



SYSTEM  
ACTIVITY

INPUT

OUTPUT

05:00 – 07:00

Sunrise, early low sunlight

Sunlight (low)

begin low solar electricity generation

07:00 – 11:00

Strong sunlight, maximum solar input

Sunlight (strong)

solar electricity ---> Cyrocooler running at full power, starting LN<sub>2</sub> production

11:00 – 15:00

Peak solar input (optimal cryogenic production)

Sunlight (very strong)

High LN<sub>2</sub> production, surplus electricity charges batteries

15:00 – 17:00

Declining sunlight, cyrocooler slowing

Sunlight (medium)

Reduced LN<sub>2</sub> production, balancing storage

17:00 – 18:30

Sunset transition

Sunlight (low)

Solar stops, cyrocooler pauses; shift to stored LN<sub>2</sub> for energy production

18:30 – 22:00

Nightfall -thermal lunar engine active

Stroed LN<sub>2</sub> , expanding

Turbine generates electricity ---> Village power

22:00 – 05:00

Night (Deep cycle)

Stroed LN<sub>2</sub> , expanding

turbine runs on LN<sub>2</sub> to power basic nighttime loads

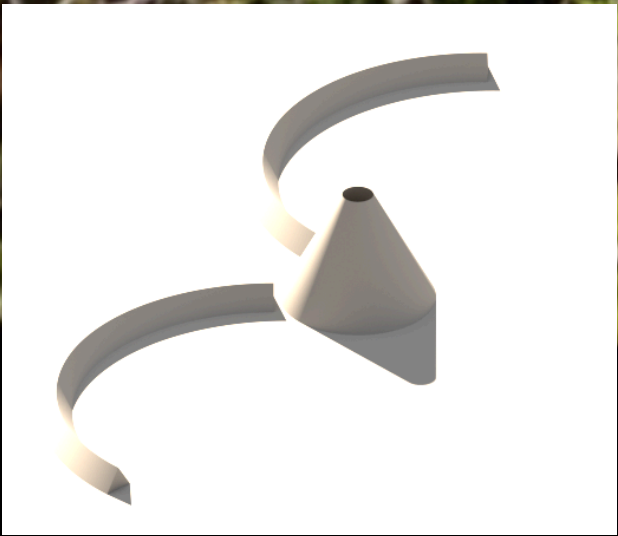
# LAGEE FIJI VAI VAI

Living in a natural bowl the tree roots stopping the maroo village from being washed away in the floods. Yet don't hold water in the dry season. However the nitrogen rich leaves of the Vai Vai freeze in the night

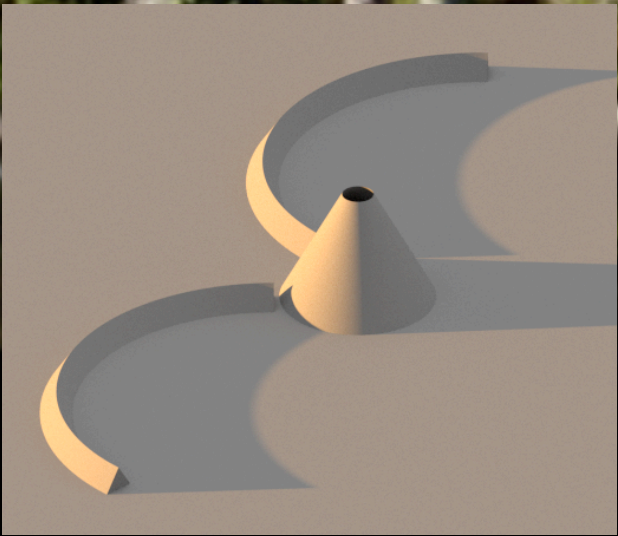
This project proposes a closed loop energy system that blends traditional passive cooling with cutting edge solar and cryogenic technologies. The design is inspired by the Persian Yakhchal which harvested and stored ice in desert climates. Reinterpreting this with LN<sub>2</sub> (liquid nitrogen) cryogenic storage to convert solar energy into stored potential via nitrogen phase changes. Constructed with the earth and modular frame. The outer form blends with the environment and community gathering space, the inner geometry sculpts air and houses the cryogenic technology and potentially cold storage for fish catch and medicine. And inspired by the Via Vai tree, with its frost prone leaves, known for its nitrogen-fixing abilities. The ground turns green as a result of the nitrogen-rich flowers and pods decaying in the soil. Now imagine a close collaboration between air and cryotech to produce energy; the grass is greener using the stored potential in ice and sunlight.



Morning 8am



Midday 12pm



Evening 5pm