Heating and Cooling
in a centralized conditioning system running 24/7

(Solar Cooling-NG + focal mirror Archimédes OR Cogen + Solar Cooling-NG + focal mirror Archimédes)

A shopping center or a mansion has the need to cool off appliances and rooms or to heat up rooms during day and night and supply warm water. However, during the day it experiences two types of extra thermal load or thermal loss depending upon the season, due to peoples rushing in and out, as well as increased building heat-up due to extended sunshine IR-radiation or loss of heat during cold weather.

Currently, in order to maximize efficiency, a modulated base-load electric power auto-generation configuration has to be maintained during day and night 24h/7 feeding air conditioning equipment (cold and heat) with electricity.

There are 2 solutions to Hamletian's dilemma around the 24h:

Solution -1- as day-night business concept:
Solar-NG "Kalina 24KW a +5°C cold water gen" + Solar *Archiméd s* focal mirror system @350°C, MAKING COLD ONLY:

During the day all the power or just the extra power as needed is taken from the sun directly. In the night methane is burned in the machine directly.

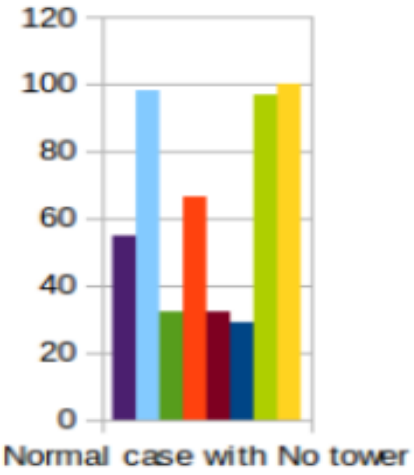
a- Our PARALLEL installable multiple Kalina Solar Cooling Chillers (operating as Solar Cooling via our solar focal concentration system *Archiméd s* or directly firing Natural-Gas at night, so-called Solar-NG, come with a cooling tower if the roof is big enough; white certificates
b- our Solar-NG multiple units Kalina, is a mini chiller intaking 34KW-thermal from 6 solar focal concentration system (*Archiméd s*) or fumes and hot water of a methane-engine producing 20KW of electricity and it delivers 24KW-thermal @+5°C of cold water to be used to drive cold over a centralized air conditioning. This unit can run on methane (NG) during the night also. Several Solar-NG units can be installed on a roof. The unit is cooled off by air (integrated or external tower). It uses up to 1KW of electric power. It uses a proprietary energy carrier.
• 3,75m³ /h of methane supply
• the efficiency is >66%
• dual operations collecting the sun or burning methane.

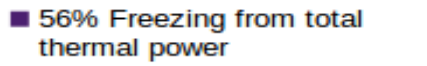
Solution -2- as day-night business concept:
Micro Cogeneration Engine "Sampo" firing methane + "Kalina 24KW +5°C cold water gen" + warm water + Solar system *Archimédes* @350°C, MAKING COLD OR HEAT:

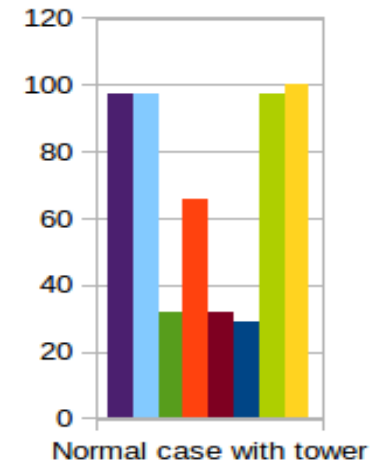
The thermal energy produced by multiple installed 65KW methane firing engines (20KW electric means >45KW thermal heat) is used to generate heat or 24KW of +5°C water, while the engine is now mainly generating electricity partially to be sold. +5°C cold water and/or steam or heat are generated for free. *Archiméd s* can add up an other 24KW of +5°C water during day time while taping the sun.

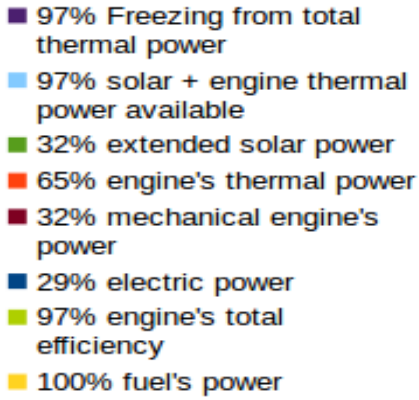
a- Engines release fumes to our SMALL energy recuperation system. Engine's hot water and fumes go to Chiller or heater (sustained by our a solar focal concentration system *Archimédes* if any ; white certificates or ETS UE

- the motor-generator is driving an electric generator providing the electric baseload (lamps and utilities);
- the motor is continuously driving at 80% to its power
- the fumes and the hot water to the motor are powering the hot and cold generators
- the engine's total efficiency reaches 97%.
- during sunshine, depending upon the roof's size, a solar focal concentration system (*Archimédes*) is, for example, providing up to 32% of 220°C extra heat, all available to the steam or cold generators.
- the connection to the electric grid stays in place as a backup in case of engine's maintenance and for the sale of electricity.
- dual operations collecting the sun or burning methane.
- 6.5 m3 / h of methane supply
- 3,75m³ /h of methane supply (solar cooling-NG)
- 55dB acoustic emissions at 1 meter.









On the way back to the chiller the air conditio-ning liquid circuit repor-ting less than +12°C can be used to cool off frizer's engines and /or their Freon's out-puts repor-ting a max. warmup up to +12°C

Our Archimédes:

it is an **optional** focal mirror collecting Sun's energy to max 350°C during the day while alleviating one of the stages in temperature elevation:

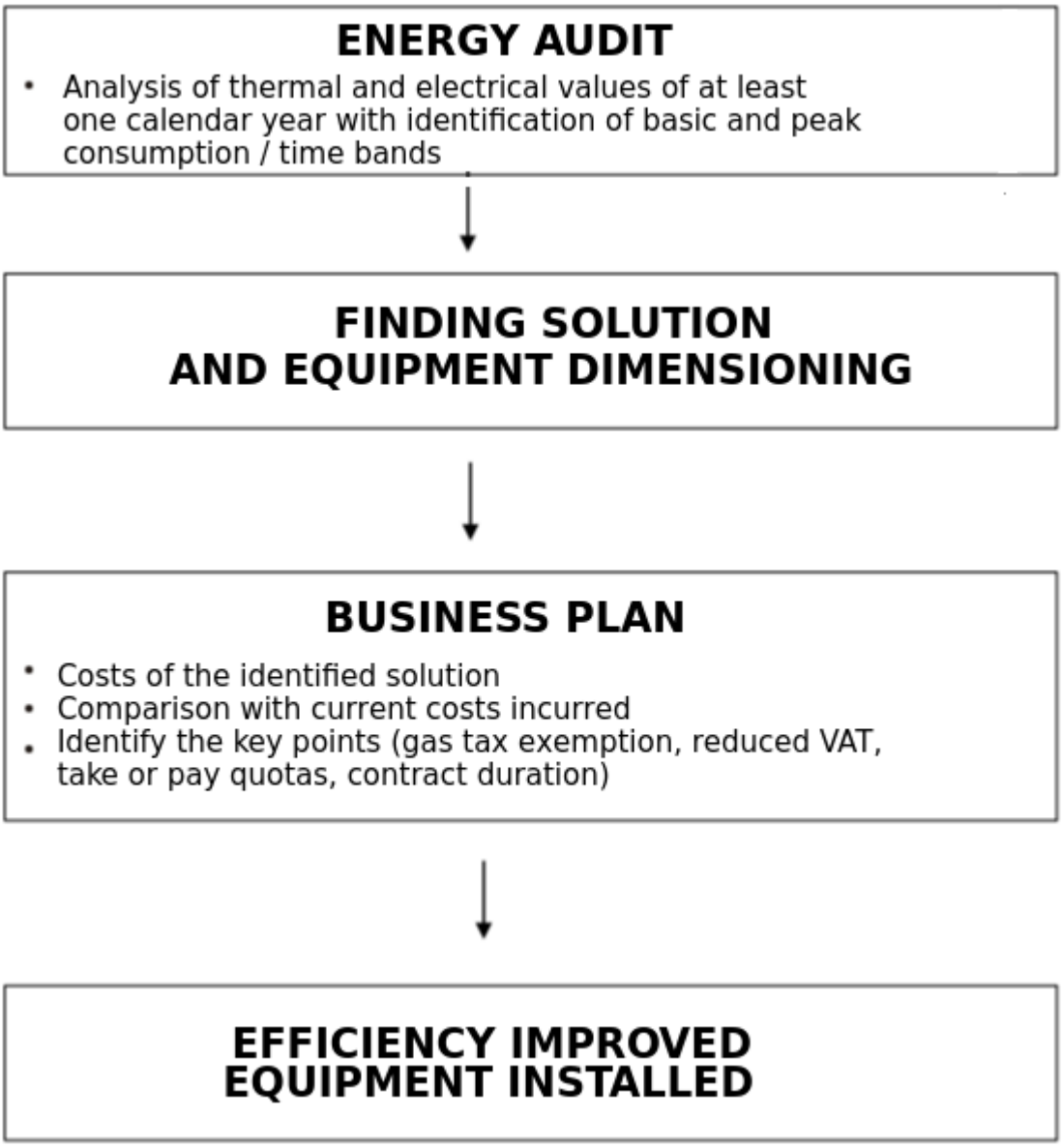
- 1,5m large, 2m long, 1,3m high,
- one or two-axis electrically drove
- accurate positioning toward the sun
- our Energy Carrier is easy handling and causes no problems in bridging distances of 2Km @ 700°C
- effective thermal power at focus 1.2KW
- temperatures 350°C @ DNI1000W/m²
- 700°C when idle
- optical efficiency >70%
- adopting properly 700°C coated and insulated pipings in Vortexed Supercement and Supercement Foam.

NB: It can be connected to the POST OXIDIZER.

The Evolution:

Kalina 24KW of water @+5°C

How do we proceed from here?



There is a cost billed by us for the Case Study, Planning, Projecting and Maintenance of our apparatuses.

Your Swiss Team
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