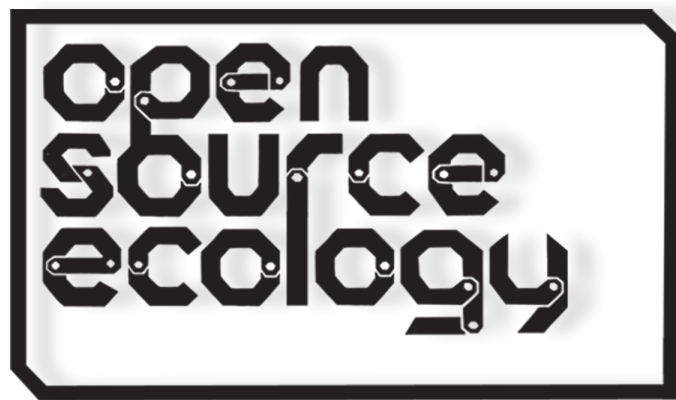




**Global Village
Construction Set
Budget**

January 01, 2012

GVCS Budget Projections

January 01, 2012

GVCS Development Budget

[\$]

Designing	536,068
Prototyping	1,029,190
Field Testing	200,978
Documentation	414,581
Total	\$2,184,669

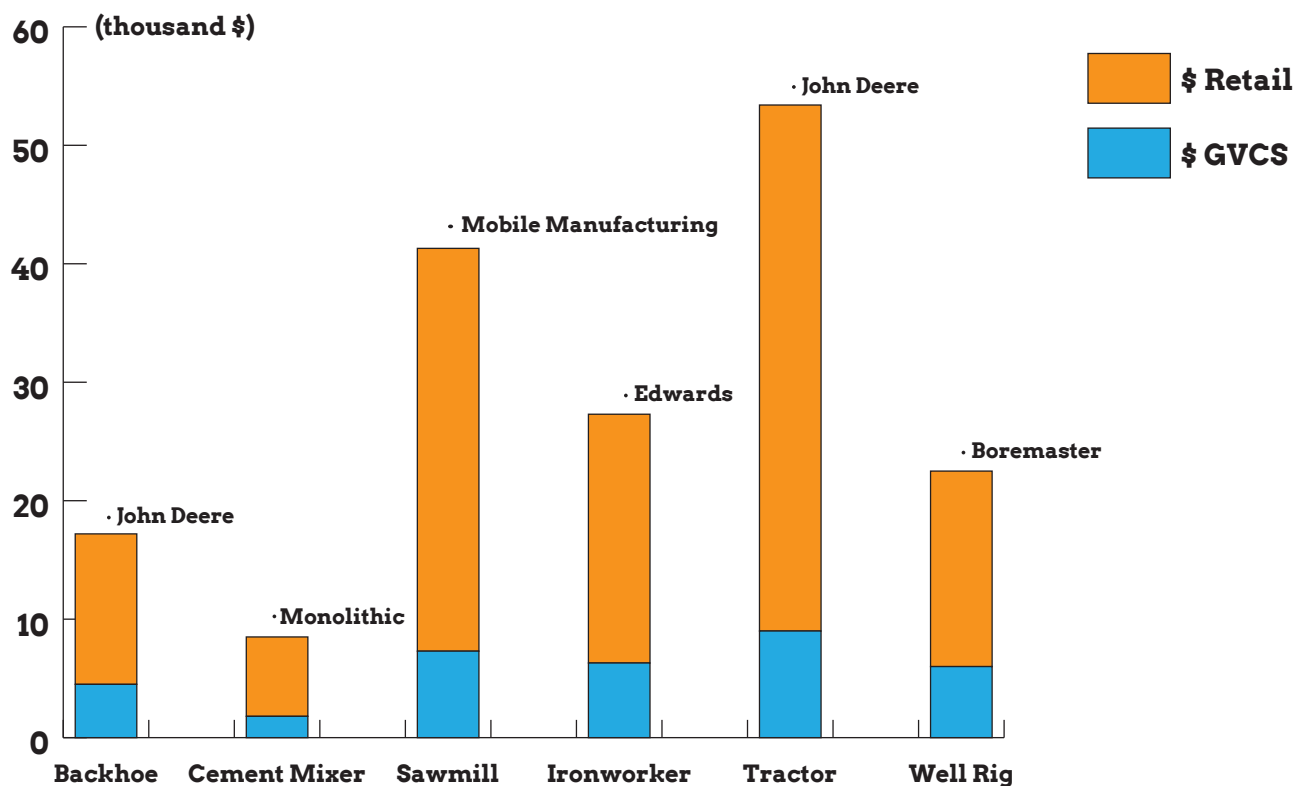
1. Designing - research of existing technology as the conceptual foundation for prototyping.

2. Prototyping - three rounds of prototype development.

3. Field Testing - rigorous inspection of third prototype to determine the soundness of the design.

4. Documentation - creating materials to teach others how to build the machinery for themselves.

Price Comparison: GVCS vs Commercial Models



(see [Appendix](#) for more information)

Designing

Mechanical Engineers:

(17-2141)

Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment.

Average hourly wage: \$39.65

U.S. Bureau of Labor Statistics

Machine	Designing (Hrs)
3D Printer	160
3D Scanner	160
Aluminum Extractor	320
Backhoe	160
Bakery Oven	160
Baler	320
Bioplastic Extruder	320
Bulldozer	320
CEB Press	160
Cement Mixer	160
Chipper/Hammermill	80
CNC Circuit Mill	160
CNC Torch Table	320
Dairy Milker	160
DIimensional Sawmill	160
Electrical Generator	320
Gasifier Burner	400
Hay Cutter	160
Hay Rake	160
Hydraulic Motor	320
Induction Furnace	640
Industrial Robot	640
Ironworker	160
Laser Cutter	320

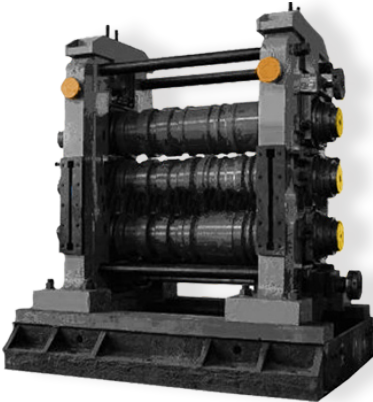
GVCS Budget Projections

(continued)

Metal Roller	320
Microcombine	320
Microtractor	240
Modern Steam Engine	400
Multimachine	640
Nickel-Iron Battery	160
Nursery	N/A
Open Source Car	640
Open Source Truck	640
Pelletizer	80
Plasma Cutter	320
Power Cube	320
Press Forge	160
Rod and Wire Mill	320
Rototiller	80
Solar Concentrator	400
Spader	160
Steam Generator	80
Tractor	240
Trencher	80
Univ. Power Supply	640
Universal Rotor	80
Universal Seeder	240
Universal Welder	160
Well-Drilling Rig	160
Wind Turbine	400

Total 13,520 Hrs

\$536,068



Metal Rolling Machine

GVCS Budget Projections

Prototyping - Fabrication

Machinists:

(51-4041)

Set up and operate a variety of machine tools to produce precision parts and instruments. Includes precision instrument makers who fabricate, modify, or repair mechanical instruments...applying knowledge of mechanics, mathematics, metal properties, layout, and machining procedures.

Average hourly wage: \$19.13

U.S. Bureau of Labor Statistics

Machine	Fabrication (Hrs)*
3D Printer	120
3D Scanner	240
Aluminum Extractor	480
Backhoe	240
Bakery Oven	240
Baler	360
Bioplastic Extruder	480
Bulldozer	480
CEB Press	240
Cement Mixer	120
Chipper/Hammermill	120
CNC Circuit Mill	120
CNC Torch Table	240
Dairy Milker	240
DImensional Sawmill	360
Electrical Generator	240
Gasifier Burner	240
Hay Cutter	120
Hay Rake	120
Hydraulic Motor	240
Induction Furnace	480

(continued)

Industrial Robot	360
Ironworker	360
Laser Cutter	240
Metal Roller	480
Microcombine	480
Microtractor	240
Modern Steam Engine	240
Multimachine	360
Nickel-Iron Battery	120
Nursery	N/A
Open Source Car	480
Open Source Truck	480
Pelletizer	240
Plasma Cutter	240
Power Cube	120
Press Forge	480
Rod and Wire Mill	480
Rototiller	120
Solar Concentrator	240
Spader	240
Steam Generator	120
Tractor	480
Trencher	240
Univ. Power Supply	240
Universal Rotor	120
Universal Seeder	240
Universal Welder	240
Well-Drilling Rig	240
Wind Turbine	480

Total 13,920 Hrs

\$266,290

*each machine goes through 3 prototypes

Prototyping - Materials

Bill of Materials:

A list of the raw materials, sub-assemblies, intermediate assemblies, sub-components, components, parts and the quantities of each needed to manufacture an end product.

(example)

Machine	Materials (\$)*
3D Printer	\$3,000
3D Scanner	\$7,500
Aluminum Extractor	\$150,000
Backhoe	\$9,000
Bakery Oven	\$10,500
Baler	\$12,000
Bioplastic Extruder	\$36,000
Bulldozer	\$60,000
CEB Press	\$12,000
Cement Mixer	\$3,000
Chipper/Hammermill	\$3,000
CNC Circuit Mill	\$3,000
CNC Torch Table	\$12,000
Dairy Milker	\$6,000
DImensional Sawmill	\$15,000
Electrical Generator	\$9,000
Gasifier Burner	\$3,000
Hay Cutter	\$6,000
Hay Rake	\$3,000
Hydraulic Motor	\$3,000
Induction Furnace	\$45,000
Industrial Robot	\$15,000
Ironworker	\$12,000
Laser Cutter	\$9,000
Metal Roller	\$24,000
Microcombine	\$24,000
Microtractor	\$12,000

*each machine goes through 3 prototypes

GVCS Budget Projections

(continued)

Modern Steam Engine	\$6,000
Multimachine	\$9,000
Nickel-Iron Battery	\$3,000
Nursery	N/A
Open Source Car	\$24,000
Open Source Truck	\$24,000
Pelletizer	\$12,000
Plasma Cutter	\$15,000
Power Cube	\$2,400
Press Forge	\$18,000
Rod and Wire Mill	\$30,000
Rototiller	\$3,000
Solar Concentrator	\$12,000
Spader	\$6,000
Steam Generator	\$3,000
Tractor	\$18,000
Trencher	\$12,000
Univ. Power Supply	\$7,500
Universal Rotor	\$3,000
Universal Seeder	\$9,000
Universal Welder	\$7,500
Well-Drilling Rig	\$13,500
Wind Turbine	\$18,000

Total 762,900 \$

\$762,900



CNC Circuit Mill

Field Testing

Inspectors, Testers:

(51-9061)

Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications. May use precision measuring instruments and complex test equipment.

Average hourly wage: \$17.09

U.S. Bureau of Labor Statistics

Machine	Field-Testing (Hrs)
3D Printer	240
3D Scanner	240
Aluminum Extractor	240
Backhoe	240
Bakery Oven	240
Baler	240
Bioplastic Extruder	240
Bulldozer	240
CEB Press	240
Cement Mixer	240
Chipper/Hammermill	240
CNC Circuit Mill	240
CNC Torch Table	240
Dairy Milker	240
Dlmsional Sawmill	240
Electrical Generator	240
Gasifier Burner	240
Hay Cutter	240
Hay Rake	240
Hydraulic Motor	240
Induction Furnace	240
Industrial Robot	240
Ironworker	240

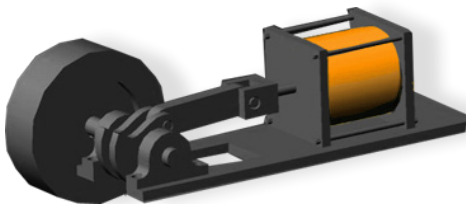
GVCS Budget Projections

(continued)

Laser Cutter	240
Metal Roller	240
Microcombine	240
Microtractor	240
Modern Steam Engine	240
Multimachine	240
Nickel-Iron Battery	240
Nursery	N/A
Open Source Car	240
Open Source Truck	240
Pelletizer	240
Plasma Cutter	240
Power Cube	240
Press Forge	240
Rod and Wire Mill	240
Rototiller	240
Solar Concentrator	240
Spader	240
Steam Generator	240
Tractor	240
Trencher	240
Univ. Power Supply	240
Universal Rotor	240
Universal Seeder	240
Universal Welder	240
Well-Drilling Rig	240
Wind Turbine	240

Total 11,760 Hrs

\$200,978



Modern Steam Engine

Documentation - Filming

Camera Operators - Video

(27-4031)

Operate television, video, or motion picture camera to record images or scenes for various purposes, such as TV broadcasts, advertising, video production, or motion pictures.

Average hourly wage: \$23.29

U.S. Bureau of Labor Statistics

Machine	Filming (Hrs)
3D Printer	20
3D Scanner	40
Aluminum Extractor	80
Backhoe	40
Bakery Oven	40
Baler	60
Bioplastic Extruder	80
Bulldozer	80
CEB Press	40
Cement Mixer	20
Chipper/Hammermill	20
CNC Circuit Mill	20
CNC Torch Table	40
Dairy Milker	40
Dlimensional Sawmill	60
Electrical Generator	40
Gasifier Burner	40
Hay Cutter	20
Hay Rake	20
Hydraulic Motor	40
Induction Furnace	80
Industrial Robot	60
Ironworker	60
Laser Cutter	40

GVCS Budget Projections

(continued)

Metal Roller	80
Microcombine	80
Microtractor	40
Modern Steam Engine	40
Multimachine	60
Nickel-Iron Battery	20
Nursery	N/A
Open Source Car	80
Open Source Truck	80
Pelletizer	40
Plasma Cutter	40
Power Cube	20
Press Forge	80
Rod and Wire Mill	80
Rototiller	20
Solar Concentrator	40
Spader	40
Steam Generator	20
Tractor	80
Trencher	40
Univ. Power Supply	40
Universal Rotor	20
Universal Seeder	40
Universal Welder	40
Well-Drilling Rig	40
Wind Turbine	80

Total 2,320 Hrs

\$54,033



Bakery Oven

Documentation - Video Production

Film and Video Editors:

(27-4032)

Edit moving images on film, video, or other media.
May edit or synchronize soundtracks with images.

Average hourly wage: \$29.75

U.S. Bureau of Labor Statistics

Machine	Production (Hrs)
3D Printer	39
3D Scanner	56
Aluminum Extractor	86
Backhoe	46
Bakery Oven	46
Baler	71
Bioplastic Extruder	86
Bulldozer	76
CEB Press	46
Cement Mixer	38
Chipper/Hammermill	38
CNC Circuit Mill	56
CNC Torch Table	51
Dairy Milker	51
DImensional Sawmill	66
Electrical Generator	46
Gasifier Burner	56
Hay Cutter	43
Hay Rake	38
Hydraulic Motor	51
Induction Furnace	86
Industrial Robot	71
Ironworker	71
Laser Cutter	51
Metal Roller	84
Microcombine	84

GVCS Budget Projections

(continued)

Microtractor	56
Modern Steam Engine	56
Multimachine	71
Nickel-Iron Battery	38
Nursery	N/A
Open Source Car	91
Open Source Truck	91
Pelletizer	51
Plasma Cutter	56
Power Cube	38
Press Forge	86
Rod and Wire Mill	86
Rototiller	38
Solar Concentrator	46
Spader	46
Steam Generator	43
Tractor	86
Trencher	51
Univ. Power Supply	51
Universal Rotor	38
Universal Seeder	56
Universal Welder	56
Well-Drilling Rig	56
Wind Turbine	91

Total2,911Hrs

\$140,635



Aluminum Extractor

Documentation - Shop Drawings

Mechanical Drafters:

(17-3013)

Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

Average hourly wage: \$24.62

U.S. Bureau of Labor Statistics

Machine	Drafting (Hrs)
3D Printer	20
3D Scanner	40
Aluminum Extractor	80
Backhoe	40
Bakery Oven	40
Baler	60
Bioplastic Extruder	80
Bulldozer	80
CEB Press	40
Cement Mixer	20
Chipper/Hammermill	20
CNC Circuit Mill	20
CNC Torch Table	40
Dairy Milker	40
Dlimensional Sawmill	60
Electrical Generator	40
Gasifier Burner	40
Hay Cutter	20
Hay Rake	20
Hydraulic Motor	40
Induction Furnace	80
Industrial Robot	60
Ironworker	60
Laser Cutter	40
Metal Roller	80

GVCS Budget Projections

(continued)

Microcombine	80
Microtractor	40
Modern Steam Engine	40
Multimachine	60
Nickel-Iron Battery	20
Nursery	N/A
Open Source Car	80
Open Source Truck	80
Pelletizer	40
Plasma Cutter	40
Power Cube	20
Press Forge	80
Rod and Wire Mill	80
Rototiller	20
Solar Concentrator	40
Spader	40
Steam Generator	20
Tractor	80
Trencher	40
Univ. Power Supply	40
Universal Rotor	20
Universal Seeder	40
Universal Welder	40
Well-Drilling Rig	40
Wind Turbine	80

Total2,320 Hrs

\$57,118



Gasifier Burner

Documentation - Manuals

Technical Writers:

(27-3042)

Write technical materials, such as equipment manuals, appendices, or operating and maintenance instructions. May assist in layout work.

Average hourly wage: \$31.85

U.S. Bureau of Labor Statistics

Machine	Drafting (Hrs)
3D Printer	40
3D Scanner	80
Aluminum Extractor	160
Backhoe	80
Bakery Oven	80
Baler	120
Bioplastic Extruder	160
Bulldozer	160
CEB Press	80
Cement Mixer	40
Chipper/Hammermill	40
CNC Circuit Mill	40
CNC Torch Table	80
Dairy Milker	80
Dlimensional Sawmill	120
Electrical Generator	80
Gasifier Burner	80
Hay Cutter	40
Hay Rake	40
Hydraulic Motor	80
Induction Furnace	160
Industrial Robot	120
Ironworker	120
Laser Cutter	80
Metal Roller	160

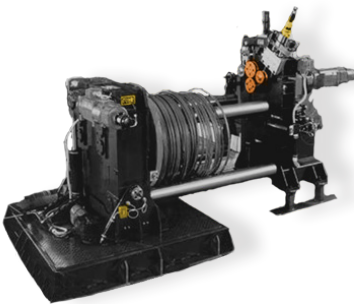
GVCS Budget Projections

(continued)

Microcombine	160
Microtractor	80
Modern Steam Engine	80
Multimachine	120
Nickel-Iron Battery	40
Nursery	N/A
Open Source Car	160
Open Source Truck	160
Pelletizer	80
Plasma Cutter	80
Power Cube	40
Press Forge	160
Rod and Wire Mill	160
Rototiller	40
Solar Concentrator	80
Spader	80
Steam Generator	40
Tractor	160
Trencher	80
Univ. Power Supply	80
Universal Rotor	40
Universal Seeder	80
Universal Welder	80
Well-Drilling Rig	80
Wind Turbine	160

Total 4,640 Hrs

\$147,784



Wire and Rod Mill

Documentation - CAD Drawings

Industrial Designers:

(27-1021)

Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.

Average hourly wage: \$29.76

U.S. Bureau of Labor Statistics

Machine	Drafting (Hrs)
3D Printer	20
3D Scanner	40
Aluminum Extractor	80
Backhoe	40
Bakery Oven	40
Baler	60
Bioplastic Extruder	80
Bulldozer	80
CEB Press	40
Cement Mixer	20
Chipper/Hammermill	20
CNC Circuit Mill	20
CNC Torch Table	40
Dairy Milker	40
Dlimensional Sawmill	60
Electrical Generator	40
Gasifier Burner	40
Hay Cutter	20
Hay Rake	20
Hydraulic Motor	40
Induction Furnace	80
Industrial Robot	60
Ironworker	60
Laser Cutter	40
Metal Roller	80

GVCS Budget Projections

(continued)

Microcombine	80
Microtractor	40
Modern Steam Engine	40
Multimachine	60
Nickel-Iron Battery	20
Nursery	N/A
Open Source Car	80
Open Source Truck	80
Pelletizer	40
Plasma Cutter	40
Power Cube	20
Press Forge	80
Rod and Wire Mill	80
Rototiller	20
Solar Concentrator	40
Spader	40
Steam Generator	20
Tractor	80
Trencher	40
Univ. Power Supply	40
Universal Rotor	20
Universal Seeder	40
Universal Welder	40
Well-Drilling Rig	40
Wind Turbine	80

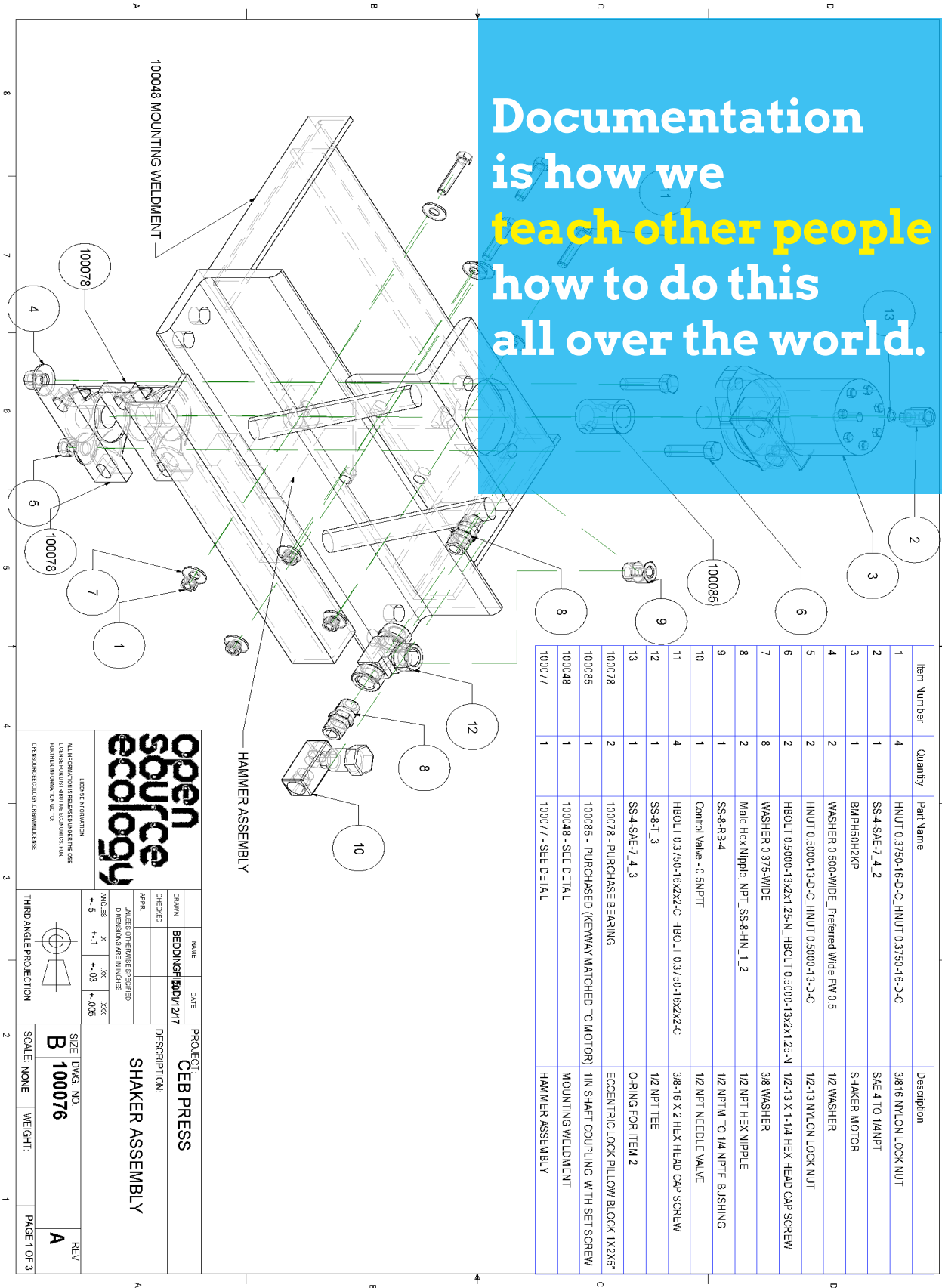
Total2,320 Hrs

\$69,043



Ironworker

Documentation is how we teach other people how to do this all over the world.



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

Compressed Earth Brick Press



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

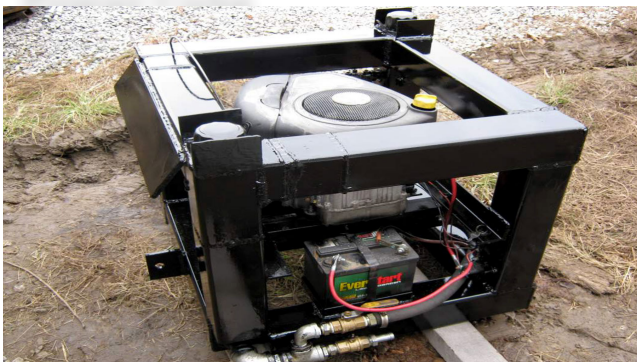


Documentation:

(links)

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

Power Cube



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

GVCS Machine	Retail Model	Price Difference \$	Savings %
3D Printer	BFB 3000 3D CAD Printer	\$2,684	60%
3D Scanner	Artec M 3D Scanner	\$10,056	71%
Aluminum Extractor	(N/A)	(N/A)	(N/A)
Backhoe	John Deere BH11	\$8,162	64%
Bakery Oven	Blodgett ZEPHAIREPLUSBAS NG	\$695	12%
Baler	John Deere 328 Twine Baler	\$13,412	68%
Bioplastic Extruder	Plastic Pipe Extruder - MSZS51	\$15,939	51%
Bulldozer	John Deere 650J Crawler Dozer	\$114,711	83%
CEB Press	Powell & Sons PGA-600-12	\$46,970	89%
Cement Mixer	Monolithic Portable Concrete Mixer	\$4,930	74%
Chipper / Hammermill	Buskirk Hammermill 20HP 3-Phase	\$3,485	66%
CNC Circuit Mill	LPKF ProtoMat E33	\$6,435	78%
CNC Torch Table	Torchmate 3	\$11,351	67%
Dairy Milker	Mobile Milking Trolley	\$1,469	29%
Dimensional Sawmill	Mobile Manufacturing Mobile Dimensional Saw	\$26,954	79%
Electrical Motor	200hp 1785RPM 460 Volts Leeson Electric Motor	\$1,073	19%
Gasifier Burner	GEK Tower of Total Thermal Integration	\$3,055	55%
Hay Cutter	John Deere SB31	\$2,197	44%
Hay Rake	John Deere WR54 Wheel Rake	\$21,498	92%
Hydraulic Motor	Eaton Hydraulic Motor 22.6 cu. in.	-\$2,046	-422%
Induction Furnace	(N/A)	(N/A)	(N/A)
Industrial Robot	Kuka KR 1000 Titan	(N/A)	(N/A)
Ironworker	Edwards EDWIW120-02	\$14,630	70%
Laser Cutter	Amada Quattro 2000w	\$289,470	98%
Metal Roller	(N/A)	(N/A)	(N/A)
Microcombine	John Deere S550 Combine	\$283,434	96%
Microtractor	BCS Rear Tine Tiller 340CC - 26 Inch	-\$2,031	-58%
Modern Steam Engine	(N/A)	(N/A)	(N/A)
Multimachine	Jet 690913 JTM-1050EVS/230 Milling Machine	\$28,714	84%
Nickel-Iron Battery	Nickel-Iron Batteries 20kWhr	\$18,235	91%
Nursery	(N/A)	(N/A)	(N/A)
Open Source Car	Toyota Camry 2012	\$11,939	52%
Open Source Truck	Ford F150 2012	\$11,929	52%
Pelletizer	Buskirk Model PM1230 Pellet Mill	\$11,020	67%
Plasma Cutter	Miller 875 Air Plasma Cutter	-\$2,912	-80%
Power Cube	Greenlee Hydraulic Power Unit 13hp	\$4,704	75%
Press Forge	(N/A)	(N/A)	(N/A)
Rod and Wire Mill	(N/A)	(N/A)	(N/A)

(Continued)

GVCS Machine	Retail Model	Price Difference \$	Savings %
Rototiller	John Deere RT52 Rotary Tiller	\$3,039	63%
Solar Concentrator	Solartron Solarbeam	\$35,470	87%
Spader	Imants 47S Rotary Spader	\$52,610	94%
Steam Generator	(N/A)	(N/A)	(N/A)
Tractor	John Deere 5075M Utility Tractor	\$35,426	80%
Trencher	John Deere TR60B Trencher	\$2,210	29%
Universal Power Supply	(N/A)	(N/A)	(N/A)
Universal Rotor	(N/A)	(N/A)	(N/A)
Universal Seeder	John Deere 1700 Planter	\$14,835	77%
Universal Welder	Miller Pipeworx	\$9,860	71%
Well-Drilling Rig	BoreMaster Hydraulic Rig	\$10,434	63%
Wind Turbine	FSW 50kw Wind Turbine	\$153,336	94%

