

# Open Source Ecology

## The Shumaker Family Foundation

Letter of Inquiry

### Global Village Construction Set

We are a network of farmers, engineers, fabricators, and multi-skilled supporters engaged in creating the *Global Village Construction Set (GVCS)*, a low-cost, high-performance, open-source, do-it-yourself platform that allows for the easy fabrication of the 50 industrial machines that it takes to build a small civilization with modern comforts.

The GVCS includes machinery, equipment, tools, components, and other infrastructures for creating a complete economy: food, fuel, energy, building materials, transportation, and fabrication. The platform lowers the barriers of entry into farming, building, and manufacturing, and can be seen as a life-size lego-like set of modular tools that can create entire economies, whether in rural Missouri, where the project was founded, in urban redevelopment, or in the heart of Africa.



Solar Concentrator

Distributed  
Renewable Energy  
(examples)



Biomass Gassifier/Burner

### GVCS - Key Features

**Open Source** - we freely publish our 3D designs, schematics, instructional videos, budgets, and product manuals on our open source wiki, and we harness open collaboration with technical contributors.

**Low-Cost** - The cost of making or buying our machines is on average 49% cheaper than buying from an industrial manufacturer.

**Modular** - Motors, parts, assemblies, and power units can interchange, where units can be grouped together to diversify the functionality that is achievable from a small set of units.

**User-Serviceable** - Design-for-disassembly allows the user to take apart, maintain, and fix tools readily without the need to rely on expensive repairmen.

**DIY** - The user gains control of designing, producing, and modifying the GVCS tool set.

**Closed Loop Manufacturing** - Metal is an essential component of advanced civilization, and our platform allows for recycling metal into virgin feedstock for producing further GVCS technologies - thereby allowing for cradle-to-cradle manufacturing cycles.

**High Performance** - Performance standards must match or exceed those of industrial counterparts for the GVCS to be viable.

**Flexible Fabrication** - It has been demonstrated that the flexible use of generalized machinery in appropriate-scale production is a viable alternative to centralized production.

**Distributive Economics** - We encourage the replication of enterprises that derive from the GVCS platform as a route to truly free enterprise - along the ideals of Jeffersonian democracy.

**Industrial Efficiency** - In order to provide a viable choice for a resilient lifestyle, the GVCS platform matches or exceeds productivity standards of industrial counterparts.

### Context

#### Problem

“America faces long-term structural challenges.\*” Factory automation and the globalization of the labor market have fundamentally changed the American economy, resulting in high rates of long-term unemployment.

The climate crisis threatens to disrupt society on every level. Centralization and dependence on petroleum for the distribution of goods have brought an increasing amount of instability to the international economy.

#### Opportunity

Unprecedented levels of technological efficiency and global cooperation motivated by a wealth of economic and cultural opportunities.

\* New Policy Institute

### Activities

#### Global Village Construction Set

- Designing
- Prototyping
- Field Testing
- Documentation

#### Business Model Incubation

The GVCS machinery works together in ‘micro-ecologies’ creating a vast array of production opportunities beyond the outputs of a single machine. We create open source business models for the development of **distributive enterprise**.

#### Trainings - OSE Fellows & Distance Learning

We facilitate independent replication of our work (**technology** and **business plans**) freely and openly. At Factor e Farm, we provide hands on skills training in machine fabrication and enterprise development, and our online tools are already in use internationally.

### Impact

#### Outputs

We create extensive documentation using standard manufacturing schematics to assist independent replication:

- Design Rationale
- 3D CAD Files
- Fabrication Drawings
- Exploded Parts Diagrams
- Bills of Materials
- A-Z Instructionals
- Assembly Videos
- etc.

#### Outcomes

- manufacturing and job creation
- small business entrepreneurship
- clean energy market transformation
- 21st century infrastructure
- local economic development

### Indicators

#### Questions

How many people are independently replicating our designs? Which ones? Where?

What are our OSE Fellows learning? Are they starting businesses after their fellowship is finished? What kind?

What are the most profitable, resilient business models using GVCS equipment?

How many jobs are being created?

Are the renewable energy technologies replacing conventional energy sources?

How long do GVCS machines last without needing repair?

How many people are training other entrepreneurs in their own regions and communities?

## LifeTrac



### Documentation:

([links](#))

1. Design Rationale\*
2. Assembly Video
3. Fabrication Manual
4. Bill of Materials
5. Fabrication Drawings
6. Master CAD Files
7. User Manual

## Soil Pulverizer



### Documentation:

([links](#))

1. Design Rationale\*
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## Compressed Earth Brick Press

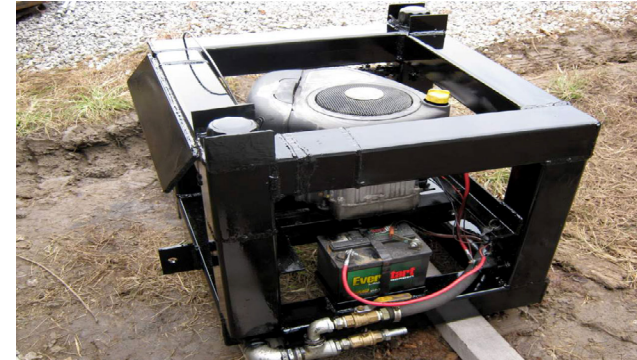


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## Power Cube



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\*Click for descriptions ([what is that?](#))