Benefits of Solar Thermal for Industry

30th of June 2022
9 AM GMT – 10 AM WAT
11 AM CAT – 12PM EAT

Roger HACKSTOCK

Pauline DUSABEMARIYA
Michelle CROSS
Troy BARRIE
Jeff KIMANTHI
MEMBER’S RESOURCES AND BENEFITS

AFSIA SERVICES

COMPANIES DATABASE
B2B MATCH-MAKING
EVENTS PROMOTION AND MANAGEMENT
WHO’S WHO INTERVIEW
PROJECTS DATABASE
TENDERS DATABASE
WEBINARS & PRODUCT SHOWCASE
JOB PORTAL

AFSIA
Africa Solar Industry Association
AFSIA
Africa Solar Industry Association

AFSIA
MEMBERS

STRATEGIC PARTNER

FOUNDING
Benefits of Solar Thermal for Industry

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Roger HACKSTOCK

MODERATOR

Pauline DUSABEMARIYA
Michelle CROSS
Troy BARRIE
Jeff KIMANTHI
Roger Hackstock
Managing Director
Austria

• 30+ years experience in energy transition
• Managing Director of Austria Solar Association for combined 17 years
• Member of the Think Tank Energy Academy
• Lecturer at the Vienna University of Technology
• Author of two books on energy transition
Pauline Dusabemariya
Coordinator
Rwanda

- 10 years of experience in solar energy
- Electrical engineer with experience in both thermal and photovoltaic systems
- Specialized in electrical power networks that include power transmission lines and distribution systems
- Currently enrolled Masters in Renewable Energy at Herriot-Watt University
Solar Thermal Technology for Industrial and Residential Use in Africa

Pauline DUSABEMARIYA
Electrical Engineer
Coordinator of Solar Water Heater department at Munyax Eco
MUNYAX Eco is specialized in solar (thermal & photovoltaic) and energy efficiency sectors. Operating since 2013, the company was founded by Francine MUNYANEZA, CEO.

**VISION:**
To become a key player in accelerating access and adoption of clean energy solutions in Africa while fostering women leadership and participation.
COMPANY’S ACTIVITIES

Design office and installation of solar systems:

PHOTOVOLTAIC: feasibility studies, sizing, development, and implementation of projects: off-grid and grid-connected systems.

THERMAL: sales and installation of individual and collective solar water heating systems

Solar Mini-grids: MUNYAX ECO is looking at over 100 mini-grids to develop and implement in the near future thanks to Rwanda’s government target of universal electrification by 2024.

Solar street lights & solar torch
For individual and institutions

Solar cold chain and solar pumping solutions
Empowering cooperatives of agriculture with sustainable solutions in agricultural value chain

Solar Home Systems:
Rural electrification through National electrification program
SWH installed and Co2 emission avoided

CO2 EMISSION AVOIDED

- The cumulative Energy produced from the solar water heaters installed is: 2700 MWh
- The Equivalent Co2 avoided is 4,124 Tones

Total number of SWH installed = 1707
In October 2020, MUNYAX ECO has been recognized as best solar achievement of the year in Africa by AFSIA (Africa Solar Energy Industry Association) to have contributed outstandingly to promoting and advancing the use of solar energy across Africa in its full diversity.

After 5 years of operation, MUNYAX ECO was recognized Group to be among « Africa’s fastest growing and arguably its latest « Companies to Inspire Africa » report, released.

Since 2014, MUNYAX ECO was selected by REG (through a tender from the Solar Rwanda Program) to be a certified supplier/installer of Solar Water Heaters. Hence MUNYAX ECO has successively installed over 1500 Solar Water Heating systems.
Installation of 3800L solar water heating system for alvins elevation in Kigembe fishery,
January 2019
Centre Bethanie (Kibuye)

Installation of 10 solar water heating systems 300 liters each
INZIZI HOTEL (Gisenyi)
installation of 10 solar water heating systems 300 liters each
GAKO Military training center

Installation of 10 solar water heating systems 300 liters each
Michelle Cross  
Head of international Business Development  
France

- Co-founder of Planet Soar
- International Business, Digital Marketing & Sales specialist
- Worked with Sad Marketing, Fast Moving Experts and iRevolution Digital Acceleration
- Holds a MBA, Luxury Brand management from OMNES Education and Degree in Sustainable Business Strategy from Harvard University
Solar Thermal Production Line / Africa
GLOBAL INDUSTRIAL ENERGY DEMAND

Breakdown of industrial energy demand in the EU-28 countries

Source: IEA / IRENA
T160 - THERMAL SOLAR COLLECTOR
To ensure emission-free industrial processes

Our T160 solar collector decarbonises industrial processes with temperatures up to 160°C. The T160 has the highest optical efficiency ever measured: 76.4%.
## T160 SPECIFICATION

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPERATING TEMPERATURE</strong></td>
<td>40-160°C (100-320°F)</td>
</tr>
<tr>
<td><strong>MAX STEAM PRESSURE</strong></td>
<td>up to 8 bar (115 PSI)</td>
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<tr>
<td><strong>PRESSURE RATING</strong></td>
<td>16 bar (232 PSI)</td>
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<tr>
<td><strong>COLLECTOR SIZE (LxWxH)</strong></td>
<td>5,514 x 1,095 x 347 mm</td>
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<tr>
<td><strong>WEIGHT</strong></td>
<td>148 kg</td>
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<tr>
<td><strong>DYNAMIC LOAD</strong></td>
<td>90 kg/m²</td>
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<tr>
<td><strong>OPTICAL EFFICIENCY</strong></td>
<td>76.4 %</td>
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<tr>
<td><strong>EXPECTED LIFETIME</strong></td>
<td>25 years</td>
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<tr>
<td><strong>PEAK ENERGY GENERATION</strong></td>
<td>700 W/m² aperture area under optimum conditions</td>
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</tbody>
</table>
## INDUSTRIAL MARKET

<table>
<thead>
<tr>
<th>Process</th>
<th>Beverage</th>
<th>Chemicals</th>
<th>Cooling</th>
<th>Dairy</th>
<th>Desalination</th>
<th>District Heating</th>
<th>Food Processing</th>
<th>Mining</th>
<th>Pharmaceutical</th>
<th>Pulp &amp; Paper</th>
<th>Tea</th>
<th>Textile</th>
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<tbody>
<tr>
<td>Bleaching</td>
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<td>Cleaning in place (CIP)</td>
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<td>Heat Treatment</td>
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<td>Hot Water</td>
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<td>Pasteurization</td>
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<td>Multi-Effect Desalination</td>
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<td>Sterilization</td>
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</tbody>
</table>
Supply heat, steam, and cooling processes with the same system.

Solar heat can be integrated at multiple integration points into the existing heating system.

The highest possible solar system efficiency is achieved by prioritizing low-temperature integrations points.
Solar Thermal Production Line / Africa

**PRODUCING COLLECTORS**
- 1 EVERY 6 MIN

**PRODUCTION / YEAR**
- 50 MW

**SQM / YEAR**
- 100 K
<table>
<thead>
<tr>
<th><strong>COMPANY BENEFITS FROM SOLAR THERMAL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substantially lower energy costs</strong></td>
</tr>
<tr>
<td>A lot of energy used in a typical plant can be replaced with solar energy, resulting in lower OPEX and higher profitability.</td>
</tr>
<tr>
<td><strong>Reduced CO₂ emissions</strong></td>
</tr>
<tr>
<td>Replacing carbon-based fuels with solar thermal energy leads to dramatic cuts in CO₂ emissions. Low emissions is getting increasingly important to stay competitive.</td>
</tr>
<tr>
<td><strong>Protection against rising energy prices</strong></td>
</tr>
<tr>
<td>The more fossil energy you replace with solar energy, the more protected your bottom line is against sudden increases in fuel prices.</td>
</tr>
<tr>
<td><strong>Building your brand</strong></td>
</tr>
<tr>
<td>Using solar energy to process your products brings new opportunities to build your brand in a positive way.</td>
</tr>
</tbody>
</table>
Thanks

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Troy Barrie
CTO
Kenya

- 10+ years of experience in Energy
- Working with Ariya Finergy and Mazi Mobility
- Worked with Pacific Energy Innovation Association and Avalon Battery
- Former co-founder of Shifting Growth Garden Society
- Bachelor of applied sciences, engineering physics, minor in commerce at the university of British Columbia
ARIYA FINERGY
YOUR POWER PARTNER

EPC 14 MW
O&M 40 SYSTEMS

USD $ 1.4M IN ENERGY SAVINGS
• We work extremely hard to understand our client’s industry and integrate green and clean technologies that provide strong returns
  • Solar PV
  • Solar Thermal
  • Batteries
  • Off-grid Power
• Innovation here in Africa
  • Vision Controller
• Also Provide
  • Power Stabilisation
  • Financing
Solar Thermal Solution

Key Features

- Can attain heating conditions of:
  - Temperature: 160°C
  - Pressure: 8 bar
- Single axis tracking system
- Collector efficiency factor: 76%
- Highest optical efficiency

How it works

- Sunlight strikes reflector surface and bounces off to receiver tube
- Receiver surface absorbs solar energy
- Heat is transferred to working fluid in receiver tube
- Working fluid transfers heat to meet client’s needs
Benefits
• Attain high temperatures to meet industrial needs using clean power
• Reduction in fuel costs
• Energy security – sustainable heat
• Reduction in CO2 emissions
CONTACT US FOR YOUR SOLAR CONSTRUCTION AND FINANCING OPTIONS

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+254 799 751 597
www.ariyafinergy.com
Kalamu House, 3rd Floor
Nairobi
Jeff Kimanthi
Technical Office Manager
Kenya

- 10+ years of experience as a technical office manager
- Previously worked with Socoin
- Certified energy manager with more than a decade of power industry experience in project design
- Business Administration and Management from USIU
Introduction

Iberafrika Power

- 52.5MW HFO plant
- 7 units Wartsila W20V32
- Fully owned by APMC
- Supports industrial area – Consumption voltage 66kV
- ESG goal to decarbonize its operations
NSPP facilities
Transformation of energy

Plant transformation

- **Combustion.** The fuel is combusted producing heat and gases that drive the pistons.
- **Generation.** The rotary movement produced by the Engine (mechanical power) is transformed to electricity by the Alternator.

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Base load operations &gt; 65% CF</td>
</tr>
<tr>
<td>2015</td>
<td>Peaking plant operations &lt; 30% CF</td>
</tr>
<tr>
<td>2022</td>
<td>Standby operations</td>
</tr>
</tbody>
</table>
Heating Problem

• How to heat HFO sustainably
• Lower:
  • Heating costs – HFO & Power
  • Stack emissions – PM, CO$_2$, SO$_X$
  • Maintenance costs
  • Waste handling costs
Thank You
NEW PROGRAMS

COUNTRY

OBJECTIVE
CREATING MORE VIDEO CONTENT ADAPTED TO COMMUNITY’S ONLINE ACTIVITY AND PREFERENCES, TO DRIVE AFSIA AND MEMBERS ONLINE VISIBILITY AND THOUGHT-LEADERSHIP, AND GROW THE COMMUNITY

FORMAT
• INSPIRED FROM WORLD ECONOMIC FORUM 1-MINUTE VIDEOS ON INNOVATIVE INITIATIVES
• 1 KEY SOLAR TOPIC PER COUNTRY
• 1 MINUTE VIDEOS
• 54 COUNTRIES = 1 VIDEO PER WEEK

RWANDA HAS EMBARKED ON THE MOST AMBITIOUS NATIONAL ELECTRIFICATION PLAN IN AFRICA
NEW PROGRAMS

JOB PORTAL

OBJECTIVES

• Assist members with recruitment efforts
• Cater to community’s high interest in solar job opportunities
• Provide 1st access platform for aspiring solar professionals
• Develop market intelligence about solar industry’s weight in African employment
• Diversify revenue streams for AFSIA

OPPORTUNITY

To work with academia, recruitment partners, training centers, DFIs, ...
15.

- 18,000 FOLLOWERS
- +1,000/MONTH
- 180,000 IMPRESSIONS/MONTH
- 100 UPDATES/MONTH
- ALSO “AFSIA EN FRANÇAIS” AND “AFSIA EM PORTUGÊS”

- 55,000 SOLAR PROFESSIONALS REACH
- +2,000/MONTH
- AVERAGE OPEN RATE: 24.9%
- AVERAGE CLICK RATE: 19.6%
- AVERAGE UNSUBSCRIBES: 0.1%

- 49 ARTICLES IN 2020
- 33 ARTICLES IN 2021 H1
- PARTNERSHIPS WITH
  - AFRIK21
  - SUN-CONNECT
  - PV MAGAZINE
  - MINING AFRICA REVIEW
thank you,