COMPO ENERGY INC.

Solar Thermal Alternative Renewable Energy Lab

Mechanical Engineering
Cal Poly Pomona

CBC
STEEL BUILDINGS
A NUCOR Company

METWEST CONSTRUCTION, INC.

MWH
BUILDING A BETTER WORLD
Compost Waste Heat to Energy Solar Chimney Power Plant

COMPO ENERGY INC.
**INTRODUCTION**

- **RESEARCH SPONSORED BY:**
  - **COMPTE ENERGY INC.**
    - The Smartest Name in Energy

- **HYBRID COMPOST WASTE HEAT TO ENERGY / SOLAR CHIMNEY POWER PLANT (SCPP)**
  - US PATENT NUMBER 7396447
  - CANADIAN PATENT NUMBER 270544

- **OBJECTIVES**
  - **SYNERGY OF WASTE MANAGEMENT AND RENEWABLE ENERGY TECHNOLOGIES**
    - COMPOST WASTE HEAT TO ENERGY
    - TURBINE / GENERATORS
  - **PHOTOVOLTAIC ARRAY ON SOLAR COLLECTOR ROOF**
  - **WASTE MANAGEMENT**
  - **ADRESSES LANDFILL INFRASTRUCTURE ISSUES**
  - **FERTILIZER / COMPOST FOR URBAN FARMING**
  - **SUSTAINABLE AGRICULTURE AND COMMUNITIES**

- **SCCP DESIGN WITH THE FOLLOWING FEATURES**
  - NO INTEGRATORS ARE USED IN THIS PROJECT
  - CHIMNEY HEIGHT = 100 m
  - CHIMNEY DIAMETER = 10 m
  - FOOTPRINT = 24 ACRES (97.125 sq m)
  - OVER 100 MW ENERGY GENERATION CAPABILITY
  - 12 CHAMBER CONFIGURATION ALLOWS 24/7 OPERATION AND SUPPORTS PLANT MAINTENANCE & SERVICING
  - TRANSPARENT ROOF ALLOWS SOLAR AIR COLLECTOR TO TRAP HOT AIR FROM THE SUN
  - HEAT RELEASED FROM COMPOST ENHANCES THE NATURAL CONVECTION SOLAR UPTAKE POWER PRODUCTION
  - COMPOST FERTILIZER FOR USE IN URBAN FARMING AND AGRICULTURAL APPLICATIONS
  - IDEAL FOR REMOTE DESERT CLIMATES

**MATERIALS AND METHODS**

- **BUILDING CONSTRUCTION ENGINEERING TECHNOLOGY**

- **EXPERIMENTAL PROTOTYPE TEST FACILITY**

- **NUMERICAL HEAT TRANSFER AND FLUID FLOW MODELING**

- **EXPERIMENTAL PROTOTYPE EMPIRICAL DATA COLLECTION**

**RESULTS**

- **EXPERIMENTAL PROTOTYPE ENGINEERING TESTS**

**CONCLUSIONS**

- **ECONOMIC ANALYSIS**
  - COMPOST WASTE HEAT ENERGY CONVERSION 49% ($44.1M)
  - WASTE MANAGEMENT 45% ($40.5M)
  - MISCELLANEOUS (PV ARRAY, RECYCLING, FERTILIZER, FOOD WASTE TO HEAT) 6% ($5.4M)
  - **BUILDING CONSTRUCTION COST ESTIMATE $156M**
  - FOUNDATION / STRUCTURAL SUPPORT = $12.47M
  - SITE PREPARATION = $42M
  - GENERAL CONDITIONS = $43.3M

**REFERENCES**


**CASE STUDY OF A SOLAR TOWER/COMPOST WASTE TO ENERGNY TEST FACILITY**

Dr. Kevin R. Anderson¹, Suzann Shihadeh², Pedro Perez², Benjamin Kampen³, Chris McNamarar, Souha Jouhar², Saman Bahrami², Kaian Wang², Joseph Juarez¹, Dr. Yasser Salem⁴, Dr. Maryam Shafahi⁵, Dr. Monica Palomo⁶, Dr. Reza Baghaei Lakeh⁷, Dr. Ali Sharbat⁸, "Mechanical Engr., Construction Engr. Technology, Agricultural & Plant Sciences, Civil Engr., Engr. Technology Calif. State Polytechnic Univ. at Pomona, 3801 W. Temple Ave, Pomona, CA, 91768 USA.


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Supplemental Presentation from CBC Steel Buildings
MET WEST CONSTRUCTION, INC.

• 40 Years industry experience
• Design build specialists with in-house engineering
• Ability to handle any project
• L.A. City Fabricator
CBC STEEL BUILDINGS

Founded by an engineer, CBC was structured to take the confusion out of the building process. Based as a true Service Company, our goal is to provide the highest quality building in the shortest time possible.
CAPABILITIES

• CBC does not outsource – People make projects successful and CBC has the best in the business.

• Design Flexibility - We haven’t seen it all yet. But we are prepared to handle whatever the challenge.

It Pays To Take A Closer Look…
L. A. COUNTY FACILITIES

HANGAR 25 AT BOB HOPE AIRPORT
1ST LEED PLATINUM HANGAR

LAFD & LAPD HANGARS

W: 140.5’  L: 199.3’  EH: 29.5’

W: 142’9  L: 64’2  EH: 22.8’

W: 157’  L: 361’  EH: 47’
SPECIAL PROJECTS

QUANTAS HANGAR – L.A. CITY

Hangar Door: 295’ x 60’ 93’-tail
Airbus 8380

W: 311.33’  L: 227’  EH: 54.5’
RECYCLING FACILITIES

GRAND CENTRAL RECYCLING
W: 350’  L: 348’  EH: 32’

PUENTE HILLS RECYCLING FACILITY
W: 300’  L: 750’  EH: 37’

ZERO WASTE FACILITY
W: 232’  L: 387’  EH: 27’
MAJOR SPECIALTY PROJECTS

BIGELOW AEROSPACE
“Space Hotels”

A) W: 188’ L: 145’ EH: 48’
B) W: 80’ L: 400’ EH: 77’
C) W: 93’ L: 400’ EH: 44’
D) W: 80’ L: 450’ EH: 48’
E) W: 80’ L: 50’ EH: 115’
F) W: 75’ L: 253’ EH: 48’
MAJOR SPECIALTY PROJECTS

STRATOLAUNCH HANGAR
PAUL ALLEN / BURT RUTAN PROJECT

FABRICATION DOOR
W: 22’    L: 48’

HANGAR MEGA DOOR
W: 426’

FABRICATION BUILDING
W: 275’    L: 320’    EH: 25’

HANGAR
W: 463’    L: 149’    EH: 57’
W: 212’    L: 135’    EH: 65’

OFFICE BUILDING
W: 75’    L: 135’    EH: 28’
MAJOR SPECIALTY PROJECTS

THE SPACESHIP COMPANY

Sir Richard Branson / Virgin Galactic
LARGE CLEAR SPANS
“Better Ways To Build For The Future”

FM APPROVED

L.A. CITY APPROVED
#FB01436

CLARK COUNTY NEVADA
APPROVED
FABRICATOR #404

TYPE 1 FABRICATOR
#SP12-0009

U.S. Owned and Operated
Made in America With American Steel

83%

MBMA

ACCREDITED
AC472