The advent of new materials is pivotal to transformations in human society:

CEMENT

STEEL

SILICON

THE AGE OF MAN

THE INDUSTRIAL REVOLUTION

THE COMPUTER AGE

Sadly, the construction industry remains in the Stone Age.
“One billion people live in informal settlements of their own making, without adequate shelter, dependable power, or safe drinking water.”

It is high time our homes match the intelligence of our phones.
“Bio-based chemicals are projected to become 20% of all chemicals produced worldwide, making them a $200 billion industry by 2020.”

US SECRETARY OF AGRICULTURE
Malama manufactures the first line of rigid urethane foams made from sustainable resources that are non-toxic and easily recycled.
Sustainable Advantages

Our products are cost and performance competitive with petroleum-based foams, while delivering significant human health and environmental benefits.

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
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<tbody>
<tr>
<td>High bending &amp; sheer strength</td>
<td>Yields resilient, durable products</td>
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<tr>
<td>High R value &amp; moisture resistance</td>
<td>Ideal for insulating homes, cars, appliances</td>
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<td>Uniform density and cell structure</td>
<td>Machines and surfaces accurately</td>
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<td>Made from low-cost plant polyols</td>
<td>Price competitive with petro-based foams</td>
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<td>Zero emissions (Berkley Analytical)</td>
<td>Safer work places and living environments</td>
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<tr>
<td>Fully recovered and repurposed</td>
<td>Superior lifecycle performance</td>
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<tr>
<td>Carbon negative (USDA-NIST Study)</td>
<td>Every pound sequesters 2.6 lbs of CO$_2$e</td>
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Advanced Composite & Steel Assemblies

Malama has teamed with a group of talented developers to create high performance, cost-competitive, energy efficient structures capable of meeting the challenges of sustainable 21st Century development.
ACASA System

ACASA combines Malama’s foam panels with light-gauge steel framing and geo-composite coatings to enable rapid construction of high performance structures.

Extrusions carry loads and provide channels for water and power. SIP panels lock into these extrusions providing strength and insulation values 2X to 3X higher than that of wood frame or cement block construction.
The ACASA System enables the “mass customization” of homes and buildings at costs comparable to cement block or stick frame construction methodologies.

1) A concrete foundation is poured or raised foundation constructed
2) Steel tracks are bolted to the foundation and vertical columns set
3) Panelized walls, doors and windows slide into the framing system
Electrical wiring, plumbing, LED lighting, solar panels, rain water collection, and water purification systems are integrated into the building panels.

4) Exterior and interior geo-composite surfaces are applied
5) Sinks, toilets, windows, doors, cabinetry and fixtures are installed
6) All systems are integrated and interfaced with central control unit
Interior and exterior surface treatments can be varied to meet the architectural specifications, geographic challenges and budget parameters of each project.

This dynamic systems approach to design and construction enables mass customization of homes at pre-fabricated pricing.
ACASA will forever change the way we build homes and measure their environmental performance.

The ACASA system meets ICC International Code Certification.

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<tr>
<td>MODULAR COMPONENTRY</td>
<td>Rapidly deployable in any location worldwide</td>
</tr>
<tr>
<td>STRUCTURAL SUPERIORITY</td>
<td>Stronger, lighter, safer and far more efficient</td>
</tr>
<tr>
<td>ENERGY EFFICIENCY</td>
<td>Lower cost of ownership; Grid independent</td>
</tr>
<tr>
<td>COST COMPETITIVE</td>
<td>Vs. cement block, stick or steel frame structures</td>
</tr>
<tr>
<td>SYSTEMS INTEGRATED</td>
<td>BIPV; LED lighting; Internet enabled; H₂O filtration</td>
</tr>
<tr>
<td>ECO INTEGRITY</td>
<td>Locally sourced; Zero emission; Carbon neutral;</td>
</tr>
<tr>
<td>DESIGN AGNOSTIC</td>
<td>Culturally sensitive; Aesthetically inspired</td>
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Market Drivers

Powerful forces drives adoption of the ACASA System:

- **RSB – Roundtable on Sustainable Biomaterials**
  Biomaterials produced from sustainable sources

- **USGBC’s LEED Certification Program**
  Energy & resource efficiency; Indoor air quality

- **EPA’s Environmentally Preferable Purchasing**
  Environmental impact; Lifecycle performance

- **USDA’s Bio-Preferred Purchasing Program**
  High plant-based content; Domestic sourcing

- **DOE’s Challenge Home Program**
  Energy efficiency; Indoor air quality; Durability
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