

Participant 3 : BESEL, S.A.



Engineering and consultancy company founded in 1984, working in the fields of **energy, environment and innovation**, considered today a reference among Spanish companies in these fields.

It has been involved in several projects and initiatives aimed to the **introduction and promotion of new and more efficient products and solutions**, many of them related to building's energy systems.

Currently, it has got 60-employees, who are working in the 4 main Divisions: R&D, Engineering, Consultancy and International Division.

Relevant projects include:

- **MTG micro-trigeneration**: an internal combustion engine CHP and an absorption chiller
- A small **PEM fuel cell based CHP unit** prototype (3 kWe) running on natural gas.
- **WindCell**: combination of a windmill, a PV array, an electrolyzer and a fuel cell
- **Hy-chain Minitrans**.



Participant 3 : BESEL's Divisions

R+D+i

- RES for H2 production, FC.
- hybrid vehicles.
- Control strategies.
- power electronics.
- Microtrigeneration.
- Energy efficiency and saving.
- Industrial design, etc



Engineering

- Microcogeneration.
- Biomass & solar energy.
- Efficient air conditioning.
- Trigeneration.
- H2 and fuel cell applications.
- distribution of cutting edge products.
- bioclimatic architecture.



Consultancy

- RUE in buildings and industrial processes
- Energy management
- RES and biofuels
- Environment (water management, biofuels, CO2 capture).
- Mobility and Transport
- Training



International

- Consultancy, engineering and R&D in EU, EU newly joined, acceding and candidate countries, Latin America and North Africa
- Projects and transnational consortiums management
- Internationalization. Promotion of joint ventures in third countries.



The New Age Engineering Company



Participant 3 : BESEL's Divisions

I+D+i

Engineering

Consultancy

International

Madrid Headquarters

C/. Monte Esquinza, 14, 2º izqda.

28010 MADRID

Tel: 91 702 52 33

Fax: 91 702 52 31

Leganés

Edificio Parque Científico (Universidad Carlos III)

Avda. Del Mediterráneo 22

28918 Leganés, Madrid

Tel: 91 451 42 56

Fax: 91 498 79 71

Valladolid

Edificio CEEI, Módulo 1.09

Parque tecnológico de Boecillo

47151 Boecillo, Valladolid

Tel: 983 548 240

Fax: 983 546 519

Valencia

Avenida del Saler, 4 – bloque1-oficina 4

Edificio politaria 46013 valencia

Tel: 963162946

Fax: 963959419



The New Age Engineering Company



Participant 3 : BESEL's contribution

Role and contribution of BESEL to the project

WP1. Besel will provide the necessary data for **building energy requirements characterisation**, and information about fluid and electricity connections present in the building. Besel will also manage all the necessary **administrative licences** for plant erection in Spain.

WP3. Besel will contribute to the **electric and thermal connection design**, and will design the roof integration, support structures and methods statement for the **plant integration for the Spanish system**.

WP4. The main role of Besel will be to lead the **construction of the demonstration plants**. This includes manufacturing, integration and installation of the system in Spain, and support of SHAP in the same tasks for the Italian system.

WP5 Testing the Spanish plant and suggesting improvements.

WP6. Assisting with **dissemination** within Spain.



Participant 3 : BESEL's experts

Key personnel involved

Dr. D. David Arzoz del Val Industrial Engineer and Ph.D. in Mechanical Engineering (Universidad Carlos III de Madrid). Dr. Arzoz has a wide experience in Sorption cycles and its use for low thermal level heat from waste and renewable sources utilization and conversion into chilled water. He is Head of Besel Engineering Department. He has participated in several national and international projects involving air conditioning systems based on absorption chillers fed by solar flat plate and evacuated tube collectors, Sub-zero chilled water production from waste heat and renewable sources, water-Lithium Bromide absorber working with monodisperse droplets, and micro-tri-generation system for the residential and commercial sector.

D. Javier Mielgo Carbajo. Industrial Engineer (Universidad de Valladolid). Mr. Mielgo has a large experience in projects related to hydrogen and fuel cells. He is Deputy Manager of the Research and Development Division and person in charge of laboratory work. He has taken part in numerous national and international projects related to energy efficiency, renewable energy systems and fuel cell applications, such as design and development of a hybrid Fuel Cell wheelchair or combination of Fuel Cells and Heat Pumps for the residential sector. He is the author of several articles in specialized publications and has participated in seminars and conferences both in Spain and abroad.



Participant 3 : BESEL. RELATED EXPERIENCES



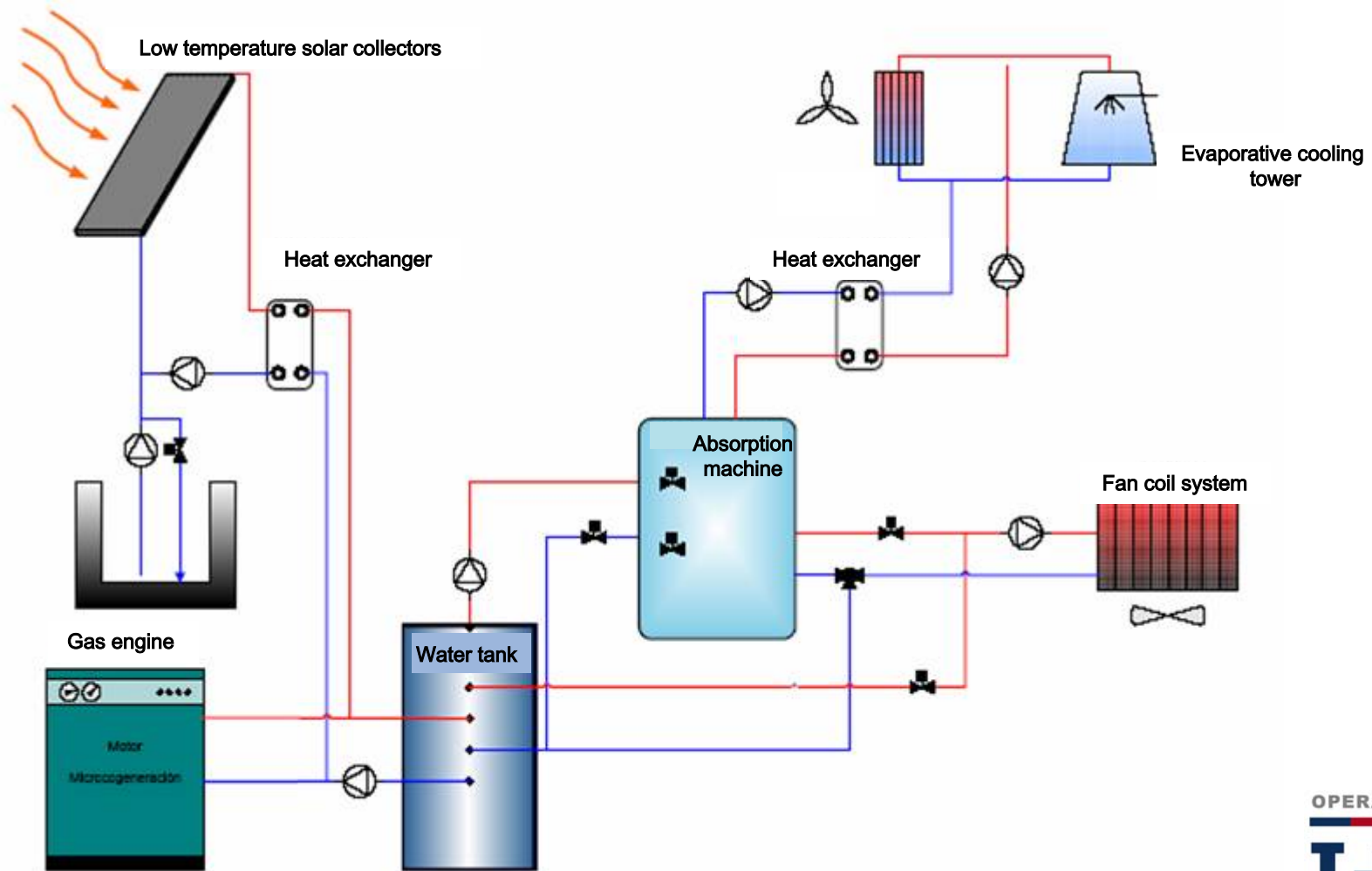
MICRO-POLYGENERATION PROJECT

- Gas Engine
- New absorption machine

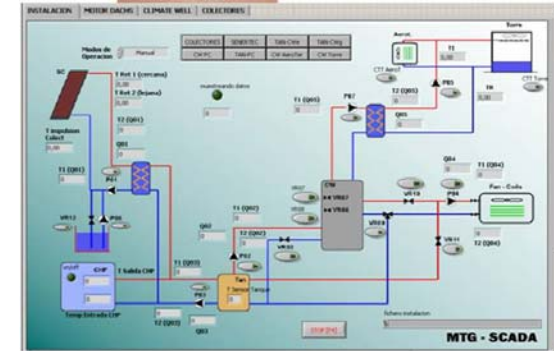
Target: development of an integrated micro-polygeneration system for low consumption applications

- High efficiency
- Environmentally friendly solutions
- Economically advantageous

Participant 3 : BESEL. RELATED EXPERIENCES



Participant 3 : BESEL. RELATED EXPERIENCES



Participant 3 : **BESEL. RELATED EXPERIENCES**

BIOPOLYGENERATION PROJECT

Research and development of a renewable micro-trigeneration system for residential sector:

Polygeneration by biomass, with Stirling engines and absorption cycles



Participant 3 : BESEL. RELATED EXPERIENCES

OBJECTIVE:

Assembly of an integrated system of micro-trigeneration for small consumers:

Highly efficient

Renewable

Economical Viable

The installation will be capable to supply to the final user:

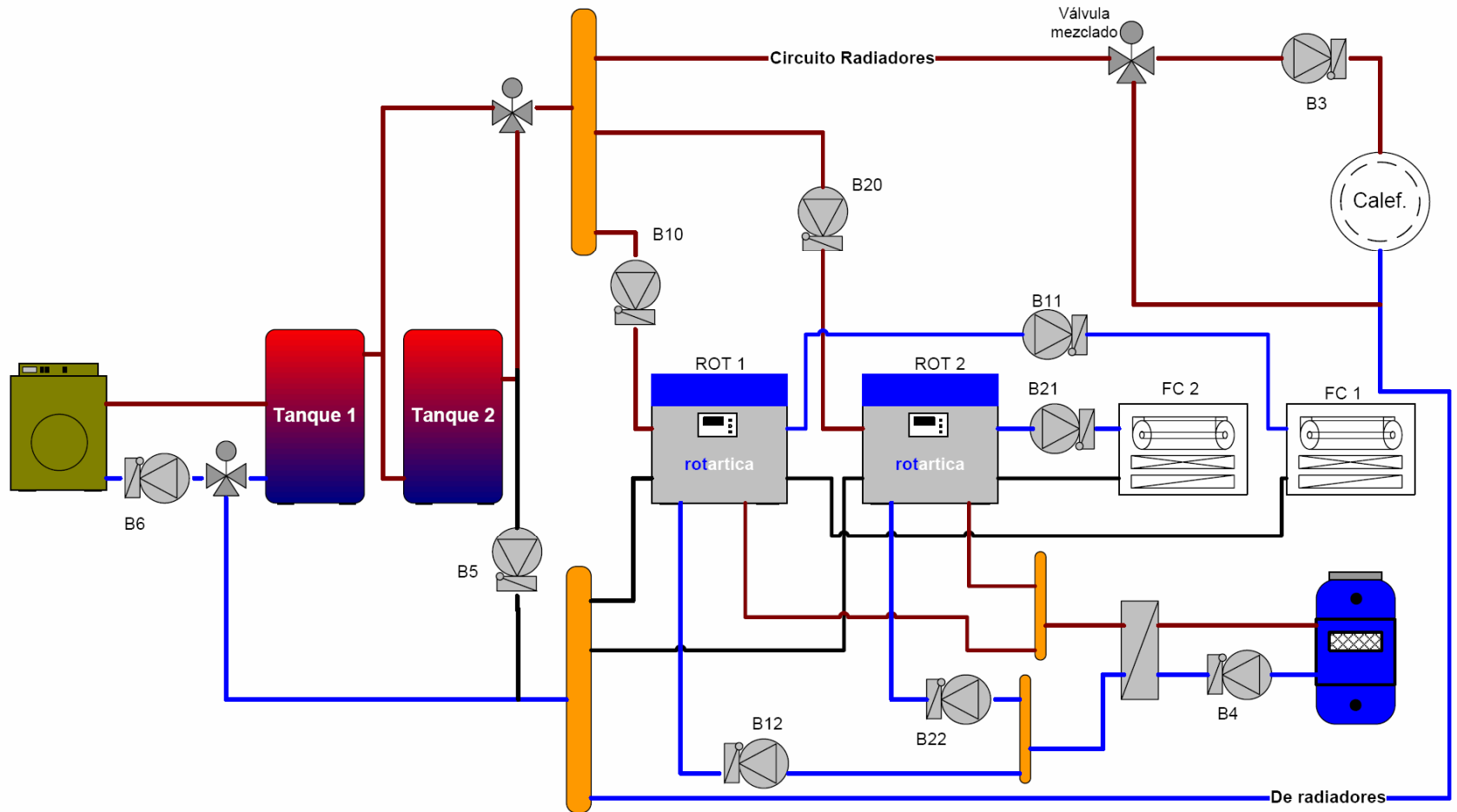
Electricity

Climatization

Hot water

All by mean of a combination of a combustion system based on biomass, a Stirling engine and the absorption technology for cold generation from heat.

Participant 3 : BESEL



Participant 3 : **BESEL, S.A.**

Thank you very much for your attention

