

Minimal Industrial Needs for a Minimal Mars Colony.

A Home O'Centric Insight.
By
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What is a colony? It is a home.

- Terrestrial Home
 - Constant influx of goods.
 - Constant influx of food.
 - Constant efflux of waste.
 - Colonial Home
 - Constant need to manufacture or re manufacture goods.
 - Production of food, and air.
 - Reprocessing of waste.
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Means of Manufacturing is the Linchpin.



- What do you need to manufacture goods?
- What do you need to make the tools to grow food?
- What do you need to make the tools to reprocess and reuse waste streams?
- You need tools.

What Kind of Tools?

- Mechanical



- Electrical



Mechanical Ensemble. The Lathe.



- The Lathe.
 - Work Rotates.
 - Tool moves about work.
 - Machines conical sections.
 - Holds accuracy to 0.001”
 - Can make parts for engines in the tens of kilowatt class.

Mechanical Ensemble. The Mill.



The Mill.

- Tool rotates
- Work is moved about the tool.
- Used to machine planer sections.
- Machines to 0.001".
- Up to tens of kilowatt class machines.

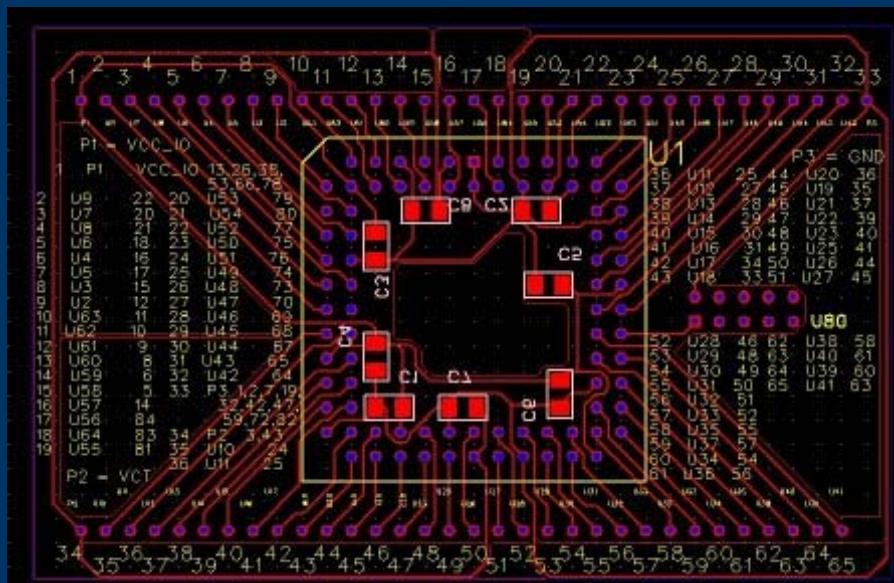
Mechanical Ensemble. Surface Grinder.



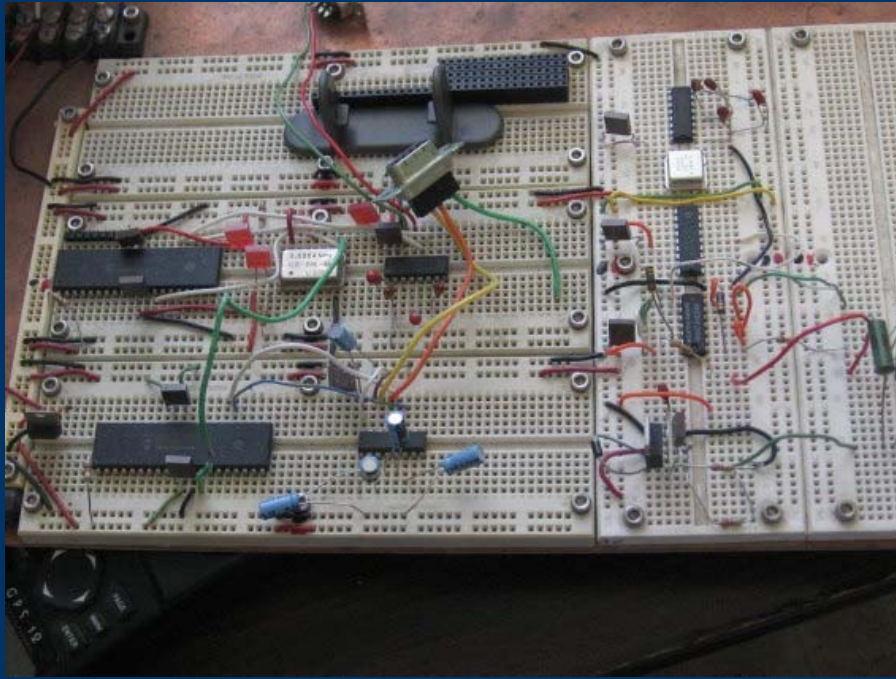
- Surface grinder.
 - Tool rotates.
 - Work moved about tool.
 - Machines planer surfaces.
 - Accuracy to 0.0001”

Electrical Ensemble EDA Tools.

- EDA Tools.
 - Specify system needs.
 - Schematic capture.
 - Simulation.
 - PCB Layout



Electrical Ensemble Circuit Prototype.



- Circuit Prototype.
 - Test ideas and concepts in a manner that allows fast changes.

Electrical Ensemble PCB Fabrication.

- PCB Fabrication.
 - Manufacture permanent solution on site.



Electrical Ensemble Test Equipment.

- Test Equipment.
 - Logic Analyzer.
 - Monitor many channels logic state simultaneously.
 - Oscilloscope.
 - Monitor signals to high resolution.
 - EDA PC Environment.
 - Project documents.
 - Soda.
 - Cool caffeinated refreshment.



Putting it all Together.



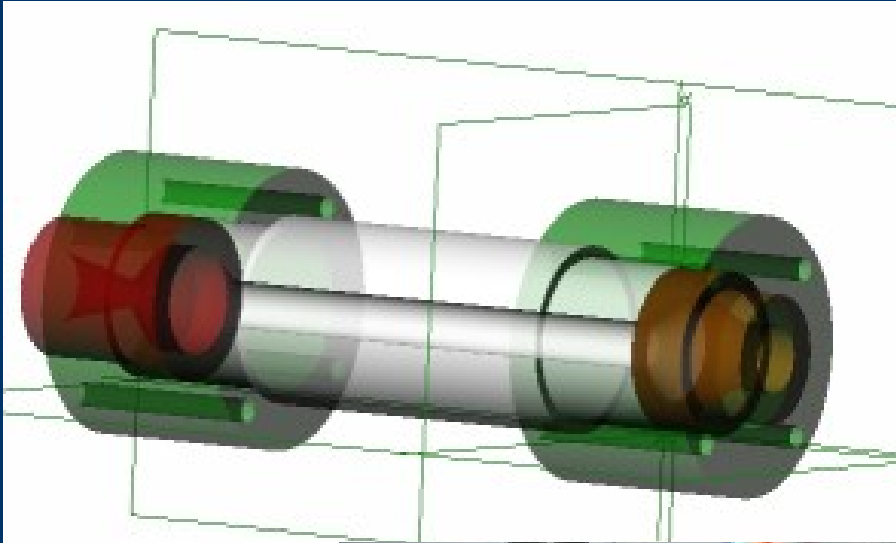
- Terrestrial thermal power source project rated at 500+W.
 - Aluminum Foundry.
 - Thermal engine power source.
 - Thermal refrigeration power source.
 - Power source for a small boiler.

Mechanical Mounts.

- Integration Sphere Interface.
 - Fast on demand fabrication.
 - Allows reactions to needs not foreseen.



Propulsion.



- A tall order for sure, but on Mars even simple propulsion systems can be quite effective.



Constant Needs of Colonial Industry.

- Support Systems.
 - Power generation.
 - Atmosphere generation.
 - Raw materials.
 - Food production.
 - Transportation.
 - Tool needs for goods requirements.
 - Industrial Expansion.
 - Use your tools to make more tools.
 - Raw materials mining.
 - Refinement.
 - Component manufacturing
 - Tool manufacturing.
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Conclusion.

- Tools make the colony.
 - Tools provide the goods needed to support human life.
 - Tools provide the means to make new tools.
 - Tools provide means to expand.
 - Colonizing is an effort in tool making and operations.
 - Engineered systems can be built integrated and tested in the terrestrial home.
 - Colonize the home as a prelude to Mars.
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Questions.

- Rip it apart.

