USC Wrigley Institute for Environmental Studies (WIES)

Proposed Science Park

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Philip K. Wrigley Marine Science Center (WMSC)

WMSC is the centerpiece of the Wrigley Institute.

The land was deeded to USC in 1965 at Big Fisherman's Cove on Catalina Island.

Founded as the Wrigley Institute in 1995 and subsequently named the Philip K. Wrigley Marine Science Center (WMSC).

Occupies more than 14 acres.

Philip K. Wrigley Marine Science Center (WMSC)

The establishment and expansion of the Wrigley Marine Science Center, and its contribution to scientific education and research, are the result of the support and vision of the Wrigley family and the backing of the USC College and the many USC donors who are committed to environmental research and education.

USC Wrigley Institute for Environmental Studies (WIES)

WIES has its main offices in Los Angeles on the USC University Park Campus.

From there, they manage the research laboratories and conference facilities on WMSC.

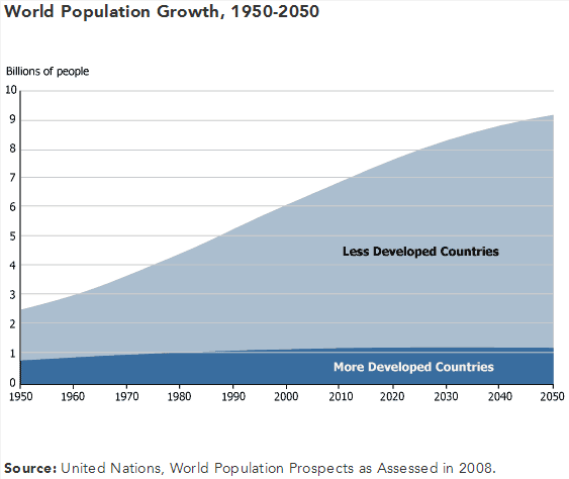
WIES “Camp David for the Environment”

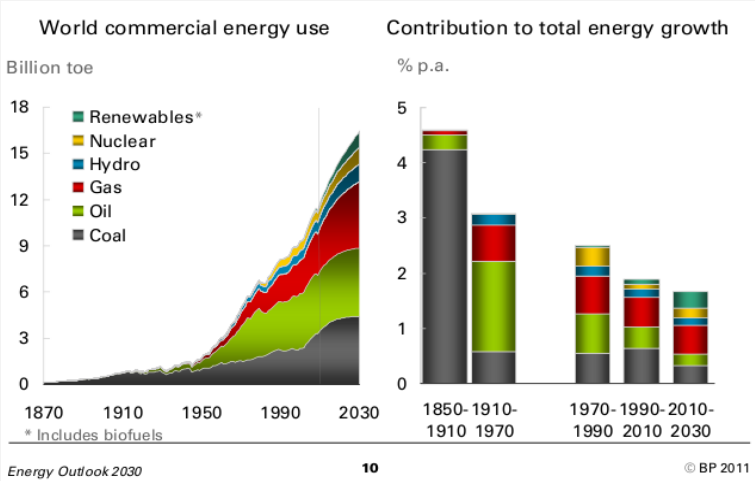
The Institute is an environmental headquarters for the university and serves as a focal point for the world’s scientific and policy leadership to collaborate on understanding and solving society's toughest environmental problems and prepare for future issues.

Perhaps its most important objective is to effectively communicate findings of this interdisciplinary center to the public, and especially to those who can effect positive environmental change.

WMSC Energy Technologies Demonstration Park (ETDP)

Technology must work with *Policy* to solve enviro-energy problems.

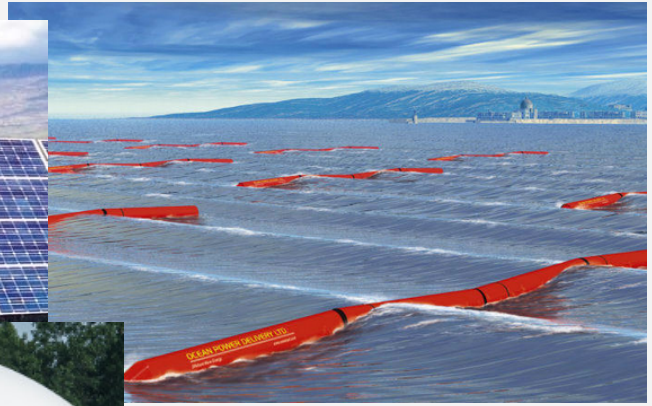




Population drives energy demand...

which drives energy consumption and environmental consequences

WMSC Energy Technologies Demonstration Park (ETDP)



WMSC Energy Technologies Demonstration Park (ETDP)

Objective: The “big picture” goal is to establish a permanent site at the Wrigley Marine Science Center dedicated to the development, testing and demonstration of alternative and sustainable energy technologies.

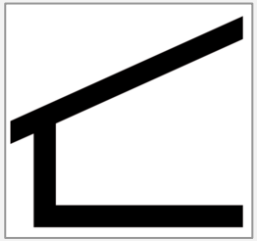
This site will serve as a research and educational setting for emerging energy technologies and as a practical platform for developing new energy ideas.

Apart from being a contemplative destination to inspire innovation by faculty and students, this site will also serve to expose technologies to visiting delegates searching for solutions to our world’s growing energy demands.

WMSC Energy Technologies Demonstration Park (ETDP)

Scope: The ETDP will comprehend three key aspects.

1) Primarily, the ETDP will be designed to quickly integrate different energy technologies and provide standardized interfaces to modern facilities. In a practical real world way, the ETDP will host a myriad of technologies concurrently.



WMSC Energy Technologies Demonstration Park (ETDP)

Scope: The ETDP will comprehend three key aspects.

2) These platforms will have the capacity to be easily reconfigured to accommodate new ideas for study.

This practical arrangement will allow the ETDP to provide WMSC with sustainable, alternative and renewable energy while ecologically managing WMSC waste streams. This will help lead to an environmentally conscious, energy self sufficient and sustainable campus.

WMSC Energy Technologies Demonstration Park (ETDP)

Scope: The ETDP will comprehend three key aspects.

3) Finally, being surrounded by the natural beauty of the Catalina Island Nature and Marine preserves, the very setting of the ETDP will serve as a constant reminder of the necessity for environmental stewardship. This idea of responsible citizenship is the heart of the project.

WMSC Energy Technologies Demonstration Park (ETDP)

The large yellow circle depicts the proposed area to be used as the ETDP site.

WMSC Energy Technologies Demonstration Park (ETDP)

Sustainable energy companies from around the world will be invited to showcase their technology and demonstrate the enviro-energy benefits they provide.

Students, faculty, scientists, regulatory agents and policy makers will converge on the island to study and analyze existing technologies, inspire and develop new and improved technologies, and acquire a comprehensive understanding of what it really takes to bring technologies to the world.

Examples of technologies include:

- Solar Power
- Wind Power
- Wave Power
- Anaerobic Digestion
- Bio Fuels
- Energy Conversion Technologies
- Fuel Cells
- Geothermal Energy
- Bioelectricity
- Hydraulic Energy Storage
- Seebeck Effect

MSolTec Energy Research, llc.

At MSolTec, our goal is to forge a path to a clean, sustainable world where energy needs and environmental stewardship coexist in harmony. We will find the most elegant solutions to the most difficult enviro-energy problems.

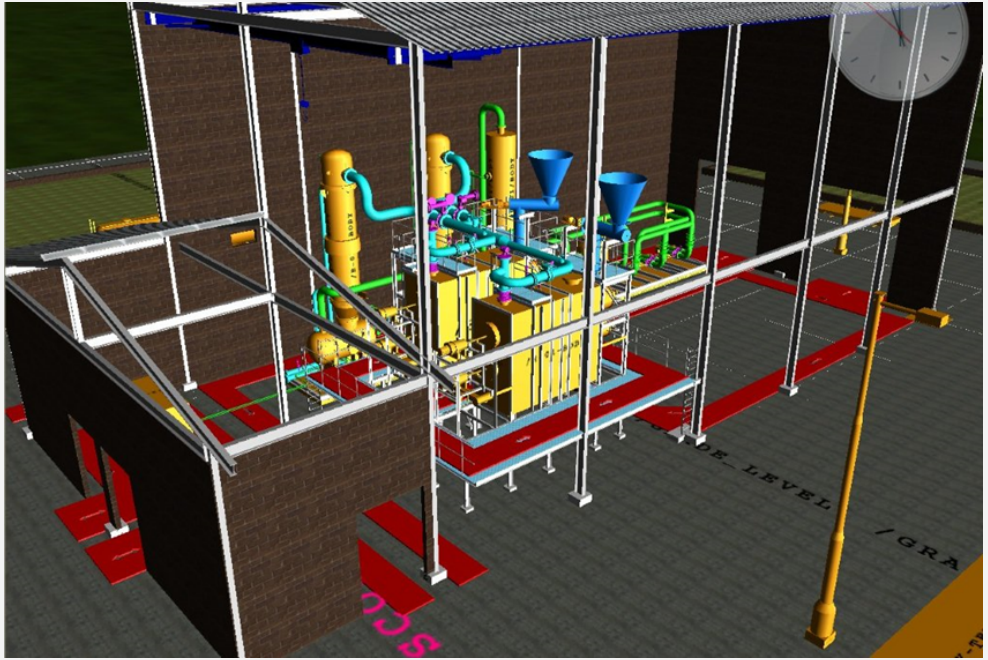
MSolTec, Proposed Pyrolysis Conversion Technology

Pyrolysis is a thermochemical decomposition process in the absence of oxygen.

It thermally breaks down complex materials into simpler compounds with minimal loss of energy.

The process temperature defines the limit of binding energies that can be decomposed.

Two types of compounds are formed by the process, pyrolysis gases and char.



M3RP System courtesy of Scogen & Ambient Energy.

MSolTec, Proposed Pyrolysis Conversion Technology

The char will be primarily compounds with binding energies above the process temperature and will be mostly carbonaceous solids.

Depending upon the feedstock, char disposition can be anything from bio-char to be applied to the land or pressed into briquettes, to carbon black, to source carbon for activating, or for daily cover at a landfill.

M3RP System courtesy of Scogen & Ambient Energy.

MSolTec, Proposed Pyrolysis Conversion Technology

The pyrolysis gases (or otherwise known as syngas) are distilled into liquids and remaining gases.

The distilled liquids include water and fuels. Once separated, the fuels can be used for power generation, components in petrochemical processes, or catalytically combined with remaining gases into liquid fuels like ethanol.

Some of the remaining gases are used to provide heat for the conversion process, but most can be used for power generation.

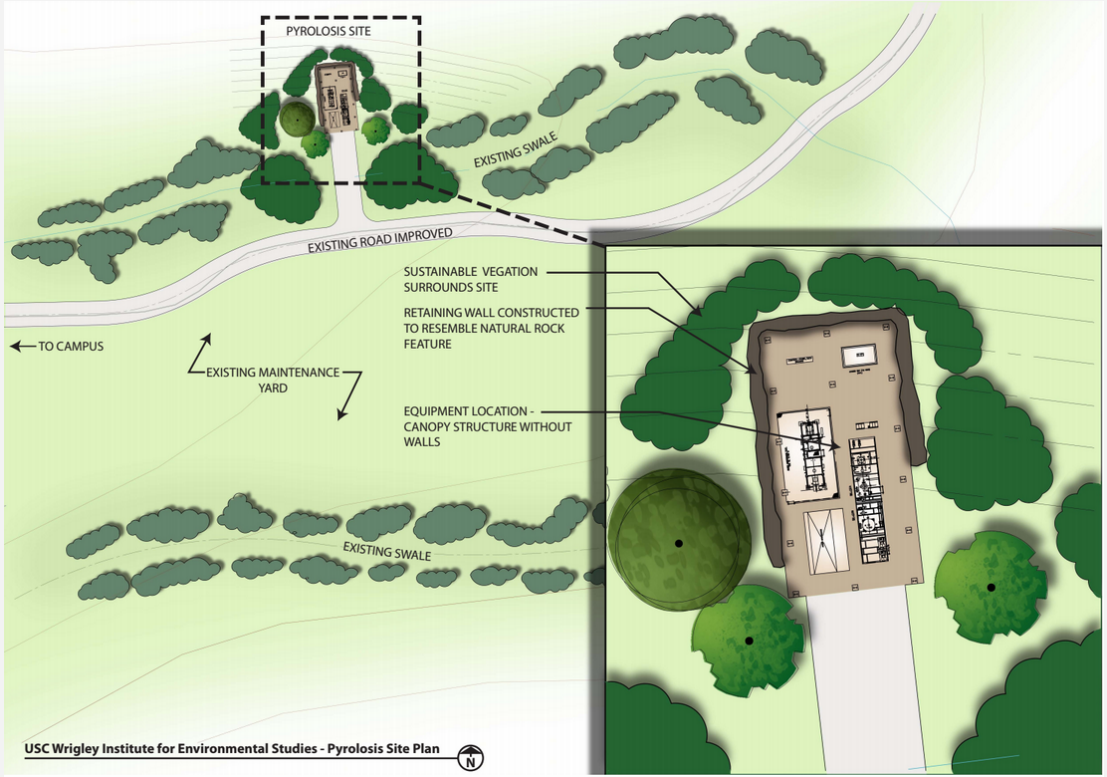
M3RP System courtesy of Scogen & Ambient Energy.

MSolTec, Proposed Pyrolysis Conversion Technology

The small yellow circle depicts a possible location for MSolTec's Pyrolysis conversion technology.

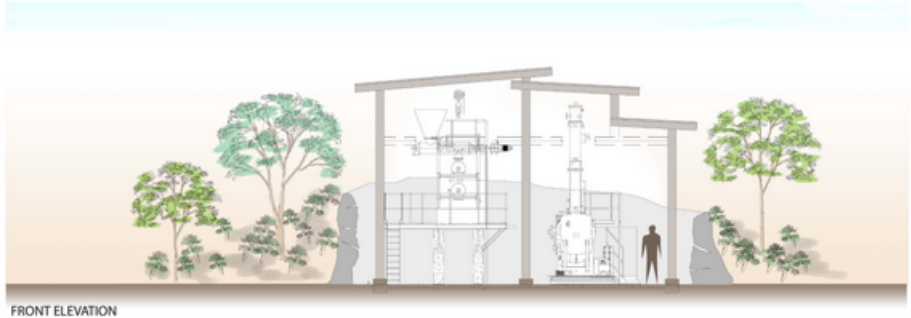
MSolTec, Proposed Pyrolysis Conversion Technology

Site Plan

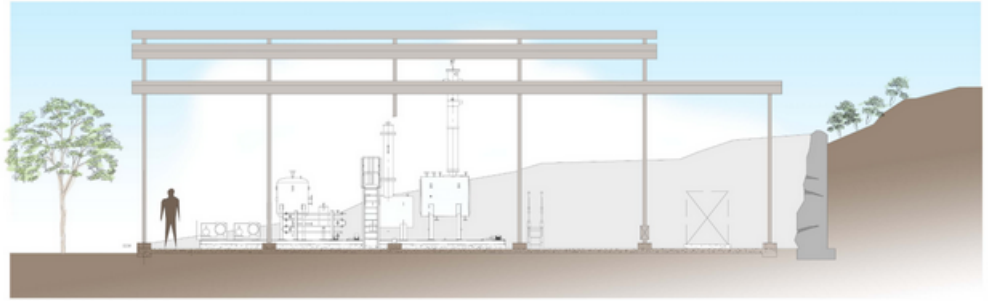


MSolTec, Proposed Pyrolysis Conversion Technology

Elevations



FRONT ELEVATION



SECTION THROUGH FACILITY

USC Wrigley Institute for Environmental Studies - Pyrolosis Site Elevation and Section

Thank You

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