

Constitution meeting
**European Technology and Innovation Platform (ETIP)
on Deep Geothermal**



ENVIRONMENTAL IMPACT



AERIFORM EMISSIONS

(from WELLS and POWER PLANTS)



EFFLUENTS

- WATER VAPOR (50 -70 % OF TOTAL FLUID PRODUCTION)
- DROPLETS CONTAINING POLLUTANTS (B, As, Hg, ...)
- GREENHOUSE GASES (CO_2 , CH_4 ,)
- UNPLESANT SMELL (H_2S)
- OTHER VOLATILE POLLUTANTS (NH_3 , H_2 , N_2 , Rn ,...)

Central
Berlín (Usulután)

GEOHERMAL ENERGY 2.0- «CLOSE LOOP» POWER PLANTS

To improve the environmental sustainability

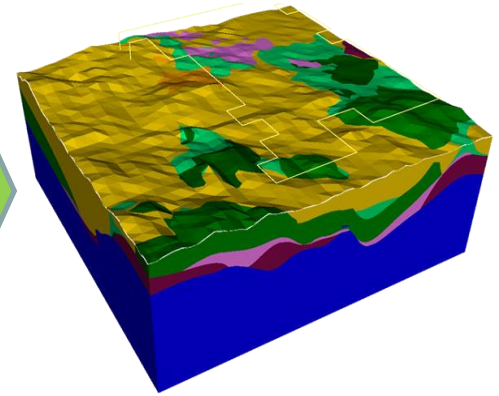
- Total re-entry of the geothermal fluid produced in the geological formations of origin, with no steam and gas emissions into the atmosphere;
- Environmental integration and landscape (“site-specific”)
- Enhancement of thermal application processes compatible with local vocations

***ZERO EMISSIONS” AND TOTAL REINJECTION
ARE MANDATORY FOR THE SOCIAL ACCEPTANCE AND ENVIRONMENTAL
SUSTAINABILITY OF GEOTHERMAL PROJECTS***

TECHNOLOGICAL CHALLENGES

RESOURCE ASSESSMENT & MANAGEMENT

- 3D IMAGING OF SUBSURFACE
- RESERVOIR MODELLING
- RESERVOIR MONITORING



DRILLING

- NEW COST EFFECTIVE TECHNOLOGY
- HT WELL LOGGING TOOLS
- ENVIRONMENTAL SUSTAINABILITY



POWER SYSTEM

- IMPROVEMENT OF EFFICIENCY
- SMALLER FOOT PRINT
- BETTER LANDSCAPE INTEGRATION



GEOHERMAL ENERGY 2.0 - RETE GEOTERMICA

A cluster of enterprises has been established in Italy with the main common goal to develop new technologies for “closed loop” geothermal projects

TOSCOGEO
geothermal energy

EXERGY
THE RADIAL OUTFLOW TURBINE

TME S.p.A. - Termomeccanica Ecologia
Gruppo Termomeccanica

SINTECNICA
ENGINEERING

IdroGeo
ENGINEERING&CONSULTING

Gesto
GEOTHERMAL ITALY

magma
ENERGY ITALIA

SORGENIA

clean energy ahead
TURBODEN
a subsidiary of MITSUBISHI HEAVY INDUSTRIES, LTD.

ISOLVER SPA

FLORAMIATA

GRAZIELLA
green power

GEOHERMICS ITALY

RENEWEM
RENEWABLE ENERGY MANAGEMENT

GENERGY
energia al tuo servizio

RETE GEOTERMICA is willing to be
a stakeholder of ETIP on Deep Geothermal, and
to cooperate for the development of its Strategic Research Agenda

THANKS FOR ATTENTION



MAGMA ENERGY ITALIA S.r.l.

Società partecipata da Graziella Green Power S.p.A. e Alterra Power corp.

Cap. soc. Euro 119.000,00 i. v.

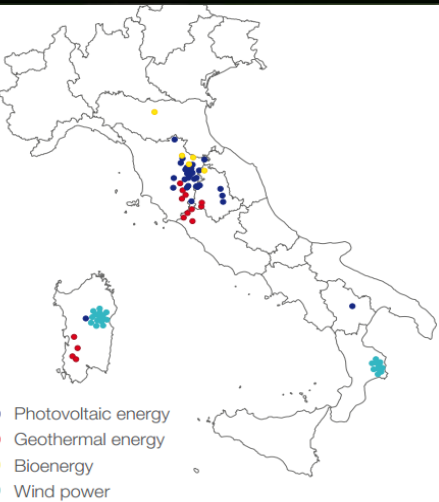
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Sede Operativa in Castelnuovo di Val di Cecina (PI) Tel. 0588 20307

PEC magmaenergy@legalmail.it email info-italy@magmaenergycorp.com

MAGMA ENERGY ITALIA



55%



Mensano
Exploration lease
(215 km²)

Roccastrada
Exploration lease
(272 km²)

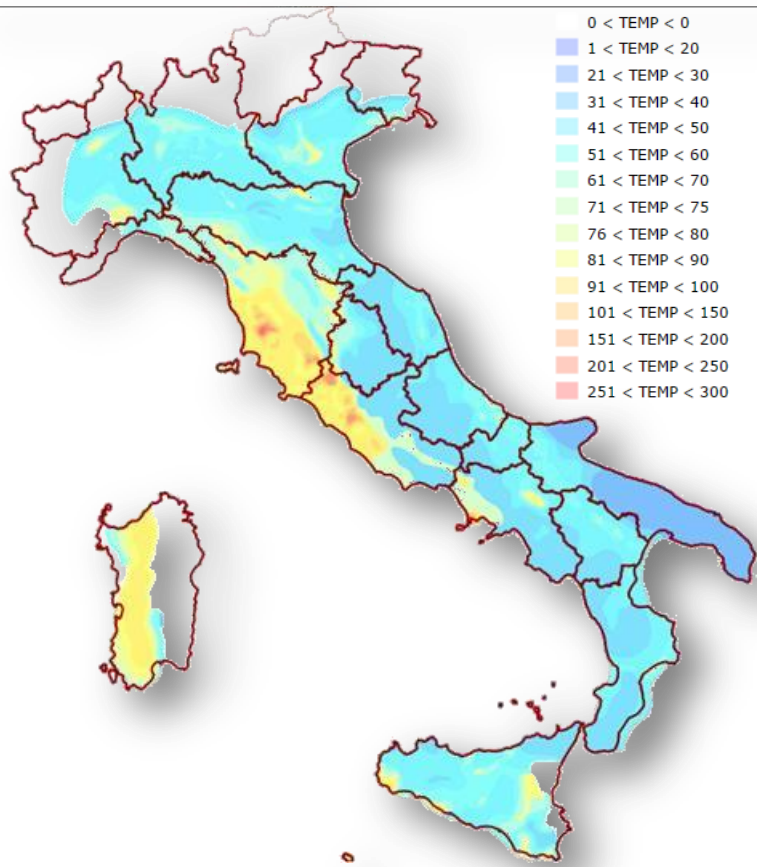
45%



GEOHERMAL ENERGY 2.0 – TECNLOGICAL CHALLENGES



GEOHERMAL ENERGY 2.0 - DEVELOPMENT SCENARIOS IN ITALY



Temperature @ 2000m b.s.l.

Source Geothopica (<http://geothopica.igg.cnr.it/>)

Geothermal potential (@ 2040)

- Power capacity: 3000 – 3500 MW
- Electric generation : 24–28 TWh/year

About 8-10% of energy needs in Italy
(today about 1,6 %)

- 15 Billion Euro investment
- 100.000 new jobs
 - 50.000 jobs during construction
 - 20.000 jobs during power plant operation
 - 30.000 jobs for direct uses of heat in industry, agriculture, etc.

Source RETE GEOTERMICA