



Company Presentation

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IDENTIFYING ASPROFOS

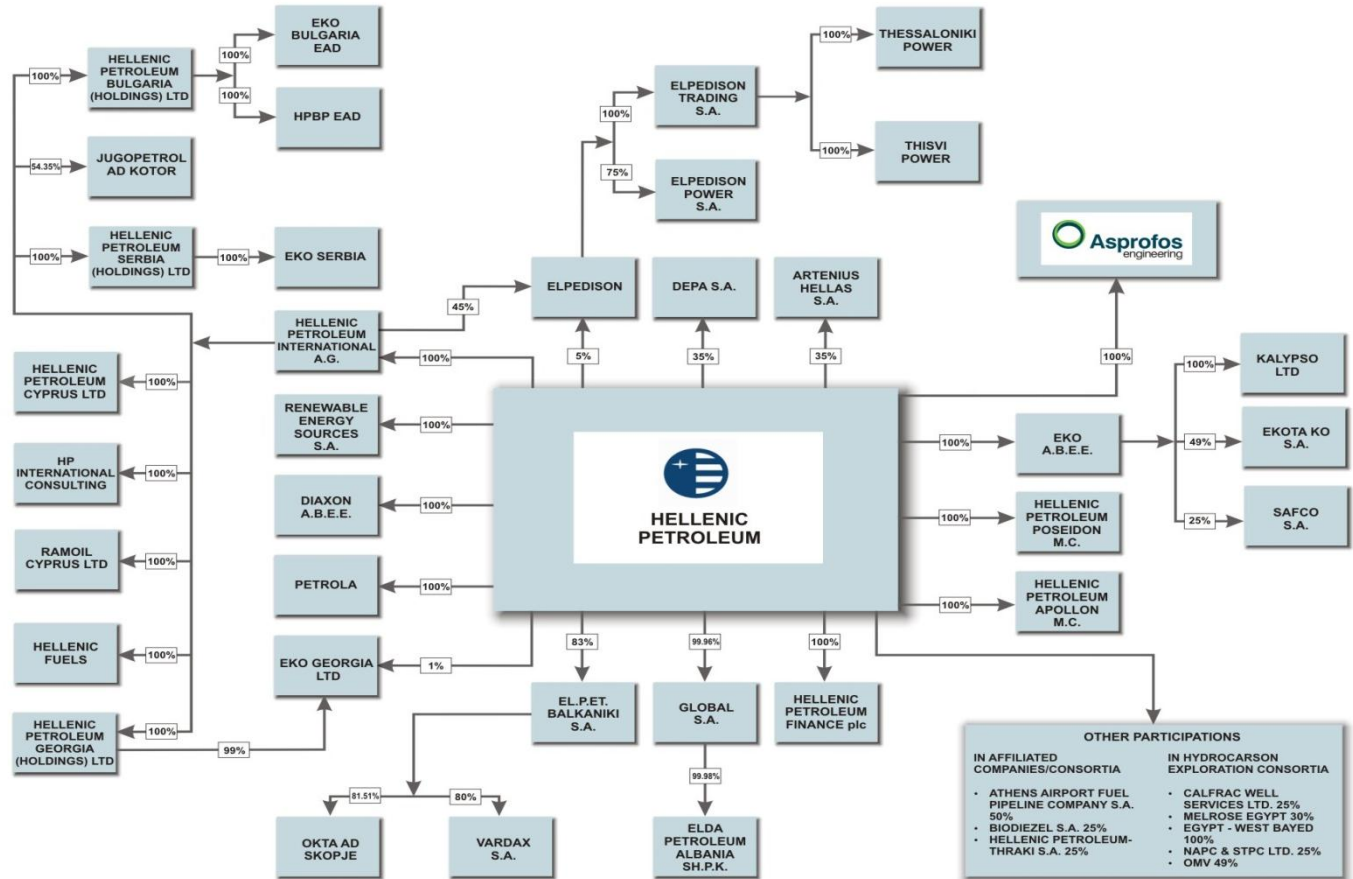
30 Years Engineering Solutions

- The largest engineering consultancy company in Greece
- Established in 1983 as a JV between the Hellenic Aspropyrgos Refinery and Foster Wheeler Italiana
- Member of the Hellenic Petroleum Group of Companies
- Provides engineering and consultancy services predominantly in the Oil & Gas Sectors
- Provides technical and economic solutions that cover clients' project needs



IDENTIFYING ASPROFOS

Hellenic Petroleum Group of Companies



IDENTIFYING ASPROFOS

Mission - Strategy

Our Mission is:

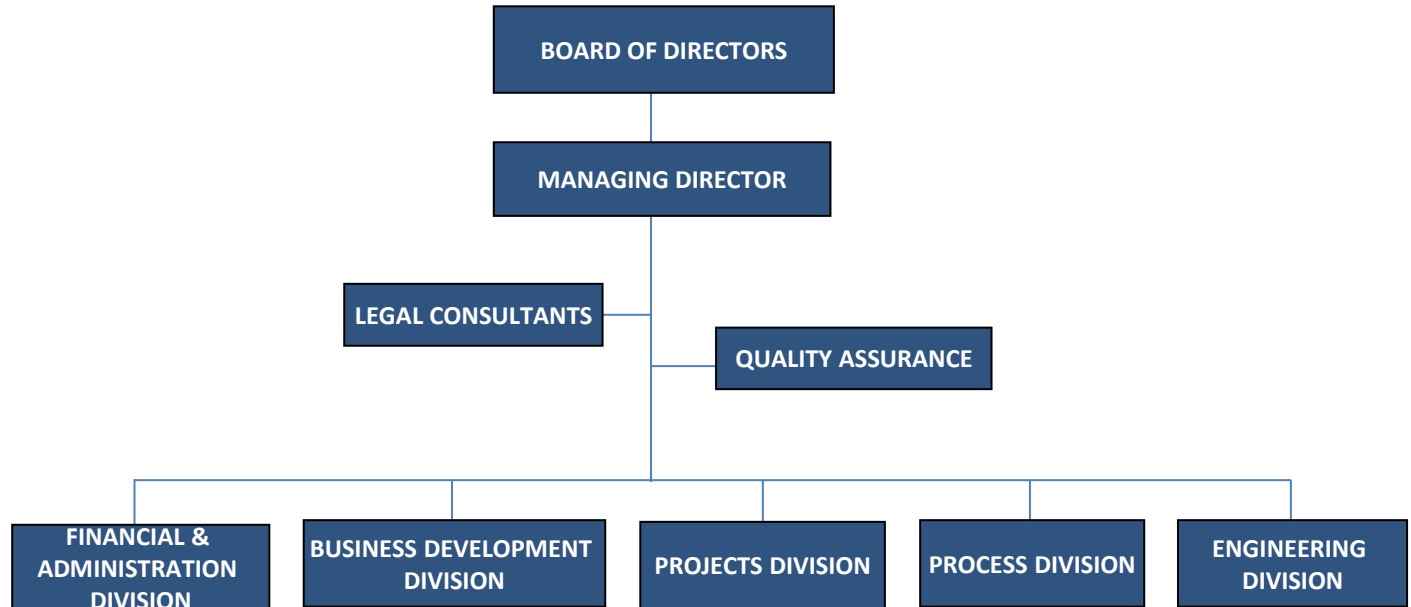
To deliver cost effective engineering solutions internationally, while providing high quality services that exceed our customers' expectations

ASPROFOS strategy is to focus on:

- **QUALITY:** always deliver top quality services
- **COST:** aim for the most competitive costs
- **CUSTOMER FOCUS:** nurture long – term relationships with our customers
- **GEOGRAPHIC EXPANSION:** penetrate new market areas

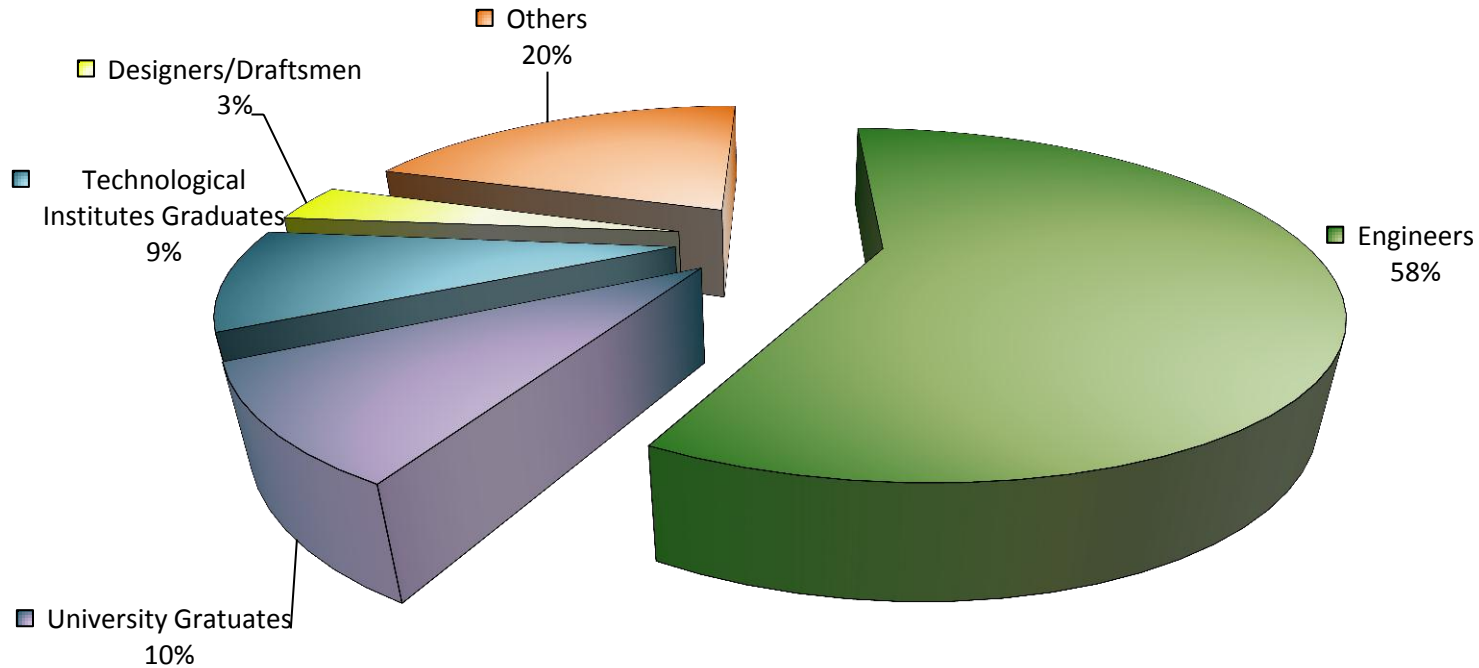
IDENTIFYING ASPROFOS

Asprofos Organization



IDENTIFYING ASPROFOS

Asprofos Personnel



A workforce of 198 persons

FIELDS OF EXPERTISE

Oil, Gas & Power Plant Sectors

REFINERIES



NATURAL GAS



STORAGE TERMINALS



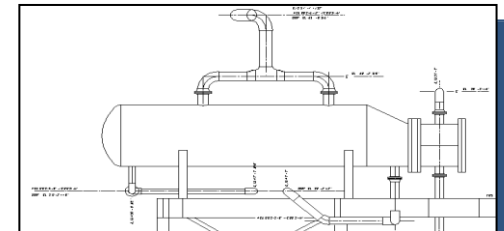
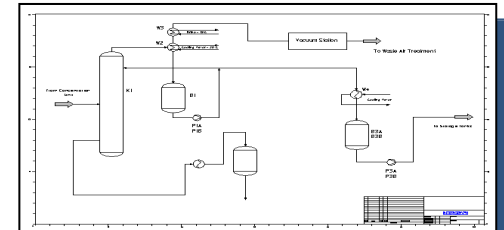
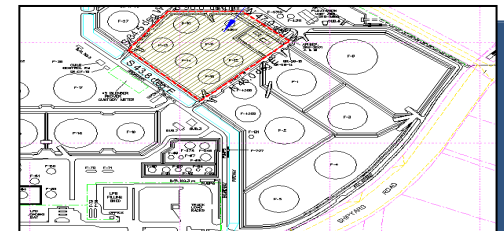
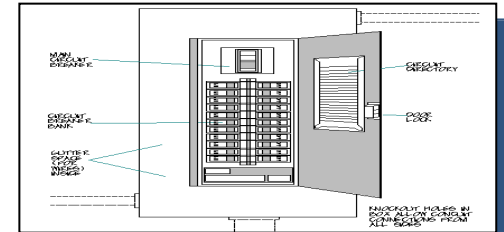
POWER PLANTS



FIELDS OF EXPERTISE

■ Services

- *Feasibility Studies*
- *Technology / Licensor Selection*
- *Basic Design*
- *Front End Engineering Design (FEED)*
- *Detailed Engineering*
 - *Process*
 - *Piping*
 - *Stress Analysis*
 - *Civil*
 - *Mechanical*
 - *Electrical*
 - *Structural*
 - *Instrument & Automation*
- *Review of Basic & Detailed Engineering*
- *Project Management Consulting*
- *Procurement Services*
- *Construction Supervision and Management*
- *Planning & Cost Control*
- *Commissioning, Start-up & Training Support*
- *Owner's Engineer*
- *EPC Bid Support*
- *Dynamic Simulation* **new**



FIELDS OF EXPERTISE

■ Dynamic Simulation

Includes:

- *All process equipment commissioned with process and mechanical details*
- *Instruments, e.g. valves, controllers, transmitters, alarms, etc.*
- *Piping isometrics (if high fidelity is required)*
- *ESD (Emergency Shut Down) system and any logic required by scope*
- *DCS details e.g. sequencing, complex loops, Advanced Process Control*

Fields of Application

- LNG
- Refineries
- Petrochemicals
- Utilities
- Power Plants



Services

OTS (Operator Training Simulator)

- Development
- Maintenance
- Upgrade
- Management

Dynamic Simulation for

- Design Validation
- “What - if” Analysis
- Process Optimization



FIELDS OF EXPERTISE

■ Owner' Engineer

(Indicative Services upon request)

- *Technical Documents and EPC Tender*
- *Bid Evaluation*
- *Contract Negotiation*
- *Cost Benefit Analysis*
- *Technical Advising / Consultancy Services*
- *Review Engineering Designs*
- *Develop QA/QC plans*
- *Project Management*
- *Procurement Management*
- *Construction Management*
- *Review Commissioning and Testing Procedures*
- *Operation and Maintenance Review*

WHY ASPROFOS?

■ Successful Engineering Solutions

- Extensive know-how in all phases of high complexity projects
- High skilled and experienced personnel
- Flexible structure that enables the successful management of a wide variety of projects
- Focus on understanding and meeting the specific needs of each customer
- Provider of services in cooperation with the Hellenic Petroleum Refineries, such as on – the – job – training, best practices etc.
- ISO Certified:
 - ✓ BS-EN-ISO 9001:2008 for Quality Management System
 - ✓ BS EN ISO 14001:2004 for Environmental Management System
 - ✓ OHSAS 18001:2007 for Occupational Health & Safety Management System
 - ✓ EL0T 1429:2008 for Managerial Capability System (Hellenic Organization Standardization)
- Offering of one-stop-shop services, from permits to start-up

SUCCESSFULLY EXECUTED PROJECTS

- Extensive Experience in Refineries

1

Elefsina Refinery Upgrade Project 2008 – 2013

2

Modernization of Aspropyrgos Refinery 1990 – 2009

3

Upgrade of Thessaloniki Refinery 1999 – 2009

4

Modernization of OKTA Refinery in Skopje 2003 – 2009

SUCCESSFULLY EXECUTED PROJECTS

■ HELPE Elefsis Refinery Upgrading Project 2008-2013

Major involvement during upgrading of Elefsis refinery, with a budget of 1,200 million Euros, which aimed towards optimization of refinery production with simultaneous increase in white products, minimization of wastes and enhancement of safety. The refinery was entirely modernized with the addition of the following new units:

- Vacuum Distillation (44,900 BPSD)
- Hydro cracker (53,000 BPSD)
- Flexicoker (20,000 BPSD)
- Hydrogen Production (125,000 Nm³/hr) and four new boilers.
- Sour Water Treatment (100 t/hr)
- Amine Treatment (400 t/hr)
- Sulphur Recovery (282 tons/day) & Tail Gas Treatment

Services Provided:

- Engagement in Front End Engineering Design
- Detailed Design of Crude Distillation unit revamp
- Detailed Design of offsites facilities with change of service in storage tanks and pumping networks
- Detailed Design of Waste Water Treatment unit, Nitrogen unit, Water Demineralization unit
- Preparation of the Fire Fighting protection network study, the Environmental Impact Study and a Seveso type Safety Study
- Handling the construction permitting issues
- Participation in construction supervision (still on-going)

SUCCESSFULLY EXECUTED PROJECTS

■ HELPE Aspropyrgos Refinery Modernization 1990-2009

New Units:

- Benzene Saturation (20,000BPSD)
- Fluid Catalytic Cracking (42,000BPSD)
- Crude & Vacuum Distillation (54,000BPSD)
- Naphtha Hydrodesulphurization upgrade (25,000BPSD)
- Gas Oil Desulfurization from 40 to 10 ppm (UOP License)
- Propane/Propylene Splitter (50M³/hr)
- Fuel Oil Blender (8,500BPSD)
- Sulphur Recovery upgrade (200t/d)
- Olefin Conversion (100,000MT/Yr)
- TAME (130 T/hr)

Services Provided:

- Project Management
- Basic Design
- Detailed Engineering
- ITB Preparation
- Procurement Services
- Construction Supervision & Start-up assistance



SUCCESSFULLY EXECUTED PROJECTS

■ HELPE Thessaloniki Refinery Upgrade 1999 - 2009

New Units:

- Isomerization (Penex) (8,300BPSD)
- Powerformate Splitter (12,000BPSD)
- Crude Oil Desalter (100,000BPSD)
- Vacuum Distillation (8,000BPSD)
- Diesel Desulphurization to 10 ppm – Ultra Low Sulfur Atmospheric Diesel Oil (Ulsado) (17,800BPSD)
- Desulphurization of Low Pressure Fuel Gas (3,810 Standard m³/hr)
- Polypropylene Production Plant (180,000t/yr)
- Hydrogen Production (6,842Nm³/hr)
- Hydrogen Purification (5,890Nm³/hr)
- Utilities Expansion: 2X35 t/hr Boilers, 2x80 t/h Demineralized Water, 250 t/hr Deaerator/BFWpumps, 6,000 Standard m³/hr Instrument & Plant Air



Services Provided:

- Project Management
- Basic Design
- Detailed Engineering
- ITB Preparation
- Procurement Services
- Construction Supervision

SUCCESSFULLY EXECUTED PROJECTS

▪ HELPE OKTA Refinery Modernization (Skopje) 2003 - 2006

New Units:

- Refinery Upgrading
- Sour Water Stripper (22 m³/hr)
- Gasoil Hydrodesulphurization (8,000BPSD)
- Crude Distillation (Preheating train optimization) (55,000BPSD)
- Sulphur Recovery (12 t/hr)

Services Provided:

- Project Management
- Feasibility Studies
- Basic Design
- Detailed Engineering
- ITB Preparation & Bid Evaluation



SUCCESSFULLY EXECUTED PROJECTS

- Extensive Experience in Oil Pipelines

1

Jet Fuel Pipelines

2

Thessaloniki – Skopje Crude Oil Pipeline

3

Burgas – Alexandroupolis Oil Pipeline



SUCCESSFULLY EXECUTED PROJECTS

■ Jet Fuel Pipeline

Characteristics: 10" / 51,5 km

Services Provided:

- Project Management
- Basic Design
- Preparation of Specifications
- ITB Preparation
- Management of LSTK contractor & Construction Supervision

Client: Athens Airport Fuel Pipeline Company (AAFPC)

Location: Hellenic Petroleum Aspropyrgos Refinery to Athens International Airport



SUCCESSFULLY EXECUTED PROJECTS

■ Thessaloniki – Skopje Crude Oil Pipeline

Characteristics: 16" / 220 km

Services Provided:

- Project Management,
- Follow-up of Basic Design,
- Detailed Design,
- Construction Supervision,
- Commissioning & Start –up of Crude Oil Pipeline and associated Terminal Stations

Client: ELPET VALKANIKI S.A.

Location: Former Yugoslav Republic of Macedonia & Greece



SUCCESSFULLY EXECUTED PROJECTS

■ Burgas – Alexandroupolis Oil Pipeline

Characteristics: 36" / 120 km

Services Provided:

- Routing Design,
- Project Management,
- Authorities & Permits Coordination,
- Environmental Impact Assessment,
- Consulting Services for Basic Design
- Project Control Services

Client: ILF & DEP-Thraki

Location: Alexandroupolis, Thrace, Evros Prefecture, Bulgaria



SUCCESSFULLY EXECUTED PROJECTS

- Extensive Experience in Natural Gas

1 Trans Adriatic Pipeline Project 2012 - 2014

2 Main National High Pressure Natural Gas Pipeline

3 High Pressure Branch lines

4 Metering & Regulating Stations

5 Medium Pressure Branch Pipeline

SUCCESSFULLY EXECUTED PROJECTS

■ Trans Adriatic Pipeline Project



The Trans Adriatic Pipeline is designed to transport natural gas from the Caspian Sea via Greece and Albania and across the Adriatic Sea to Italy. The project is aimed at enhancing security of gas supply as well as diversification of gas supplies for the European markets.

Services Provided:

- Investigation of Environmental & Social Baseline
- Route Verification
- Stakeholder Engagement
- Environmental & Social Impact Assessments
- FEED – Basic Design
- ITB Preparation
- Geotechnical Investigation / Studies
- Block Valve Station Design
- Technical Consultancy to E.ON
- FEED Project Management

Client: E.ON New Build & Technology GmbH

Location: Greece, Central and Eastern Macedonia



SUCCESSFULLY EXECUTED PROJECTS

■ Main National High Pressure Natural Gas Pipeline

Capacity: 36" / 104 km and 30"/ 411 km : Total 515 km (including the construction of 32 Scraper and Line Valve Stations)

Services Provided:

- Basic Design
- Detailed Engineering
- Permits Acquisition
- Technical Evaluation of Bids
- Construction Management Services
- Review of Vendor Drawings
- Contract Administration Services
- Services on Quality Matters
- Services on Safety
- Close Out Activities
- Final Documentation packages
- Pipe Log Books



Client: Public Gas Corporation of Greece – DEPA S.A.

Location: Pipeline routing begins from the Greek-Bulgarian Border and ends in the Attica area.

SUCCESSFULLY EXECUTED PROJECTS

■ High Pressure Branchlines

17 Projects of 790km in total ranging from 10 – 36” and from 70 – 150 barg

Services Provided:

- Basic Design
- Detailed Engineering
- Permits Acquisition
- Construction Supervision Services
- Contract Administration Services
- Services on Quality and Safety
- Close Out Activities



Clients:

- Public Gas Corporation of Greece - DEPA S.A.
- Hellenic Gas Transmission System Operator - DESFA S.A.
- GHIZZONI S.A. (Italy)
- IGI Poseidon S.A.



SUCCESSFULLY EXECUTED PROJECTS

■ Metering & Regulating Stations

42 Metering, Regulating, M/R Stations

Services Provided:

- Basic Design
- Review of Contractor's Detailed Engineering
- Technical Evaluation of Bids
- Construction Management Services
- Contract Administration
- Quality Services
- Safety Services
- Close Out Activities



Clients:

- Public Gas Corporation of Greece - DEPA S.A.
- Hellenic Gas Transmission System Operator - DESFA S.A.

Location: Greece



SUCCESSFULLY EXECUTED PROJECTS

■ Medium Pressure Branch Pipeline

11 Projects of 360km of 19 barg each

Services Provided:

- Construction Management Services
- Contract Administration Services
- Services on Quality Matters
- Services on Safety
- Close Out Activities
- Pre- commissioning Site Inspection



Client: Public Gas Corporation of Greece - DEPA S.A.



SUCCESSFULLY EXECUTED PROJECTS

- Experience in Storage Terminals

1 New Crude Storage Tanks & Interconnecting

2 Vassilikos Tank Terminal



SUCCESSFULLY EXECUTED PROJECTS

▪ New Crude Storage Tanks & Interconnecting

Capacity: 2 Tanks x 80.000 m³

Services Provided:

- Project Management
- Basic Design
- Preparation of Specifications
- ITB Preparation
- Management of LSTK Contractor
- Construction Supervision

Client: Hellenic Petroleum Thessaloniki Refinery

Location: Thessaloniki



SUCCESSFULLY EXECUTED PROJECTS

■ Vasilikos Tank Terminal Project (Cyprus)

Characteristics: 40 Tanks / Final Total Capacity of 858,000 m³

Services Provided:

- FEED Services
- Detailed Engineering Review
- Cost Estimation Services

Client: VTTI / VTT Vasilikos

Location: Vasilikos, Cyprus



INTERNATIONAL EXPERIENCE

■ Croatia

- ✓ **CDU Environmental & Efficiency improvement in Rijeka Oil Refinery (July 2013 – On going)**

Services Provided:

- Detailed Design
- Budget Estimate
- Basic Design
- Construction Supervision
- Health Safety and Environmental Studies
- Project Management



- ✓ **Amine Unit Installation in Rijeka Oil Refinery (July 2014 – On going)**

Services Provided:

- Detailed Design
- Budget Estimate
- Basic Design
- Project Management



Client: INA

INTERNATIONAL EXPERIENCE

▪ Serbia

✓ Vacuum Distillation Unit Revamp (1996-2004)

Services Provided:

- Basic Design-Process Simulation
- Detailed Engineering
- Project Management
- Procurement Services
- Construction Supervision
- Start Up Assistance

✓ Feasibility Study and Basic Design for the R.O.V. Project (March 2013-June 2013)

Services Provided:

- Budget Estimate
- Basic Design
- Health Safety and Environmental Studies
- Feasibility Study
- Project Management

Client: NIS – NAFTGAS PROMET / Pancevo Refinery



INTERNATIONAL EXPERIENCE

■ Cyprus

✓ Organization Study of TSO Cyprus (August 2005-September 2006)

Services Provided:

- Project Management,
- Consulting and Marketing

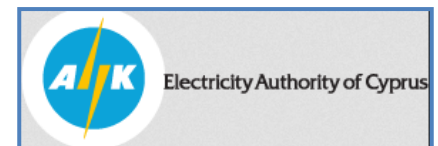


Client: Transmission System Operator - Cyprus

✓ Reengineering of EAC, Organization Improvements and Technical Consultancy Support Services (January 2006 – July 2012)

Services Provided:

- Organizational Structure Study – re-engineering
- Project Management
- Economical / Technical Consultancy



Client: Electricity Authority of Cyprus (EAC)

INTERNATIONAL EXPERIENCE

■ Cyprus

- ✓ **Technical, Economical Consultancy Services, EAC's Preliminary Tariffs Study, Review Examination & Analysis of EAC's Tariffs (October 2004 – March 2007)**

Services Provided:

- Technical / Economical Consultancy
- Project Management

Client: Cyprus Energy Regulatory Authority



INTERNATIONAL EXPERIENCE

■ Malta

- ✓ **Feasibility Study for Connecting Malta to European Gas Network (April 2014-January 2015)**

Services Provided:

- Feasibility Study
- Project Management

Client: Equinox Advisory LTD



- ✓ **Process Design Review for Malta LNG Flare System (February 2015-June 2015)**

Services Provided:

- Basic Design
- Project Management

Client: J&P Avax



INTERNATIONAL EXPERIENCE

▪ Saudi Arabia

- ✓ Services for Pipeline Stress Analysis to Increase Pump Reliability (November 2013-February 2014)

Services provided:

- Detailed Design
- Project Management

Client: MTMM Engineering Consultancy

▪ Sri Lanka

- ✓ Consultancy Services for Construction of A1 Transfer Pipeline (September 2015-On going)

Services provided:

- Feasibility study
- FEED
- Budget Estimate
- ITB preparation
- Technical Bid Evaluation
- Project Management

Client: Ceylon Petroleum Corporation

INTERNATIONAL EXPERIENCE

■ Jordan

✓ Services for CDU HEAT RECOVERY AUDIT (November 2015 - On going)

Services provided:

- Process Simulation
- Optimization of pre-heat train with addition of new heat exchangers
- Examine Distillation Tower Temperature Profile
- Determine the proper location for the PLATE heat exchanger
- Project Management

Client: Jordan Petroleum Refinery Company



SUCCESSFULLY EXECUTED PROJECTS

Service: EPC Bid Support

- ✓ **Technical Support for offer preparation in Ain Sokhna Complex, Egypt (May 2014)**

Client: Archirodon

- ✓ **Engineering Services for Tendering Purpose, Ma'aden, Saudi Arabia (November 2013)**

Client: J&P Overseas



SUCCESSFULLY EXECUTED PROJECTS

■ Experience in Power Plants

1

390MW CCPP

2

400MW CCPP

3

13MW CHP

4

5.5MW Steam Power Generation Plant

SUCCESSFULLY EXECUTED PROJECTS

■ Combined Cycle Power Plant

Capacity: 390 MW

Services Provided:

- Project Management
- Contractor's Engineering Follow-up
- Construction Supervision
- Environmental Impact Assessment
- Basic Design of surrounding installations
- Permit Engineering for Installation and Operation



Client: Thessaloniki Energy – ELPEDISON

Location: Thessaloniki, Greece



SUCCESSFULLY EXECUTED PROJECTS

■ Combined Cycle Power Plant

Capacity: 400 MW

Services Provided:

- Preparation for Power Generation Permit
- Site Preparation Study for installation
- Environmental Impact Study

Client: Public Gas Corporation –DEPA S.A.

Location: Revithoussa, Greece



SUCCESSFULLY EXECUTED PROJECTS

■ Combined Heat and Power

Capacity: 13 MW

Services Provided:

- ITB Preparation for Steam Turbine
- Pre-Feasibility Study for the selection of alternative solutions for power production
- Feasibility Study for Cogeneration with Internal Combustion Engines
- Basic Design for Cogeneration Unit with Internal Combustion Engines.

Client: Public Gas Corporation –DEPA S.A.

Location: Revithoussa, Greece



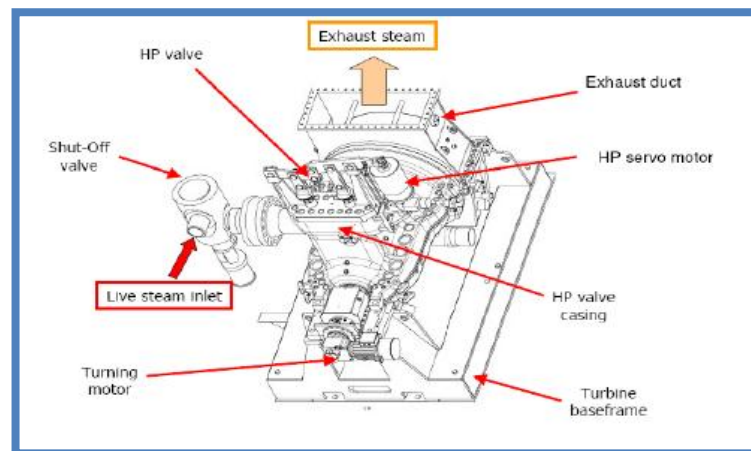
SUCCESSFULLY EXECUTED PROJECTS

■ Steam Power Generation Plant

Capacity: 5,5 MW

Services Provided:

- ITB Preparation,
- Technical Bid Evaluation,
- Installation Permit Engineering
- Contractor's Follow-up



Client: Hellenic Petroleum S.A. (Thessaloniki Industrial Complex)

Location: Thessaloniki Industrial Complex



THANK YOU FOR YOUR ATTENTION

For more information about ASPROFOS Engineering S.A.,
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or

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