



OFFSHORE WIND ENERGY DEVELOPMENT IN THE ADRIATIC SEA: THE P.O.W.E.R.E.D. PROJECT AS PLANNING POLICY

Università Politecnica delle Marche, Ancona, May 2013

SIMAM SpA **COMPANY PRESENTATION**

Author:

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Organization:



SIMAM

Company Presentation



- **SIMAM** is an Italian Engineering and Construction Company committed to provide its Clients with efficient and cost-effective solutions through evolving know-how, innovative approaches and proven practices tailored to Clients' needs in an ever increasingly complex and challenging environment.
- **SIMAM** operates since more than **18** years and employs over **140** skilled technicians providing a full range of Engineering, Procurement, Project Management and Construction services for the most important Companies in Italy and abroad as well, in the field of Oil & Gas Industry (Exploration, Drilling, Refining, Transportation), Petrochemical Plants, Industrial Facilities and Power Generation



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SIMAM MAIN CLIENTS



Eni SpA

Syndial SpA

Polimeri Europa SpA

ENI Div. R&M

ENI Div. E&P

Enipower SpA

Saipem SpA

Snam Rete Gas SpA

Italgas SpA

Stogit SpA

Enel SpA

Terna SpA

Yara SpA

Sasol SpA

Elettra Produzione SpA

Hera SpA

Herambiente SpA

Edison SpA

Poste Italiane

Croce Rossa Italiana

Edison SpA

Rsi Srl

API Raffineria d'Ancona

API Anonima Petroli

Italiana

Tamoil SpA

Saras SpA

Ies SpA

Fox Petroli SpA

Rfi SpA (Ferrovie Italiane)

Sogesid SpA

Gas Natural Italia SpA

Renco SpA

Bonatti SpA

Veritas Venice

Italian Ministry of

Environment

Regione Lombardia

Regione Marche

Regione Sardegna

Italian Army

Sviluppo Italia (Invitalia)

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SIMAM social responsibility policy

- The SIMAM social responsibility policy is based on being a responsible company for its stakeholders.
- SIMAM issued in 2010 its Charter of Values, defined to present the values and principles that guide SIMAM in its business affairs, as well as outlining the rights and obligations and behavioural standards adopted by the company, with the aim of reinforcing the company's values.

This Charter of Values will later be used to create a true Company Ethical Code.

- SIMAM socially invests in the territories in which operates to help the promotion of the individual and sustaining future growth paths. With this ethic conviction SIMAM has given life to the Foundation “Maria Grazia Balducci Rossi per i più bisognosi”, which operates for the creation and development of solidarity projects for the population of Yakassé in Ivory Coast.

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- SIMAM enjoys a competitive position for the provision of customized and integrated engineering services meeting and exceeding Client expectations with a particular focus on

- ▶ Environmental Engineering
- ▶ Water Treatment
- ▶ Waste Management
- ▶ Power Generation
- ▶ Fluid Transportation

ensuring services of international standard for a wide range of activities

- Engineering & Consulting Services
- Plant Design and Construction
- Global Service
- HSE Management Systems
- Training of Personnel
- Research and Development

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■ REGISTERED OFFICES in Italy

HEAD Office

■ **Senigallia**
Via Cimabue 11/b
60019 AN ITALY
Ph. + 39 071 6610040
www.simamspa.it

Branch Offices

■ **Porto Marghera**
■ **Venezia**
■ **Assemini - Cagliari**
■ **Augusta - Siracusa**



■ BRANCH-OFFICES, SUBSIDIARIES ABROAD

- **CHINA** – Technological Development Zone XiangHe
- **CROAZIA**- SIMAM d.o.o. - Zagreb
- **CÔTE D'IVOIRE** - SIMAM Côte d'Ivoire S.A.- Abidjan
- **SÉNÉGAL** - SIMAM Senegal S.A. - Dakar

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CERTIFICATIONS

SIMAM is certified according to **ISO 9001:2008** and **ISO 14001:2004** standards and **BS OHSAS 18001:2007**



PUBLIC WORKS

SIMAM is qualified by CQOP (Qualified Certifying Agency for Public Works):



Category OS 22 Class VI: Potabilisation plants and water purification

Category OG 12 Class VI: Environmental Reclamation and Clean-up

Category OG 9 Class III: Plants for the production of electric energy.

ENROLLED IN THE LIST OF RESEARCH LABORATORIE

SIMAM is enrolled *in the Italian Research Laboratories Register*, instituted by the Ministry of Education, University and Research as per Article 14, Paragraphs 9-15 of the Ministerial Decree No. 593 dated 8 August 2000.

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NATIONAL REGISTER OF CERTIFIED COMPANIES DEALING WITH WASTE MANAGEMENT

Simam SpA is registered in the National Register of Environmental Activities Operators (Albo Nazionale Gestori Ambientali) for the following categories:

- **Category 8 D:** Waste intermediation
- **Category 9 A:** Clean-up/Reclamation of sites under the DM n° 406/98
- **Category 10 A:** Environmental activities for asbestos removal



Ministero dell'Ambiente e della Tutela del Territorio e del Mare

Albo **N**azionale
Gestori **A**mbientali

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ENGINEERING & CONSULTING SERVICES

- ◆ Feasibility studies
- ◆ Basic and Process Design ,
- ◆ Detail and construction design
- ◆ Permitting process management
- ◆ Procurement
- ◆ Project Management and Work Direction
- ◆ Project Planning and Monitoring,
- ◆ Construction Site Supervision.



Professionals and multi-disciplinary specialists of SIMAM have accumulated extensive and diversified international experience in implementing major industrial projects worldwide.

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◆ Basic & Construction Design Power Generation Plant

EDISON SpA – Corinaldo Thermal Power Plant – 870 MWE

Basic Design and Authorization process management of Thermal Power Plant (Combined Cycle Power Plant) in Corinaldo (Ancona) – 870 Mwe + Aerial 380 kV Power transmission line (17km)+ DN 400 (16") Feeding gas pipeline (8 km – 75bar)



EDISON SpA – Gagliole Wind Farm – 18 MWe

Detail Engineering, Environmental Impact Assessment and Authorization process for development of a Wind Farm in Gagliole (Macerata) Italy – 9 wind turbines of 2,5 MWe capacity + 10Km Buried 20 kV Power Line



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➤ Basic & Construction Design *Oil & Gas Pipelines*

- **Snamprogetti** -Detail Engineering Gas Pipeline Chiuro-Tirano -DN 14" - 12 bar – 15 km
- **Snam Rete Gas** – Construction Engineering River crossings by HDD method
- **Adriatic LNG** – Detail Engineering on-shore Pipeline DN 30" – 85 bar – 15 km – Wet-lands



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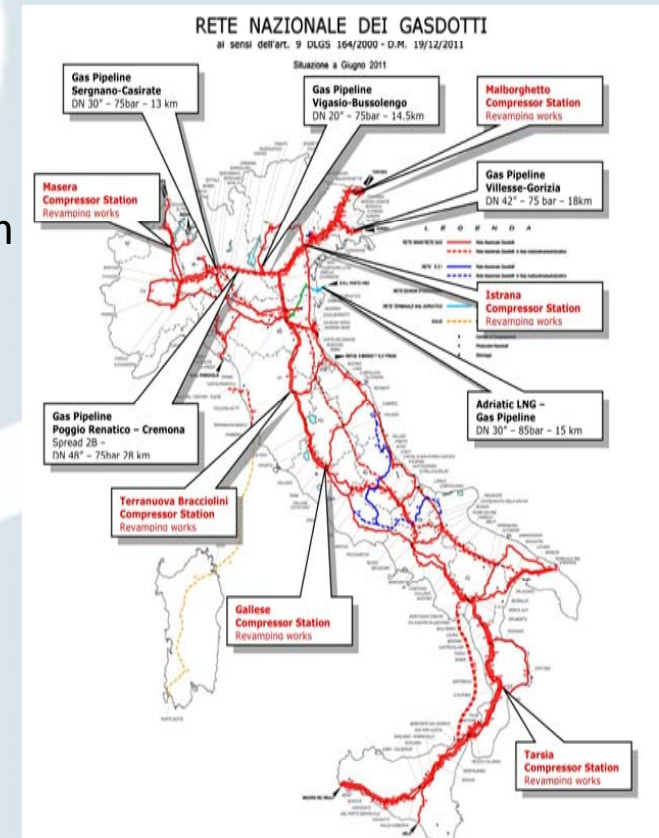
◆ Project Management - Project Direction Gas Transmission

● **Snam Rete Gas - Pipeline Construction**

- Gas Pipeline Poggio Renatico-Cremona -DN 48" – 75bar 28km
- Gas Pipeline Villesse - Gorizia -DN 42" – 75bar 18km
- Gas Pipeline Sergnano-Casirate DN30" – 75 bar 13km
- Gas Pipeline Vigasio-Bussolengo DN20" – 75 bar – 14,5 km

● **Snam Rete Gas - Compressor Station Revamping Works**

- Masera Compressor Station
- Istrana Compressor Station
- Terranuova Bracciolini Compressor Station
- Tarsia Compressor Station
- Malborghetto Compressor Station
- Gallese Compressor Station



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ENVIRONMENTAL REMEDIATION AND RESTORATION

Environment Evaluation Studies and analysis:

- Environmental characterization survey, including geological, geotechnical and hydro geological investigations and diagnosis
- Assessment of the environmental impact
- Air, soil, groundwater and surface monitoring

Remediation and Restoration of contaminated sites, Plant Decommissioning and Demolition:

- Decommissioning and Remediation Design
- Project Management and Project Direction,
- Site testing & monitoring
- Work Supervision
- Management of Environmental actions.



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WATER TREATMENT

SIMAM provides Engineering Services and Construction for:

- Sewage treatment plants
- Raw water treatment, water treatment and desalination plants
- Mobile Water Treatment Units
- Filtration Systems
- Landfill Leachate Treatment
- Groundwater Treatment
- Management of public and private waste facilities



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WASTE MANAGEMENT AND DISPOSAL

SIMAM provides Waste Management and Disposal Services for third parties:

- ▶ Global Service for Management of Site reclamation and waste disposal contracts
- ▶ Consultancy services and Management of contracts for waste management of abandoned industrial sites
- ▶ Consultancy services and Management of contracts for on-site waste processing
- ▶ Waste agency services for national and foreign sites
- ▶ Consultancy services for Management of waste cycle and cross-border practices.

All management services are provided by Simam Professionals and multi-disciplinary specialists who have accumulated extensive and diversified national and international experience. Full service operations are provided in partnership with leading Italian and foreigner companies.

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GLOBAL SERVICE

Construction of Treatment plants on “turnkey” basis, including plant operation and management.

- Water treatment for Civil and Industrial use
- Ground water treatment
- Water filtration by means of advances and innovative process
- Purification of civil and industrial waste water
- Sludge Treatment
- Disposal and recovery of industrial and civil solid waste.



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HSE MANAGEMENT SYSTEMS

- Health and Safety Consultancy Services
- Risk Analysis / Loss Prevention Analysis / Hazop/Hazid analysis
- Health and safety in mining and extraction industries
- Fire Fighting/Fire Safety Engineering
- Safety Supervision and coordination at construction sites



Engineering and consultancy services are provided by high experienced engineers and experts: senior QHSE specialists, junior QHSE specialists, risk analysts, loss prevention specialists, Hazop/Hazid chairmen, leader QHSE auditors, internal QHSE auditors, field engineers, field supervisors.

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TRAINING OF PERSONNEL

SIMAM is certified by the Regional Training Structures, as training authority under the Official Accreditation System (DAFORM).

Training programmes (in-house or external)

- Training programmes for workers exposed to specific and general hazards
- Conferences and workshops on safety
- Compulsory training
- Continuous training
- Advanced training



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RESEARCH & DEVELOPMENT

- SIMAM is enrolled in the ***Italian Research Laboratories Register***, instituted by the Ministry of Education, University and Research as per Article 14, Paragraphs 9-15 of the Ministerial Decree No. 593 dated 8 August 2000.
- SIMAM's R&D Unit is developing research in the field of alternative technology in the areas of water treatment, waste treatment and renewable energy.

GENERATOR

“An innovative wind/solar hybrid street lighting system”



The research project **GENERATOR** is funded by the Italian Ministry of Economic (INDUSTRIA 2015 - Call *Energy Efficiency*)

GENERATOR consortium:

- 4 industrial companies
- 2 University
- 1 research organisation

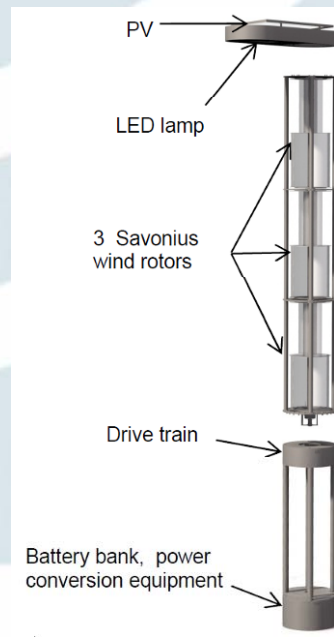
Project Leader: S.C.E. S.r.l.

Scientific Coordinator: UNIVPM

Project closed on December 2011
Experimental data acquisition is currently in progress
for further analysis to industrialize the system

The main objective of the project is to develop an innovative wind/solar renewable hybrid street lighting system (*Generator*).

A full scale prototype of the *Generator* has been installed at Politechnic University of Marche where it has been giving field experimental data in association to a dedicated 10 m meteorological tower which allows a full energy characterization of the hybrid micro-generation system.



ENERCLEAN

“Hydrogen from aluminum combustion”



The research project **ENERCLEAN** is funded by the Italian Ministry of Economic (INDUSTRIA 2015 - Call *Made in Italy*)

ENERCLEAN consortium:

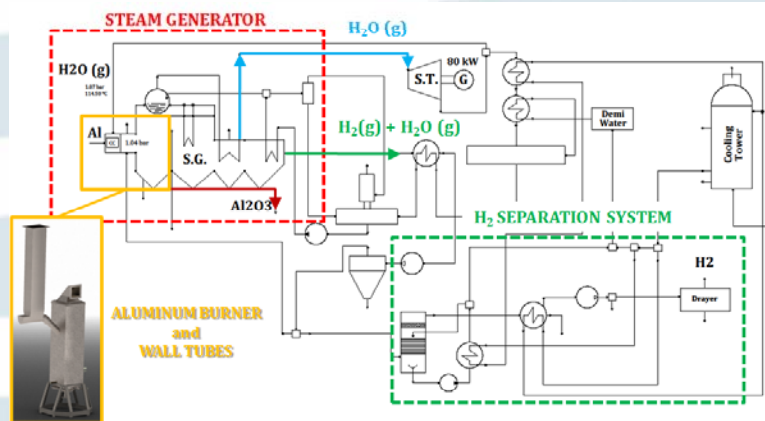
- 7 industrial companies
- 3 University
- 1 research organisation

Project Leader: SIMAM S.p.A.

Scientific Coordinator: DISMI - UNIMORE

Funded Project closed on March 2013
...but research never stopped
recent advancements...
Patent Licensed to SIMAM SpA October 2011 (till 2021)

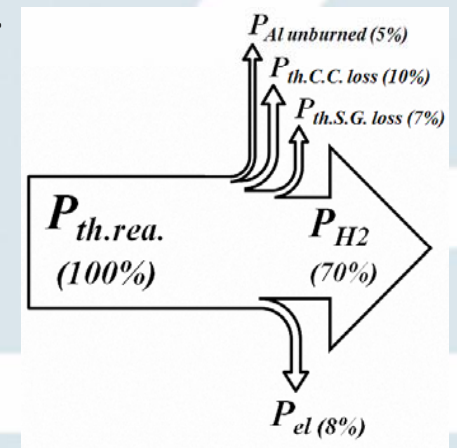
The main objective of the project is to develop a novel energy conversion system based on the products of the combustion of a metallic fuel with water. The system is potentially able to generate simultaneously four secondary energy sources in a fully environment sustainable manner and it can be named as Combined Heat Hydrogen Steam and Power (**CHHSP**).



NUMBERS:

Nominal performance with liquid injection

Al	~ 220 kg/h
H ₂ O	~ 800 kg/h
H ₂	~ 23 kg/h
P _{TH}	~ 1,85 MW



RESEARCH AND DEVELOPMENT

...other SIMAM's projects on developing



SIMAM's R&D Unit conducts research into **alternative technology** in the areas of **wastewater treatment**. Our experimental work focuses principally on:

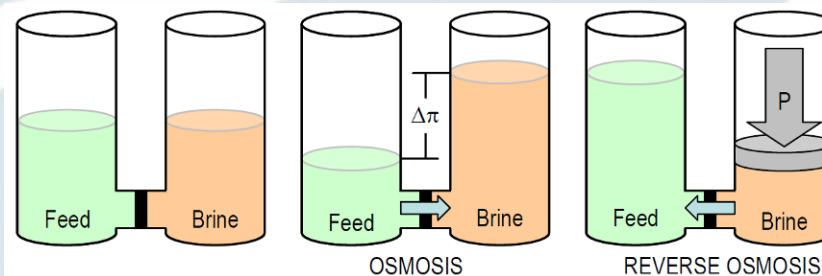
1. Identifying reliable methods for treating types of wastewater that are still not extensively covered by technical literature in the sector
2. Developing and optimizing eco-innovative treatment processes which, as well as being extremely environmentally friendly, make the on-site treatment of liquid waste possible.



FO LAB-SCALE PILOT PLANT
Setted up in the SIMAM Research
Centre located in Senigallia

An example of alternative approach to conventional technologies applied by SIMAM:

FORWARD OSMOSIS



ENERGY RECOVERY FROM BIOMASS

Anaerobic digestion and gasification



Woody biomass,
fuel fractions of MSW



GASIFICATION



Syngas

Sewage sludge, organic
fraction of MSW, livestock
farm slurry



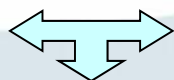
ANAEROBIC DIGESTION



Biogas

ENERGY RECOVERY SYSTEM

Heat recovery
(low temperature)



Heat recovery
(high temperature)

Electric energy

Digestate



Treated Water

ENERGETIC VALORIZATION SYSTEM

Development of an integrated plant scheme including different sections for **energy production** from **renewable energy sources** (biomass).

- **THERMOPHILIC ANAEROBIC DIGESTION** of sewage sludge, organic fraction of MSW and livestock farm slurry

- **GASIFICATION** of woody biomass, fuel fractions of MSW and dried digested sludge

A section of **MEMBRANE FILTRATION** (UF, FO, RO) is expected to treat the digestate.

EXPERIMENTAL TESTS in progress
to analyse the performance and
optimize the process

SIMAM sponsor of P.O.W.E.R.E.D. PROJECT



- Through its subsidiary - Simam d.o.o. - from 2011 **SIMAM** operates in Croatia in the field of environmental engineering and power generation from renewable sources.
- **SIMAM** is proposed as a sponsor of Powered Project and offers support and assistance for the coordination with the Croatian partner and Croatian Institutions.
- Thanks to its technical know-how in the field of Renewable Energy and to a well-established network of partners and local consultants, **SIMAM** proposes to be an effective tool of P.O.W.E.R.E.D. for linking and coordinating with the various entities in Croatia.