

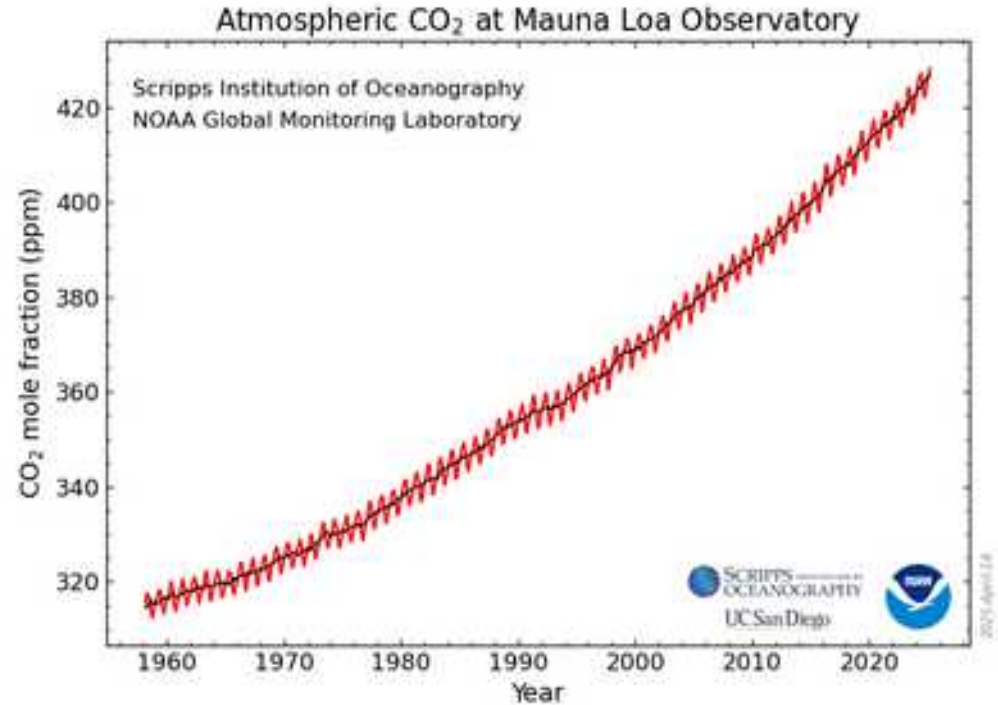
What's the problem?

(Make physics a little bit greater again)

H.Grassmann

Univ. of Udine, Isomorph srl

Presentation at SIER
Sept. 2025



By now most people understand:

The biggest problem of our time is global heating.

=> Each year billions are spent and many people are working,
for instance:

ENEA: Agency for new technologies, energy and environment
2555 staff

CNR, : national research organization, ... which carries out activities of
primary interest for the promotion of science and the progress of the country
8457 staff



Cittadini



Imprese



Scuole



Ricercatori



Giornalisti



Personale

- Scienze biomediche
- Terra e ambiente
- Fisica e materia
- Bio e agroalimentare

- Chimica e tecnologia materiali
- Ingegneria, ICT, energia e trasporti
- Scienze umane e patrimonio culturale

HOME

CHI SIAMO ▾

ORGANIZZAZIONE ▾

ATTIVITÀ ▾

SERVIZI E UTILITÀ ▾

NEWS

EVENTI



Conferenza Addetti Scientifici a Napoli: la dichiarazione del Presidente del Cnr Andrea Lenzi



IENTRANCE a Nanoinnovation 2025

Nota stampa 09/09/2025

Lunedì 15 e mercoledì 17 settembre, nell'ambito di Nanoinnovation 2025, la conferenza italiana sulle



Mostra "Fortuna. Governare l'incertezza"

Evento dal 11/09/2025 al 12/10/2025

A Napoli, fino al 12 ottobre, la mostra



Andrea Lenzi Presidente del Consiglio nazionale delle ricerche

News 26/07/2025

Il Ministro dell'Università e della Ricerca, Anna Maria Bernini, ha



Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile

Cerca ...

Cerca

HOME

L'ENEA

RICERCA E SVILUPPO

SERVIZI

OPPORTUNITÀ

ATTIVITÀ INTERNAZIONALI

PROGETTI

MEDIA

INFO

IN EVIDENZA



Avviso di consultazione pubblica
sull'aggiornamento del Codice di comportamento
dei dipendenti ENEA – Vai alla sezione

[maggiori dettagli](#)

["Trasparenza Trasparente" per i dettagli](#)

PROSSIMI EVENTI

Droni, ricerca avanzata e imprese:
l'innovazione al servizio della Pubblica
Amministrazione

16 Settembre 2025

EFCH2 2025 | European Fuel Cells and
Hydrogen Pieno Lunghi Conference 2025

17 Settembre 2025

Nuclear fusion, hydrogen and digitalization
for the energy transition: exemplary cases of
cooperation between Italy and Japan

24 Settembre 2025

Notte Europea dei ricercatori e delle
ricercatrici: l'edizione 2025 di NET - scieNeE
Together

26 Settembre 2025

Save the date! Pelli illuminazione pubblica e
chain2: nuove prospettive dall'introduzione
dei contatori di seconda generazione

29 Settembre 2025

IN EVIDENZA

COMUNICAZIONE INIZIO CONTROLLI
DELLE IMPRESE ENERGIVORE PREVISTI DA
Art. 7 DM 256 del 10 luglio 2024



PROSSIMI EVENTI

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HOME

L'ENEA

BONUS ACQUA POTABILE

RISPONDI AL QUESTIONARIO



[maggiori dettagli](#)

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HOME

L'ENEA

RICERCA E SVILUPPO

SERVIZI

OPPORTUNITÀ

ATTIVITÀ INTERNAZIONALI

PROGETTI

MEDIA

INFO

Amministrazione trasparente

EN

Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile

IN EVIDENZA

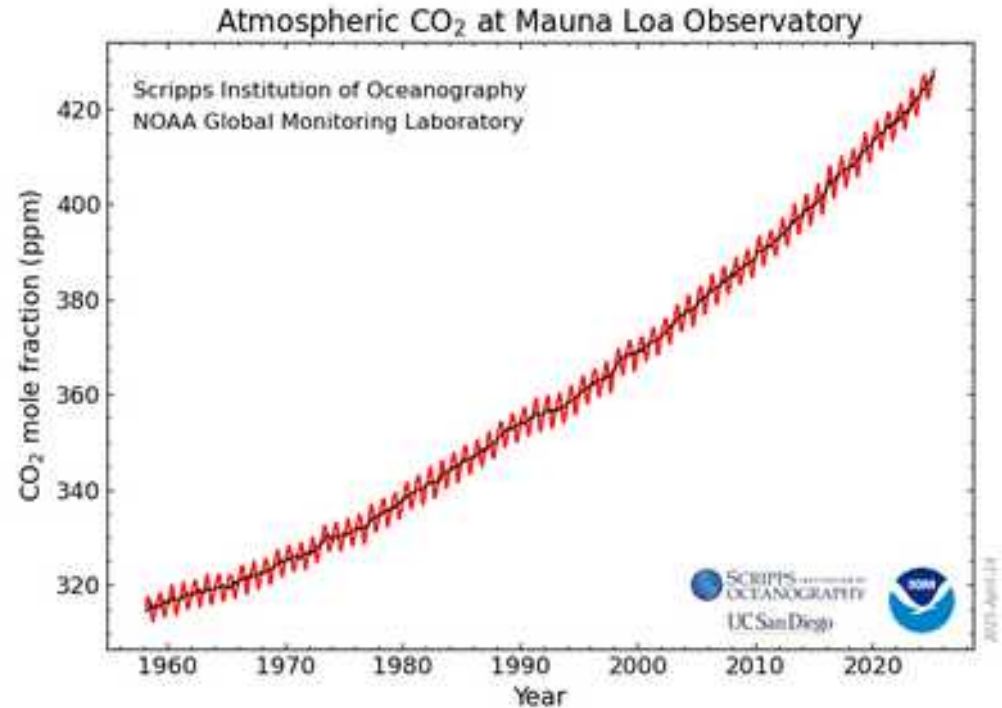
DIAGNOSI ENERGETICHE:
PUBBLICATA LA LISTA DEGLI INTERVENTI
Art. 4 comma 7 DM 256 del 10 luglio 2024



[maggiori dettagli](#)

In spite of all this money spent, CO₂ increases faster and faster.
What can we do?

Maybe progress in the fight against CO₂ cannot come from the collectives of heavily controlled organized science?



but must come from the human being?

What is a “human being”??

the human being is:

a) organic live = 80% water

b) intellectual live = 99% past (*)

=> need to reconnect to the past =culture
in order to create future ?

This may sound strange, and is different from what everybody else is saying. But since the situation is desperate, and in absence of better suggestions, we should give it a try!

() studies of human beings who grew up without past: Kaspar Hauser children, WHO ICD-10: F94.1, F94.2*

Culture starts with language;

What is the meaning of the word “problem”?

1) descriptive :

example: “I feel sick and tired”

or : “global heating is a problem”

2) explanatory:

example: “you have a bacterial disease” => take antibiotics

or: “we have no technologies for substituting fossil fuels”
=> create new technologies

What would happen in a society which knows only description, and not explanation?



In such a society, people might

- Pay themselves huge incentives (next generation will pay...)
- organize yearly international conferences to transfer huge amounts of money to “global south” (next generation will pay...)
- throw tomatoes onto their cultural heritage
- substitute physics
- substitute free press
- glue themselves to the road
- sail on luxury yachts to Gaza
- kill Charlie Kirk



If instead we reconnect to our roots=culture=past,
astonishing things will happen

(re-connecting to the past means :

- 1) improve what was good.
- 2) consider also what was bad in order to avoid repeating it.

Do not cancel.)



Explaining the problems (instead describing), we see :

The major source of renewable energy is photovoltaics, PV.

- provided only when the sun is shining
- can be stored only in small quantities.

=> PV alone cannot stop CO₂ increase.

=> PV is good,
but the fact that we have little else, is bad

PV is not produced in Italy/EU anymore



Necessary additional solar technologies were suggested:

parabolic mirrors

Suggested by ENEA

For example used at

Kramer Junction (USA),

Ouarzazate (Marocco)

global south

Many billions of dollars spent,
technology by now considered obsolete



Caveja Nord srl,
Udine Solar
30 milion Euro.

chiesto in Regione la
valutazione di
impatto ambientale

La struttura è frutto
di un brevetto
del premio Nobel
Carlo Rubbia

di Giacomina Pelizzari

Avvicinati le discurti, a Modoleto (Cassignacco), il Consorzio Caveja Nord srl, che ha in capo il premio Nobel Carlo Rubbia, è stato presentato in Regione e in Cassazione per la Valutazione d'impatto ambientale. L'obiettivo è produrre energia elettrica concentrando il calore del sole e trasformarlo con gli olii lubrificanti e privi di idrocarburi. L'investimento ammonta a 30 milioni di euro per un impianto destinato ad andare a esportazione in 25 al massimo 30 anni. Il consorzio, al quale la proprietà ha già intestato il progetto, valuterà l'impatto sulla cittadinanza nel corso di un'assemblea pubblica che risponderà a breve.

Il progetto iniziale è stato dato dal 1971 di Roberto di Tizio, ha partner di Caveja e finanziere della tecnologia (Capo Ceresini) e altri partner, prevede l'edilizia di opere paraboliche in grado di inseguire la direzione del sole per focalizzare la radiazione solare su un tubo ricettore parabolico lungo il fuoco della parabola. L'energia solare assorbita dal tubo ricettore sarà trasferita a un fluido di lavoro (olio lubrificante) che circolerà in un circuito chiuso. Il calore assorbito si legge nella relazione - sarà utilizzato per la produzione del vapore che, a sua volta, azionerà una turbina destinata alla produzione di energia elettrica. Parte del calore sarà anche in grado di essere utilizzato in grandi serbatoi di accumulo, consentendo la produzione di energia elettrica per la produzione di energia elettrica durante le ore di buio o in periodi insolari.

«Siamo in grado di coprire 225 mila metri quadrati di superficie e di alimentare 1.500 abitanti», dichiara il capo Ceresini. «Ma la cosa più importante è che questo sistema di fotovoltaico concentrato è in grado di produrre energia elettrica e ridurre l'impatto ambientale».



A CUSSIGNACCO

Al posto della discarica una centrale solare

Il consorzio Caveja investe 30 milioni per realizzare il progetto a Modoleto
L'obiettivo è produrre energia elettrica con un sistema di specchi parabolici

to da polveri sottili (pm10) prodotte dalle attività domestiche, che, al momento del calcolo, si compensano il giorno con la notte», aggiunge l'ingegnere del consorzio che l'energia prodotta potrà essere venduta all'Enel, ma anche alla Zia e alla Zia. I costi per la stipula del contratto sono in

consona con il mercato italiano, che, in realtà di una tendenza ribaltata in Germania e in Austria dove l'energia arriva molto più alta. Si sa che la sua energia l'adeguamento al nuovo impianto non è facile. Ma, in ogni caso, si può dire che i costi sono in linea con quelli del mercato italiano.

«L'impatto ambientale non è un problema», sostiene il presidente del consorzio, Carlo Rubbia, «ma il progetto non modifica il terreno, che resterà coltivato a grano. I terreni, infatti, sono in grado di essere coltivati a grano e a vite e quando l'impianto sarà operativo, si eviterà di avere alcuni problemi».

Il progetto è stato deciso da un comitato di lavoro che ha deciso di investire 30 milioni di euro in un impianto che non modifica il terreno, che resterà coltivato a grano. I terreni, infatti, sono in grado di essere coltivati a grano e a vite e quando l'impianto sarà operativo, si eviterà di avere alcuni problemi».

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LA DISCARICA

Della Rossa: un forno nel cimitero di Paderno



«L'impianto è un forno a combustione che sarà utilizzato per la produzione di energia elettrica», sostiene il presidente del consorzio, Carlo Rubbia, «ma il progetto non modifica il terreno, che resterà coltivato a grano. I terreni, infatti, sono in grado di essere coltivati a grano e a vite e quando l'impianto sarà operativo, si eviterà di avere alcuni problemi».

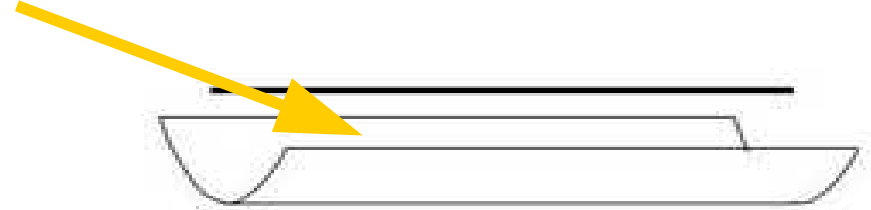
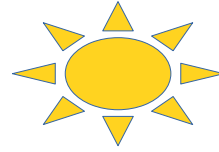


FINO AL 30% DI SCONTO SU
TUTTA LA GAMMA BMW Km/0

Messaggero Veneto



Usually, these installations are oriented north-south and follow the sun in azimuth (east-west) but not in zenith



In the north of Italy in winter sun is very low most of the day
=> need huge gas flame to keep salt liquid....

Ouarzazate suffered a molten salt leak in 2024, causing a loss of \$47m....

DD srl, Meret di Tomba, google maps

Water consumption for the Ouarzazate Noor complex is estimated at 2.5 to 3 million m³ per year for one wet-cooling project (Noor I) and two dry-cooling projects (Noor II and III). The water is sourced from the Mansour Eddahbi dam via pipeline *from wikipedia*

1 MWh of electricity produced with coal produces about 1 ton of CO₂

1500 GWh would produce 1.5 Million tons of CO₂

Water vapor is a greenhouse gas worse than CO₂

=> Ouarzazate is effectively heating up the planet, instead of helping to cool it

Open Questions regarding the Desertec Project

GRASSMANN, Hans

2008-01-01

Scheda breve

Scheda completa

Scheda completa (DC)



Anno
2008

Appare nelle tipologie:
1.1 Articolo in rivista

Informazioni



Utilizza questo identificativo per citare o creare un link a questo documento:

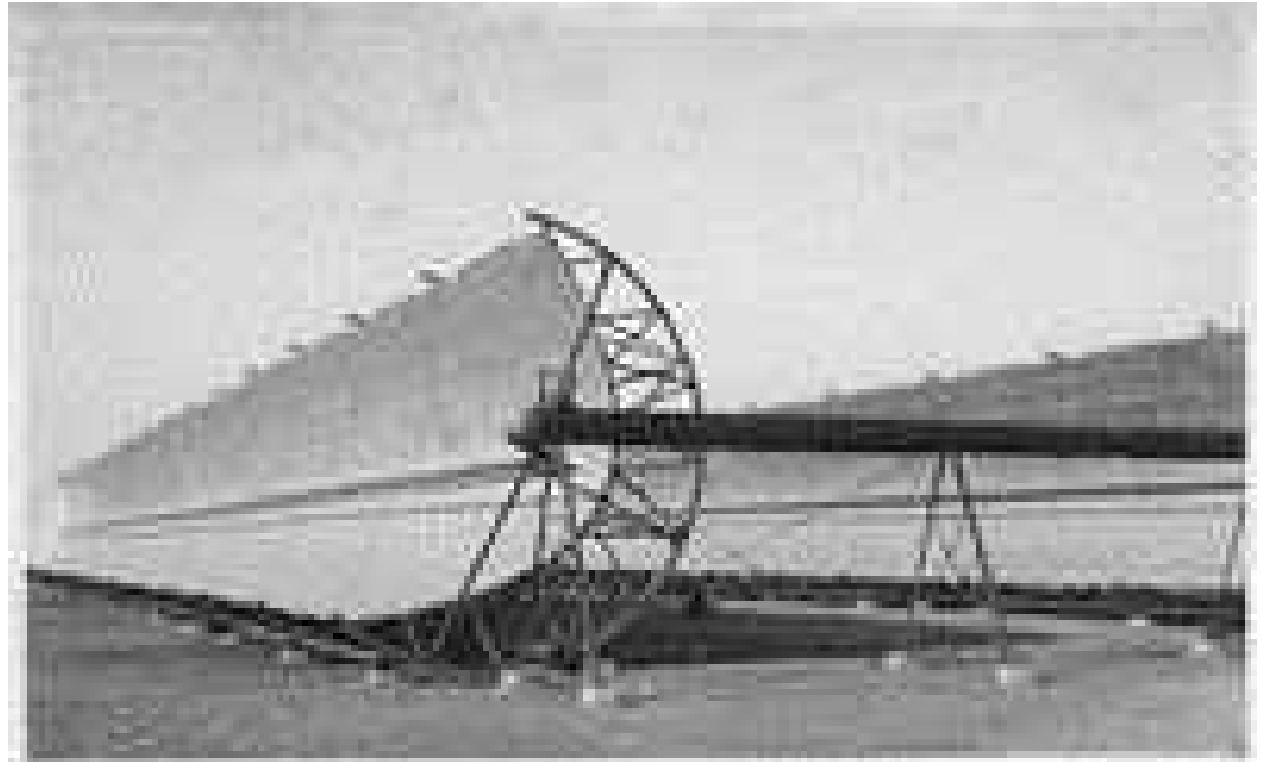
<https://hdl.handle.net/11390/849504>

Attenzione

Attenzione! I dati visualizzati non sono stati sottoposti a

In a thoughtful human culture with links to the past,
these disasters never would have happened,
because it would have been known,
that the parabolic mirror technology had failed already 110 years ago:

1913, Maadi Egypt



Tried next : Heliostat fields

for instance at Ivanpah (USA),
To be closed in 2026.

Problem:
each mirror needs 2 high precision gear
motors = expensive.

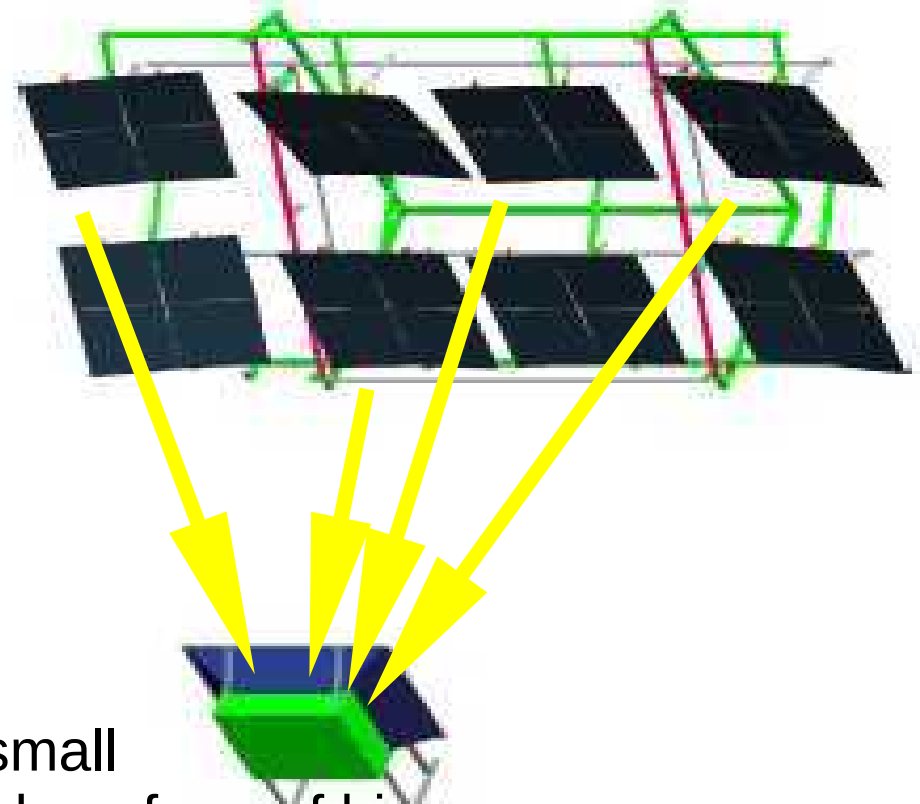
modern technology cannot solve this problem

In a thoughtful human culture with links to the
past, this problem would have been solved
already 2.300 years ago:



One can connect any number of mirrors in such a way, so that they move together as a system.
and reflect the sun light to a common absorber for any position of the sun.

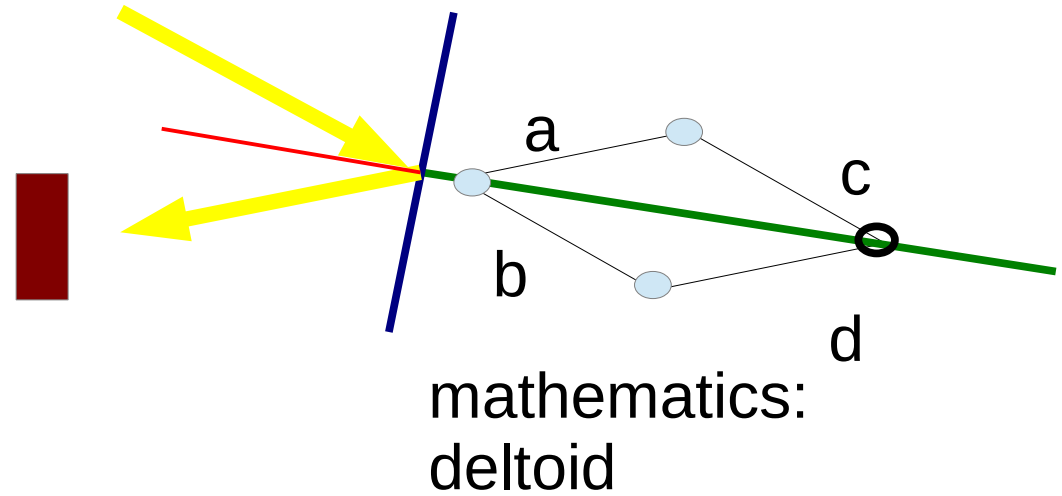
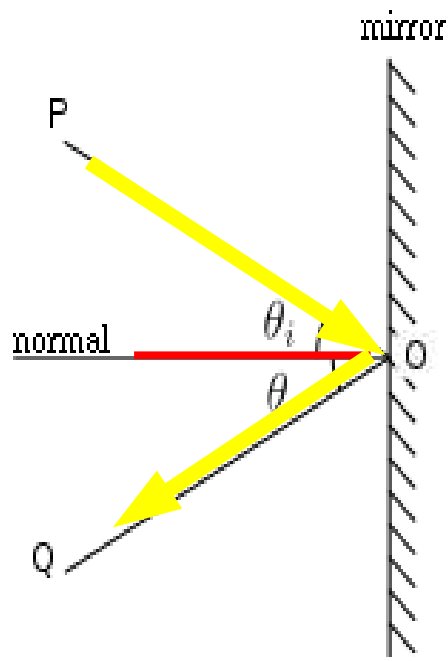
Heat exchanger remains in a fixed position.



John Tzetztes: « Archimedes ... set similar small mirrors with four edges, moved by links and by a form of hinge »
GREEK MATHEMATICAL WORKS, Tranlated by Ivor Thomas, Loeb Classical Library, Harvard Universiyt Press, Cambridge, 1941, Vol 2, page

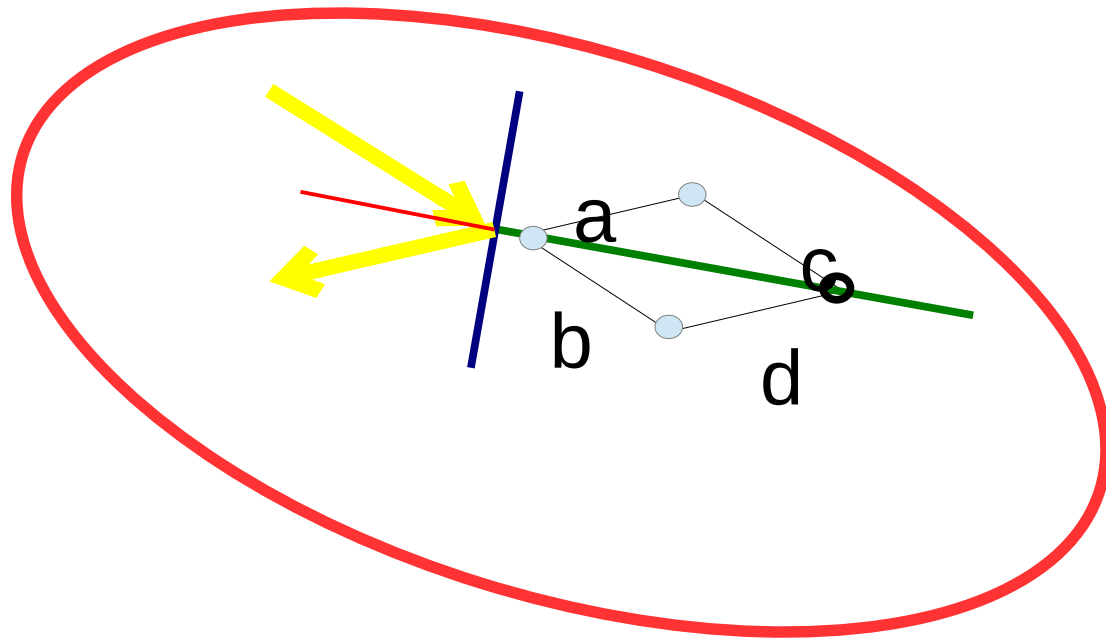
Meccanismo di Anticitera





set the mirror onto a steel structure (deltoid) behind the mirror, which has the same structure as the law of reflection before the mirror

the information processing system is isomorph to the message set



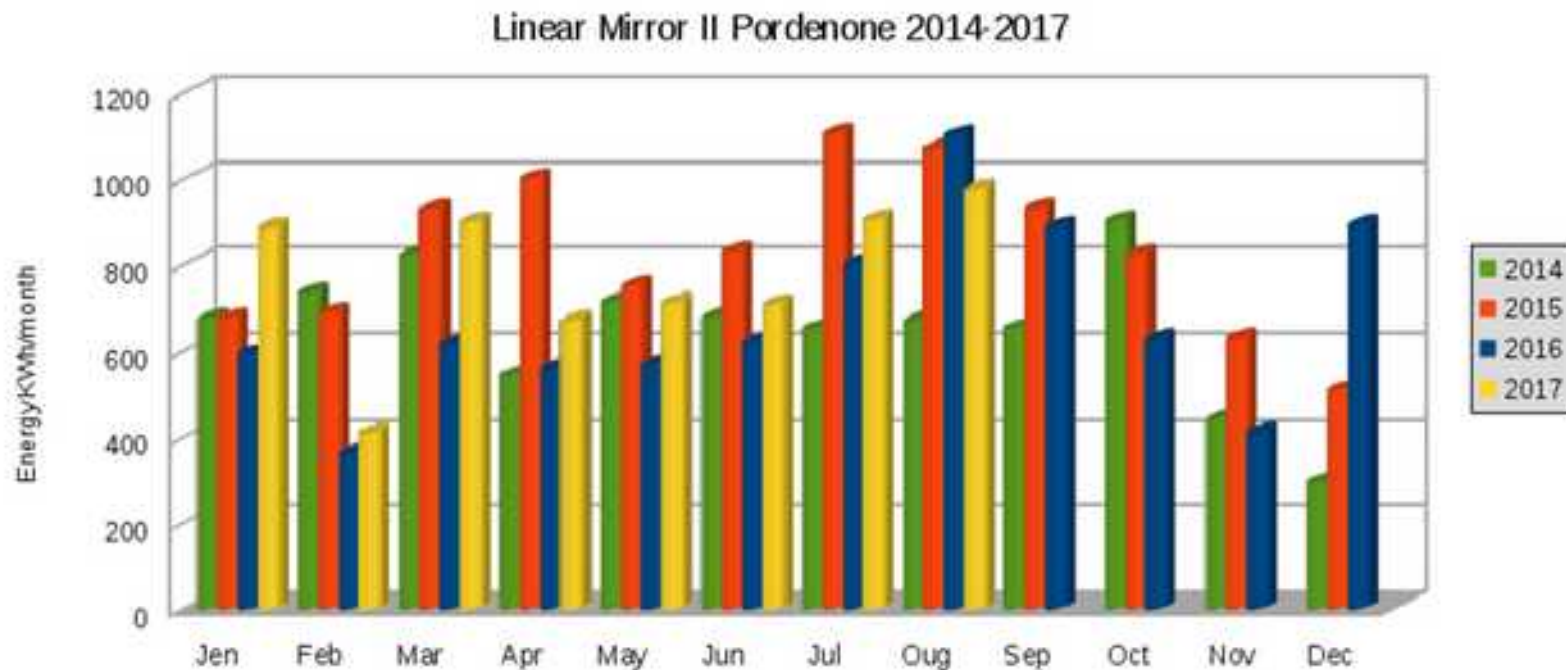
Grassmann, H., et al. (2013) First Measurements with a Linear Mirror Device of Second Generation. *Smart Grid and Renewable Energy*, 4, 253-258



Hotel “Il Cavaliere”, Pordenone, 2014



SPECCHI LINEARI : LE PRESTAZIONI



Diversi anni di raccolta dati: efficiente anche in inverno, sostituisce circa 1000 litri di gasolio da riscaldamento all'anno (sito Pordenone, Italia)

The Linear Mirror works well also in winter

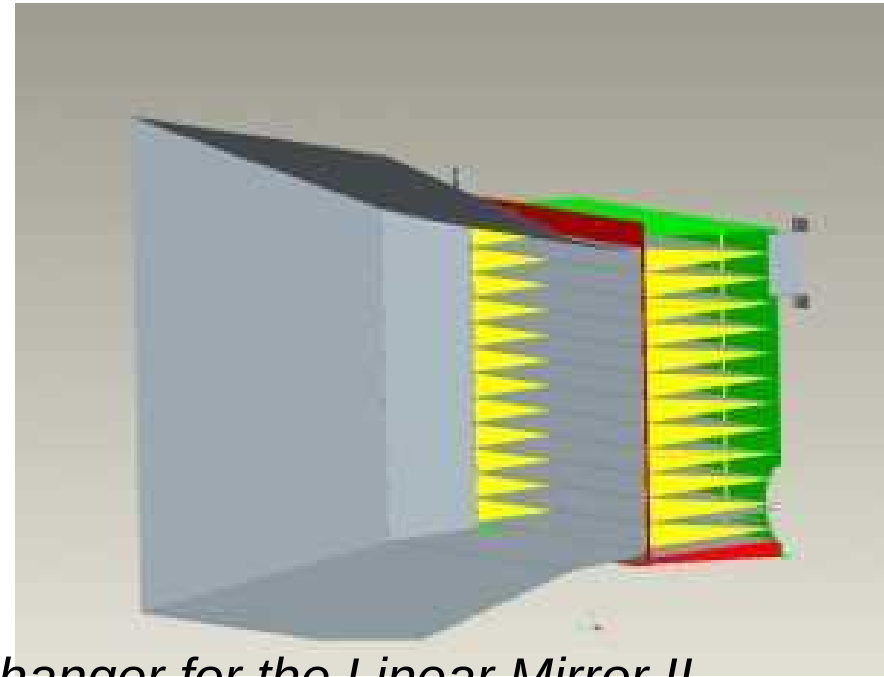
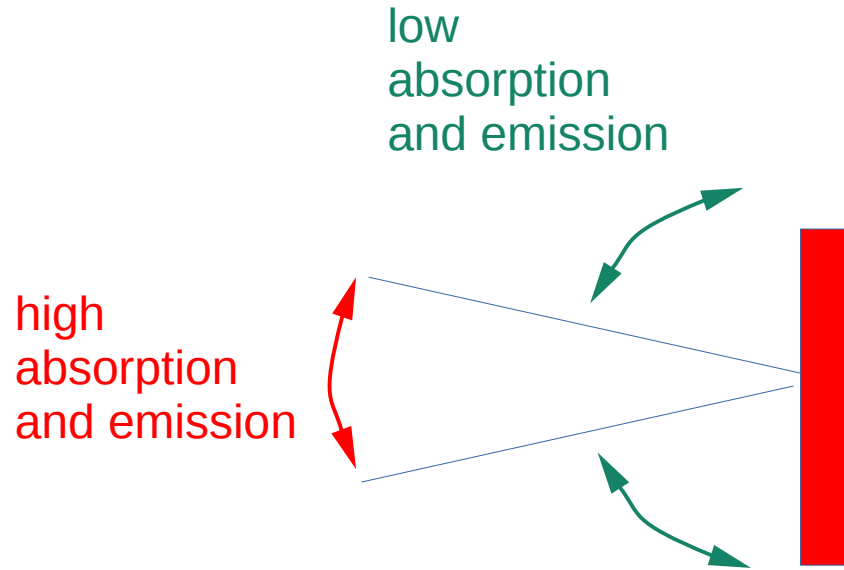


Germany (Puettlach)

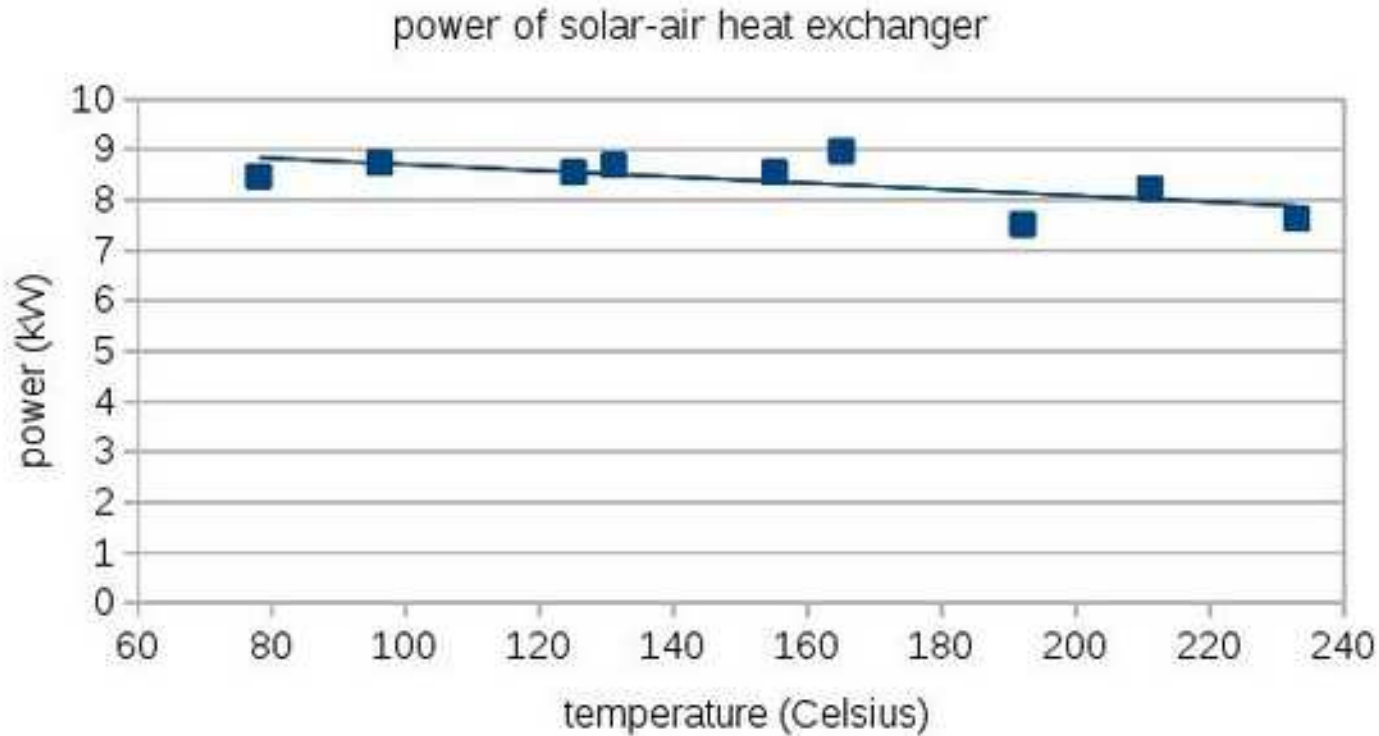
Certified industrial product: Solar Keymark

A field of new secondary technologies and applications opens, example: Heat exchanger sun-air

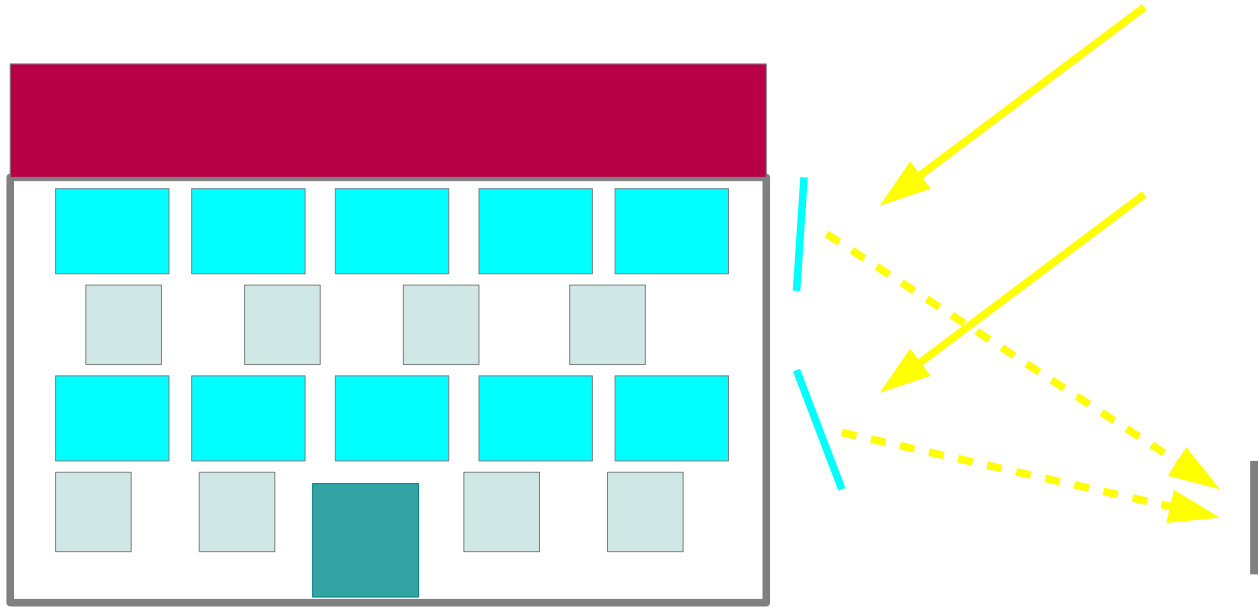
Fundamentally new kind of spatially selective surface, hot air up to 200°C



Development and Test of a New Solar-Air Heat Exchanger for the Linear Mirror II System, Hans Grassmann, Marco Citossi, Smart Grid and Renewable Energy, 2019, 10, 155-164



Suited for industrial use and new applications, for instance roasting “waste” biomass → cheap and simple carbon sequestration



1 m² mirro: 30 €

1 m² collects per year 1000 kWh of energy = 100 Euro

Without physics:

London, 2013





The only existing Linear Mirror laboratory on this planet is found in the vicinity of prehistoric pyramid:

Laboratory for New Energies at the Azienda Agraria of the University



Thanks to the General Director of the
University of Udine,
Ing. Massimo Di Silverio,
Fondazione Friuli,
Fondazione Internazionale Trieste.



Problem:

The year has 8.760 hours
but only 1.500 hours have sun shine

and:

cars and ships need CO₂ neutral gas, they cannot run on sun shine

In our present society, which knows only descriptive problems,
also this problem does not have and cannot have any solution.

In a society with links to the past (culture) one possible solution would already be known:

at the times of Einstein, Planck, Rutherford, Fermi, Marconi, Siemens, Malignani ... gas was provided from the gasification of coal : “town gas”



Town gas



Gas Works Park, Seattle, preserves most of the equipment for making coal gas. This is the only such plant surviving in the United States

$2\text{C} + \text{O}_2 \rightarrow 2\text{CO}$ (exothermic producer gas reaction)

$\text{C} + \text{H}_2\text{O (g)} \rightarrow \text{CO} + \text{H}_2$ (endothermic water gas reaction)

$\text{C} + 2\text{H}_2\text{O} \rightarrow \text{CO}_2 + 2\text{H}_2$ (endothermic)

$\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$ (exothermic water gas shift reaction)

https://en.wikipedia.org/wiki/Coal_gas

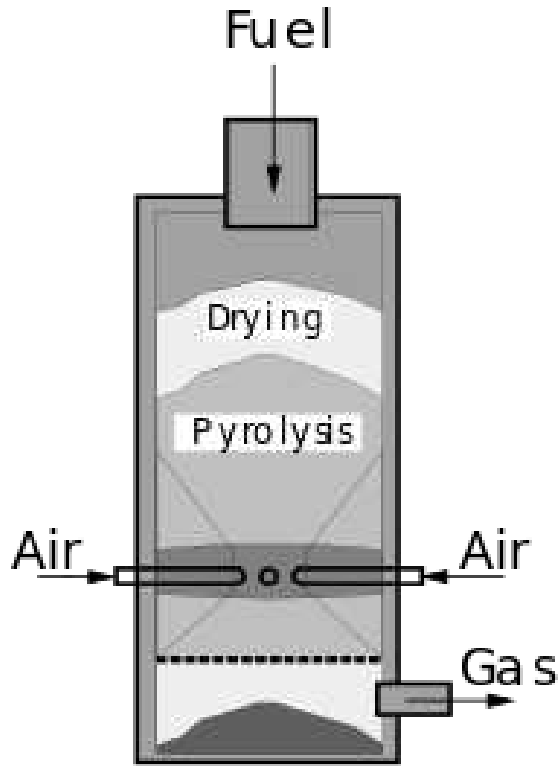
Gas can be made also from wood, however, traditional wood gasifiers are very dirty and cumbersome and need high quality wood – deforestation problem.



Engineers have tried to overcome the limitation of wood gasifiers by adding components, making them more and more complex, large and expensive



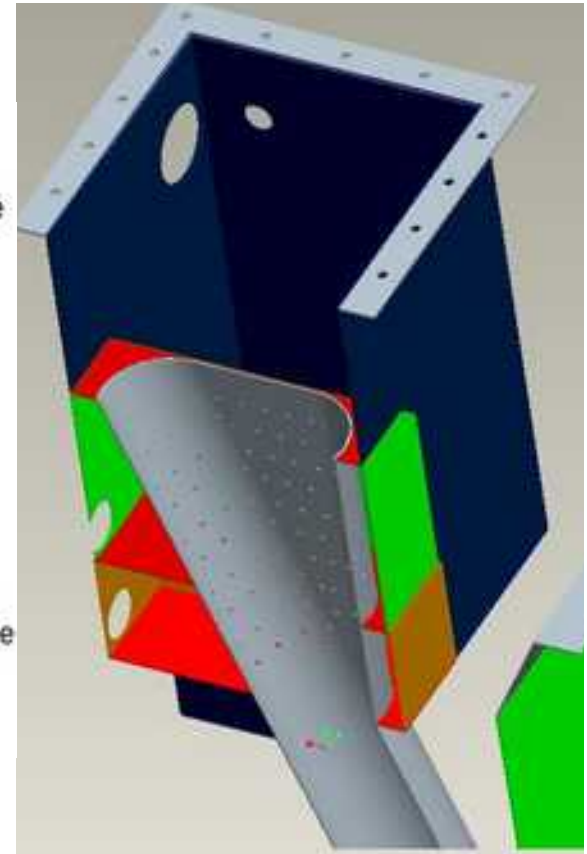
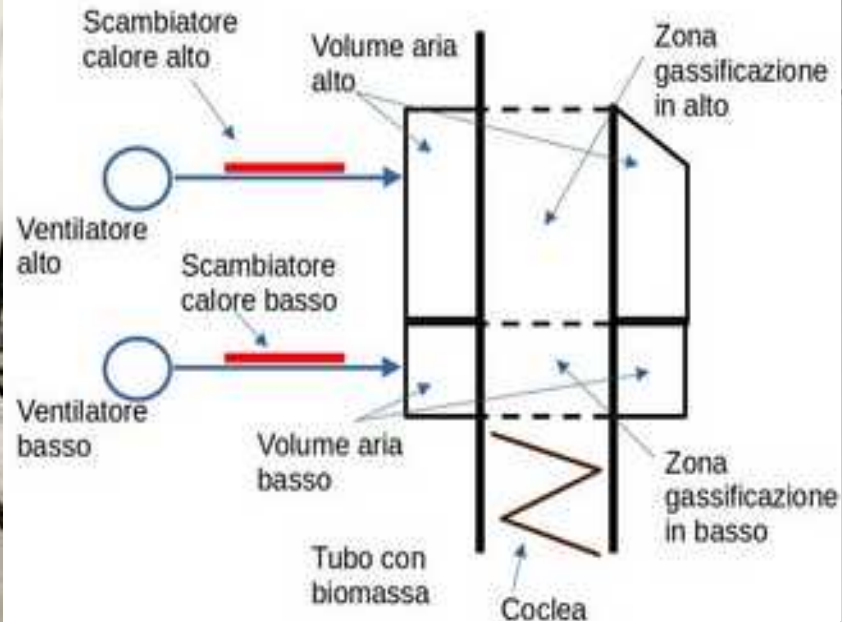
Maybe physics could give a helpful contribution to the solution of this problem ?



Nowadays,
gasifiers are constructed based on the paradigm,
according to which gasification (in difference to
combustion) occurs because of a lack of oxygen.

From a physics point of view, this paradigm is not
comprehensible, the oxygen atoms cannot
possibly know whether they are part of a lack of
oxygen.

=> gasifier with high primary air flow
very powerful = small,
very simple,
very clean



Ca 10 kg biomass/hour, 50 kW, reactor volume 5 liters
 => power density 10kW/l = comparable to nuclear reactor

wood

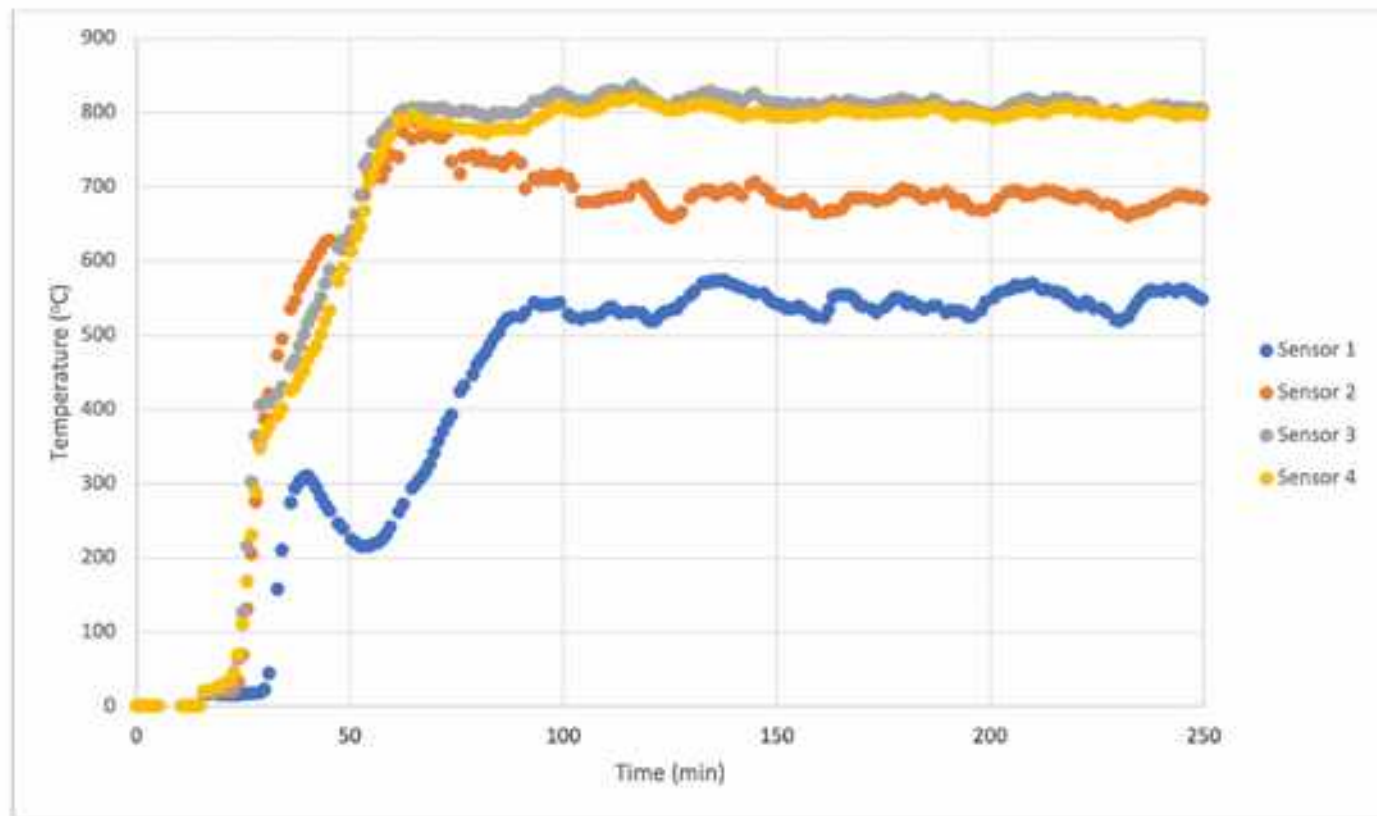


Figure 3. Results from the commissioning test of the gasifier working with wood pellets. The temperatures reported by the four sensors in °C, are shown as a function of time.

Straw:

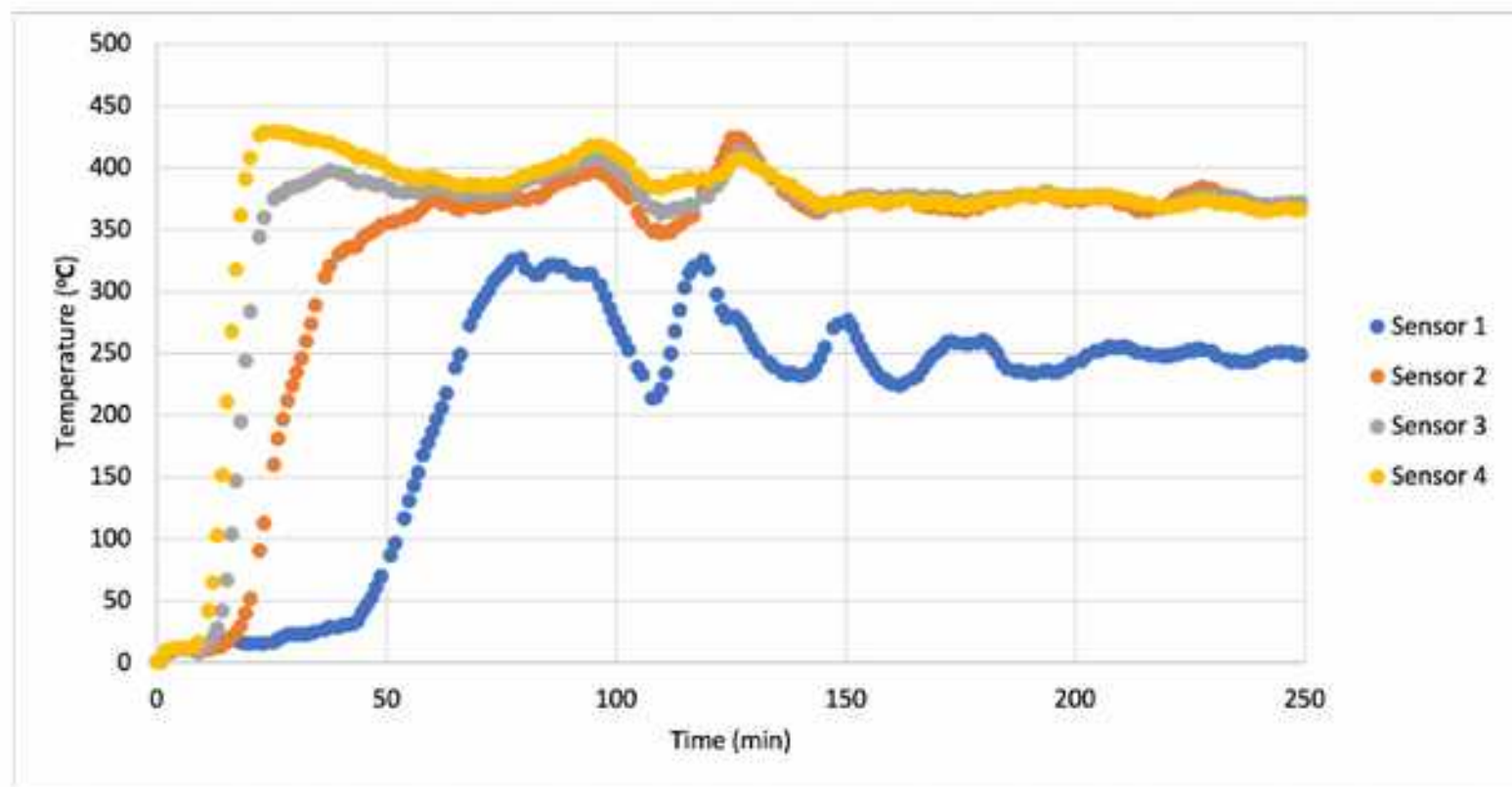


Figure 5. Results from a test of the gasifier working with straw pellets and with the temperatures controlled via the primary air flow. The temperatures in $^{\circ}\text{C}$ reported by the four sensors are shown as a function of time.

The gasifier works also at a low temperature of 400°C, therefore it can gasify even straw

It can also gasify yoghurt, potatoes, green cut, alghe, used coffee powder

In Italy alone, there are about 10 Million tons of straw each year, which could substitute 5 Million Tons of Diesel (= 5 billion Euro).

Adding water vapor one can increase the H₂ content of the gas to >50%

TABLE I. Syngas composition for two different temperatures as measured by the gas analyzer.

Gas	Percentage (%)	
	400°C	700°C
CO	14	19
H ₂	14	10
CO ₂	14	14
CH ₄	3	14

Almost half of the atoms of biomass are hydrogen atoms
Biomass is the best, cheapest and most efficient hydrogen storage.

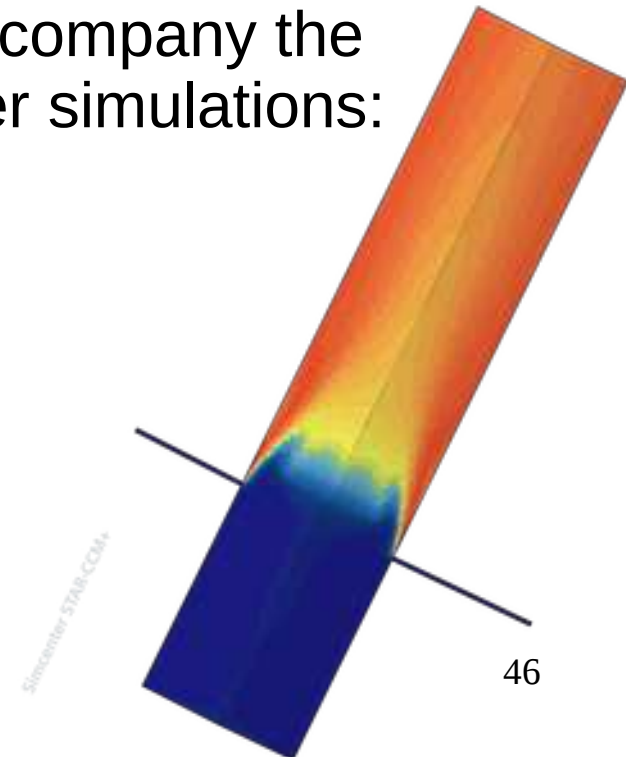
The new physics paradigm, according to which gasification is not caused by a lack of primary oxygen, is therefore confirmed by the successful operation of the gasifier.

A whole new field of science and technology is opening up now.

A small international working group is forming to accompany the development of this new field by means of computer simulations:



Fabiano Bet
Daria Bostula
Parsu Ram Sharma
Hans Grassmann
Marina Cobal



There are many problems, but they are not scientific ones:
for instance, in modern society, it is not allowed to gasify green cut



Example Udine:
17.000 tons of green cut per year.
brought to San Giorgio di Nogaro for a cost of more than 100 Euro/ton
and given to farmers, who **get paid** for distributing the rotten material on
their fields.

With state of the art gasifier technology, it is not possible to gasify waste material like straw,
and therefore only particular “energy-plants” can be considered,
which would however be in competition to food plants (*)

() Integrated assessment of carbon dioxide removal portfolios: land, energy, and economic trade-off for climate policy, Solene Chiquier et al 2025 Enviro. Res. Lett. 20 024002*

If instead we use existing biomass,
which otherwise is left to decomposition
the situation changes drastically:

“global production of primary crops reached 9.9 billion tonnes in 2023” (*)

assuming that half of produced biomass is food and half is “waste”
this corresponds to about 30.000 TWh

In comparison global primary energy consumption of	
traditional biomass (wood)	10.000 TWh
Gas	40.000 TWh
Coal	45.000 TWh
Oil	50.000 TWh

Future:

- biomass production per area can be increased by factor 10 with green houses
- also algae can be gasified

(*) <https://www.fao.org/statistics/highlights-archive/highlights-detail/agricultural-production-statistics-2010-2023/en>

The need for free research is also illustrated by the history of the Linear Mirror and the Isomorph Gasifier:

They were developed by the physics company Isomorph srl, which provided the space for doing free science.



Furthermore:

In our project “Physics & Art against CO₂”, ESOF 2020, we connected physics to the past, transforming the state library of Trieste into an image of the old library of Alexandria.

Again, the success of that project confirms the importance and feasibility of free research rooted in human history:

we were the only Europeans who presented new ideas about fighting CO₂ increase at ESOF



Outlook

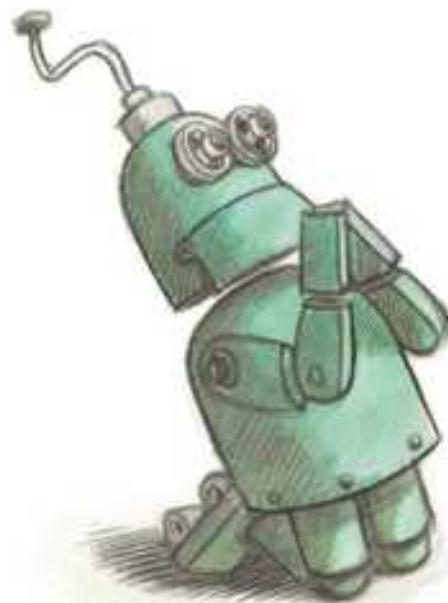
The Linear Mirror is only an example:
it is true in general, that information processing systems should always have the same mathematical structure as their messages.

Such systems are by far superior to state of the art computing.

Ray Kurzweil was wrong for the last 30 years, Sam Altman will be wrong for the next 30 years.

=> In a few years from now, will AI and quantum computing be as obsolete as Kramer Junction and Ivanpah?

Again, questions like these could not even be discussed in the present research structure.



KOMMENTAR
von Leonid Leira Ariosa

Rund um die künstliche Intelligenz ist eine Religion entstanden. Wir müssen ihren Propheten kritisch begegnen

Wie kaum eine andere Technologie befeuert KI einen gefährlichen Fanatismus. Der KI-Kult verheisst eine digitale Superintelligenz, der alles zu unterwerfen sei.



INTERVIEW

«Die UNRWA gehört abgeschafft», sagt der Uno-Kritiker Hillel Neuer. Er wünscht sich eine palästinensische Selbstverwaltung für Gaza

Die Genfer Organisation UN Watch rekonstruiert in einem Bericht die Verbindungen zwischen dem Uno-Palästinenserhilfswerk und der Hamas. Vor der Veröffentlichung sprach die NZZ mit ihrem Direktor. Er erhebt schwere Vorwürfe gegen die Uno.

Nathan Glazer, Berlin vor 1 Stunde 5 min 

Conclusion

Global heating is not a scientific problem.
From a physics point of view, it could have been solved decades ago.

As long as discussing the true problems remains a taboo, the planet will continue to heat.