

M | METKA

ENERGY





- 2 | Demanding Markets
- 3 | Competitive Solutions
- 4 | International Presence
- 6 | Gas Turbines and Combined Cycle Plants
- 10 | Steam Power Plants
- 12 | Renewables
- 14 | Turn-key Experience

Demanding Markets

Competitive Solutions

METKA is highly responsive to clients' needs, and aims to maximize overall value considering the key investment factors:

- Investment cost
 - Project schedule
- Performance
 - Plant availability
- Maintenance costs
- Operational Flexibility

The global power sector operates in a rapidly changing environment, with increasing energy demands, an evolving legislative framework and a strong focus on greener technologies.

Innovative solutions are required to secure cost-effective, environmentally friendly energy supplies in the years to come.

Power plants must be efficient, reliable, and increasingly flexible in operation. Effective project execution is a critical success factor for the major investments needed in new power generation infrastructure.

METKA meets these challenges by providing complete power plant solutions based on state-of-the-art power generation technologies throughout Europe, the Middle East and Africa.

We carry out fully integrated turn-key projects with complete engineering, procurement and construction (EPC) scope, for clients ranging from traditional state-owned utilities to independent power plant developers.

Our objective is to provide the optimum solution for client requirements and project needs.



*Korinthos Power
437 MW, combined
cycle power plant,
constructed by METKA
at the Motor Oil
Korinthos Refinery
complex in Greece.*

Experts in project execution

METKA is successful because the entire organization is highly focused on project execution. Complex projects demand excellent project management skills, combined with a wide range of functional expertise in areas such as design engineering, technical procurement, logistics, site construction, quality management, and plant commissioning.

Our team is our power

METKA has developed its capabilities through continuous investment in Human Resources across all functions. The company has the full range of technical resources across the spectrum of EPC and commissioning activities for major power generation projects.

On-time and on-budget

METKA's track record in successfully delivering projects on-time and on-budget has enabled its sustained, profitable growth. The company has remarkable financial strength and stability.

Capacity and Flexibility

METKA has the critical mass to successfully manage major projects, whilst maintaining the essential flexibility to respond quickly and effectively to unexpected events, as well as the capacity to execute multiple projects simultaneously with outstanding performance.

Strong collaborations

Being independent, but with strong relationships with major equipment suppliers, METKA has the ability to offer the most appropriate technology for any project.

Industrial facilities

The company's state-of-the industrial facilities and equipment provide it with significant competitive advantages, particularly in terms of reliability and compliance with the most stringent international quality standards.

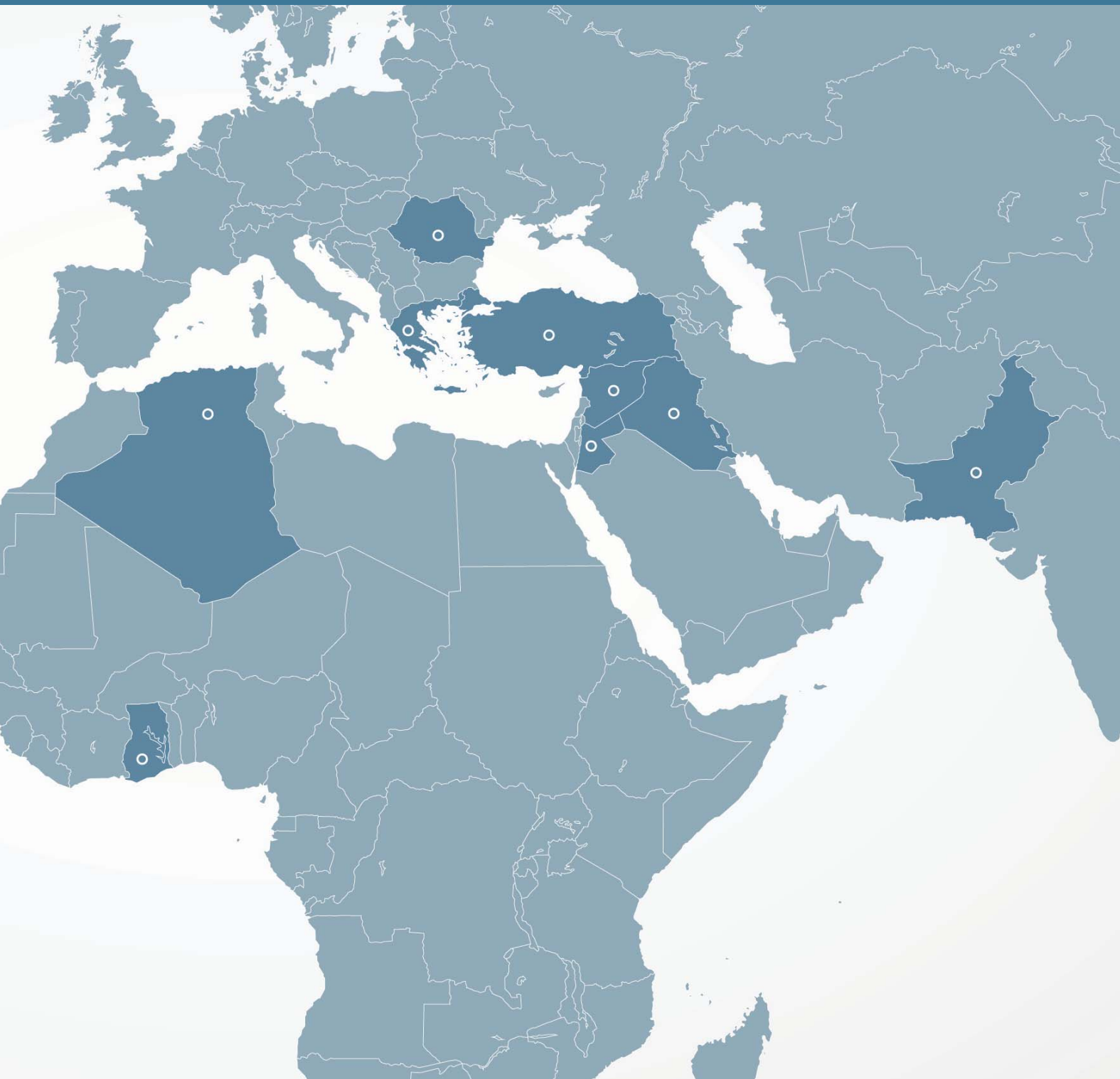
Reliable partner

As a leading international provider of turn-key high efficiency power plants and with an experience of over 50 years, METKA is a reliable partner for major international power plant investments. Above all, the company values the trust received from the customers and the fact that its reputation is built on integrity and the ability to meet the undertaken commitments.

METKA has the resources, experience and understanding of international markets, in order to meet customer's needs effectively and to actively support the development of regional energy infrastructure.



International Presence



Algeria | Romania | Greece | Turkey | Ghana | Iraq | Jordan | Pakistan



Korangi



Brazi



Samsun



Denizli

International Landmarks

1st major international EPC contract - Karachi, Pakistan
KESK Korangi 220MW combined cycle plant

Largest combined cycle plant in Romania
Petrom Brazi 860MW combined cycle power plant

2 EPC contracts in Turkey

- RWE & Turcas Güney Elektrik Uretim A.S. Denizli, 775MW combined cycle power plant
- Borasco 870MW combined cycle power plant, Samsun

1st major EPC contract in Iraq

Basra province, 1250MW open cycle combined power plant

5 EPC contracts in Algeria

- 3 fast-track EPC contracts for 38 mobile gas turbine power plants at 8 sites in Algeria
- Hassi R'mel I, 368MW open cycle gas turbine power plant
- Hassi R'mel II, 590MW open cycle gas turbine power plant

2 EPC contracts in Jordan

- 146MW fast track simple cycle project
- 143MW combined cycle project, both in Zarqa province

2 EPC contracts in Ghana

- Fast-track EPC contract for 10 mobile gas turbine power plants
- 192MW combined cycle project, both in Takoradi



Lavrio V



Agios Nikolaos



Aluminium



Thissavros

Leader in Greece

1st major power plant project as consortium member

PPC Agios Dimitrios Units I-II 2x300MW lignite fired plant

Largest pumped storage hydro scheme

PPC Thissavros 3x100MW hydro

1st utility scale combined cycle project

PPC Lavrio Unit IV 550MW combined cycle power plant

1st turn-key EPC power plant project

PPC Linoperamata 43MW gas turbine plant

1st single shaft combined cycle plant

PPC Lavrio Unit V 378MW combined cycle power plant

Largest co-generation plant of its kind in Europe

Aluminium of Greece 334MW co-generation plant

Most efficient combined cycle plant

IPP Protergia, Ag. Nikolaos, 430 MW combined cycle power plant

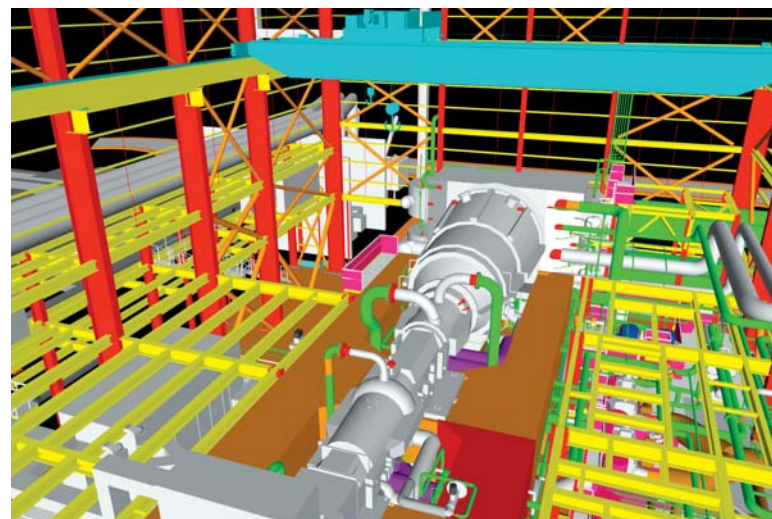
Gas Turbines and Combined Cycle Plants

We apply sophisticated 3-D modelling tools to produce highly integrated, detailed plant designs. This improves design quality, and reduces construction time for your investment. These tools also allow operations and maintenance aspects, such as equipment accessibility, to be considered during the design stage.

Combined Cycle Power Plants

As the most efficient of the currently available thermal power generation technologies, gas turbine based combined cycle power plants are the technology of choice for flexible, utility scale power generation. Apart from the high efficiency compared to traditional steam boiler plants, combined cycle plants offer advantages in terms of their relatively low environmental impact, high level of flexibility and shorter project implementation times.

METKA's experience covers both single shaft and multi shaft configurations, and a wide range of gas turbine models including both heavy duty industrial and aeroderivative types. Single shaft configurations, with the gas turbine and steam turbine on the same axis, connected to a single generator, have an advantage in terms of the compact layout. Multi shaft configurations may have one or more gas turbine generators, together with a single steam turbine generator. Our most recent projects are based on the latest generation "F" class gas turbine technology from the leading OEMs, including GE, Siemens, Alstom and Ansaldo, providing extremely high plant efficiency.



METKA combined cycle solutions use well-established reference plant concepts as a basis for the design, with flexibility to meet client needs, as well as other local market and project specific requirements. We work closely with the power-train manufacturer so that proven product developments, and lessons learned from previous operating experience, can be built into the plant design. The latest technologies and operating philosophies are therefore available in such areas as:

- Plant flexibility, such as start-up / shut-down times and cycling operations to enhance economic dispatch of the plant
- Performance improvements, including techniques, such as natural gas pre-heating, inlet air chilling, part-load efficiency optimization
- Emission controls, using the latest NOx reduction techniques

With experience of numerous combined cycle projects, and several different configuration types, METKA has the expertise to ensure that all plant components are properly selected, leading to a well integrated plant design and reliable long-term plant operation.

METKA has significant expertise in gas turbine based power plants, with a broad range of experience in combined cycle, co-generation and simple cycle projects. We provide our customers with highly competitive combined cycle plants with world-class performance.



*PPC Lavrio Unit V - 378 MW
combined cycle power plant
completed in 2006*

Simple Cycle Power Plants

For peaking duty or fast-track project execution, gas turbine based simple cycle plants are an ideal solution. Both industrial and aeroderivative type gas turbines are widely applied, with the latest generation aeroderivative gas turbines offering efficiencies above 40%. Where appropriate, METKA designs simple cycle plants to facilitate future conversion to combined cycle.

METKA has successfully carried out several projects to provide fast-track simple cycle power generation capacity, with particular experience with aeroderivative type gas turbines.



Mobile gas turbine power generating sets installed in Ghana

Samra 146 MW simple cycle project completed in 8 months on fast-track basis in Zarqa, Jordan

Mobile Gas Turbine Power Plants

Flexible to meet customers' needs, mobile gas turbine power units typically have a unit size of 20-25MW, with complete plants being scalable up to several hundred MW.

METKA has developed a fast-track approach with complete, trailer mounted balance of plant. All packages are delivered in a completely assembled and pre-commissioned form. This solution in particular requires little or no site preparation, and can provide power to the grid in only a few months.



The 320 MW Aluminium of Greece co-generation plant. The plant delivers power to the network and process steam to the alumina plant, which can be seen in the background.

Co-generation

For combined heat and power (CHP) applications, such as industrial steam production and district heating, combined cycle plants can provide very high overall efficiency, and large environmental benefits. Co-generation applications are typically more complex in operation than standard combined cycle plants, due to the requirement to support multiple operating modes, such as large variations in process steam requirements, or changing seasonal heating demand. Strong plant integration and thermal cycle design skills are essential to ensure the co-generation plant can reliably support all required operational needs.

METKA has successfully completed a major co-generation plant project for Aluminium of Greece, the largest co-generation plant of its kind in Europe. The plant produces electricity for the network and a highly reliable steam supply to the adjacent alumina production plant.

Steam Power Plants

Working together with the leading equipment suppliers, our specialist skills and know-how allow us to provide complete, high performance plant solutions.

Conventional Plants

Much of the world's existing power generation capacity is based on traditional steam power plants. The new generation of larger coal fired power plants with supercritical steam technology offers potential for major improvements in plant efficiency. There are also significant opportunities for upgrading of the existing fleet plants to extend lifetime and improve performance.

METKA has several decades of experience in steam power plants projects, and we have participated as consortium partner in the construction of most of the units installed in Greece over the past 30 years. We have a strong background in upgrading/rehabilitation and construction of large lignite fired units, and we manufacture a range of major plant components and equipment in our industrial facilities. Our extensive experience in this area includes complete turn-key solutions for lignite handling and mills, balance of plant, and ash conveying and disposal systems.

Environmental Upgrades

An entire generation of power plants faces a growing range of environmental regulations and increasingly stringent emission controls. At the same time the industry is challenged to boost power plant efficiency, increase availability and extend plant lifetime. We execute projects to improve environmental performance, either by upgrading existing equipment or by installing new state-of-the-art emission control technologies.

METKA as consortium leader with Alstom has completed a series of projects which dramatically reduced particulate emissions from existing lignite fired units throughout Greece. By replacing and upgrading the existing Electrostatic Precipitators (ESPs), as well as by adding new high performance ESPs, we helped the Public Power Corporation to bring plant environmental performance in line with national legislation and the European Directive 2008/01/EC on integrated pollution prevention and control.

METKA has consistently delivered complex and demanding projects to the highest technological standards.



Florina 330 MW lignite fired power plant



Upgrading of the Electrostatic Precipitators for Agios Dimitrios Units I, II, III and IV

Renewables

Hydro Power Generation

Intelligent use of water's potential for hydro power generation can provide cost-effective long term power and significant reductions in carbon dioxide emissions. Pumped storage hydro also helps enable increased penetration of intermittent power sources, such as wind and solar.

METKA has a long-standing presence in hydro power, with a wide range of projects completed over several decades. Our experience ranges from small run-of-river hydro to large pumped storage plants. We have a strong track record in manufacturing major equipment components for hydro applications.

For large hydro projects METKA provides complete solutions for all electro-mechanical works, whilst for small hydro projects METKA delivers the complete power plant on a turn-key basis, including civil works.

The Thissavros pumped storage hydro plant (3x100 MW) in Northern Greece



METKA recognizes the global challenge of climate change and the critical importance of renewable energy sources – such as the sun, wind, water and biomass – for sustainable development. We strongly support the adoption of low carbon technologies and we are committed to continuous development of our capabilities in this area.



METKA EGN solar PV plant in the UK

1 MW solar rooftop installation at METKA's main industrial plant, Volos, Greece.



Solar Power

We aim to apply our specialist industry knowledge to achieve cost competitiveness of renewable technologies with traditional power generation technologies. Our engineering, construction and project management skills enable the economies of scale needed for utility scale adoption of renewables such as solar.

Through METKA EGN, the group is well positioned to meet the challenges of the rapidly growing global solar PV market. METKA EGN is a world-class EPC contractor for utility scale solar PV projects, with a customer portfolio including some of the leading investors in the PV sector. Project references include more than 400MW of medium – large scale PV projects in several countries, including the home market of the United Kingdom, Bulgaria, Greece, Romania and Turkey.

In addition METKA is the owner of two operational photovoltaic (PV) plants, total 3.5MW, installed at its manufacturing plants in Greece.

Turn-key Experience

Gas turbines / Combined cycle

Project	Capacity	Project type	Contractor	Location
PPC Lavrio IV	550 MW	Combined cycle Multi-shaft 3+3+1	METKA - GEC Alstom	Greece
PPC Linoperamata	43 MW	Open cycle	METKA	Greece
PPC Linoperamata	20 MW	Open cycle	METKA	Greece
PPC Chania, Linoperamata, Rhodes (3 units)	84 MW	Open cycle	METKA	Greece
PPC Lavrio V	378 MW	Combined cycle Single-shaft	METKA	Greece
Aluminium Co-Generation	320 MW	Co-generation Multi-shaft 2+2+1	METKA	Greece
KESC Korangi	220 MW	Combined cycle Multi-shaft 2+1+1 / Open cycle	METKA	Pakistan
Protergia Ag. Nikolaos IPP	430 MW	Combined cycle Single-shaft	METKA	Greece
PPC Aliveri	420 MW	Combined cycle Single-shaft	METKA	Greece
Petrom Brazi	860 MW	Combined cycle Multi-shaft 2+2+1	GE - METKA	Romania
Korinthos Power	437 MW	Combined cycle Single-shaft	METKA	Greece
PEEGT Deir Ali II	701 MW	Combined cycle Multi-shaft 2+2+1	METKA - Ansaldo Energia	Syria
OMV Samsun	890 MW	Combined cycle 2 x Single-shaft	METKA - Power Projects	Turkey
RWE-Turcas Denizli	775 MW	Combined cycle Multi-shaft 2+2+1	METKA - Power Projects	Turkey
PEEGT Deir Azzur	724 MW	Combined cycle Multi-shaft 2+2+1	METKA - Ansaldo Energia	Syria
Shat-Al-Basra	1250 MW	Open cycle	METKA	Iraq
Algeria (3 fast-track projects)	775 MW	Total 38 trailer mounted mobile gas turbine plants	GE - Power Projects	Algeria
Samra Phase III Add-on	143 MW	Combined cycle	METKA	Jordan
Samra fast-track	147 MW	Open cycle	METKA - Power Projects	Jordan
Hassi R'mel I	368 MW	Open cycle	GE - METKA	Algeria
Al Anbar CCGT	1642 MW	Combined cycle Multi-shaft 4+4+2	METKA - METKA Overseas	Iraq
Hassi R'mel II	590 MW	Open cycle	GE - METKA	Algeria
Ameri Energy fast-track	250 MW	10 trailer mounted mobile gas turbine plants	GE - Power Projects	Ghana
Amandi Energy CCGT	192 MW	Combined cycle	GE - Power Projects	Ghana



Steam Power Plants

Project	Capacity	Project type	Contractor	Location
PPC Agios Dimitrios Units I-II	2 x 300 MW	Lignite fired steam	Alstom - Stein - METKA - Biokat	Greece
PPC Agios Dimitrios Units III-IV	2 x 300 MW	Lignite fired steam	EVT-TPE - E.T.E.I. - METKA Mannesmann	Greece
PPC Florina (Meliti Achlada) Unit I	330 MW	Lignite fired steam	Alstom Power	Greece
PPC Megalopolis Unit III	300 MW	Environmental upgrading / Rehabilitation	METKA - Alstom	Greece
PPC Kardias Units III-IV	2 x 300 MW	Environmental upgrading / Rehabilitation	METKA - Alstom	Greece
PPC Agios Dimitrios Units I, II, III, IV	4 x 300 MW	Environmental upgrading / Rehabilitation	METKA - Alstom	Greece

Hydro Power Plants

Project	Capacity	Project type	Contractor	Location
PPC Ilarion / Papadia	2 x 70 MW 1 x 4 MW 1 x 500 kW	Hydro power plants Full electromechanical scope	METKA	Greece
PPC Thissavros	3 x 100 MW	Pumped storage hydro Full electromechanical scope	METKA - Cegelec - Alstom - Vevey	Greece
PPC Ghiona	1 x 8.5 MW	Hydro power plant Full turn-key	METKA	Greece
PPC Pigai Aous	2 x 105 MW	Hydro power plant Full electromechanical scope	METKA	Greece



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