-3xM6	
9	KG-01-13 Connector for profile 4023 - 20x5-50 - 2xM6	

Lp	Index/Name	Drawing
10	KG-01-19 Coupling 50x50x50 - M8	
11	KG-01-20 Coupling 50x50x65 - M8 - 25 St	
12	KG-01-25 Connector L - 39x39-25 St	
13	KG-01-27 Connector X - 39x39	
14	KG-01-29 T-joint - 39x39-25 St	
15	KG-01-40 Connector for profile 393908 from RP100754	
16	KG-01-18 Screw 8.5x5x122 / M8x20	
17	NKG RP 638056 Handrail 63x80x5x6	
18	KG-00-1 Handrail profile plug NKG RP 638056	



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