



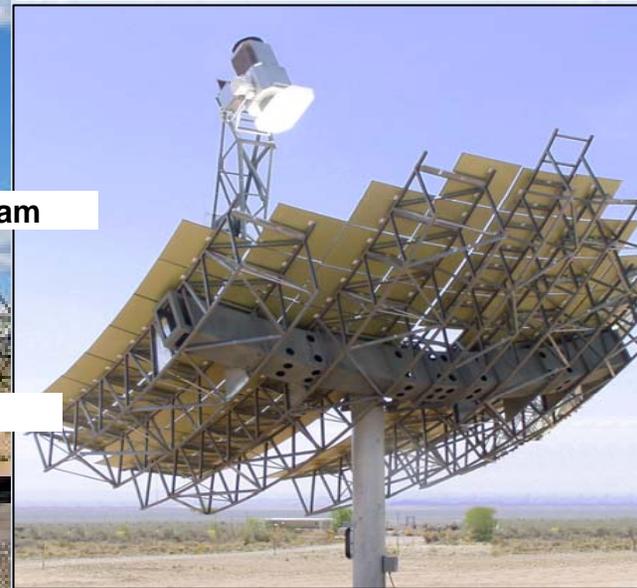
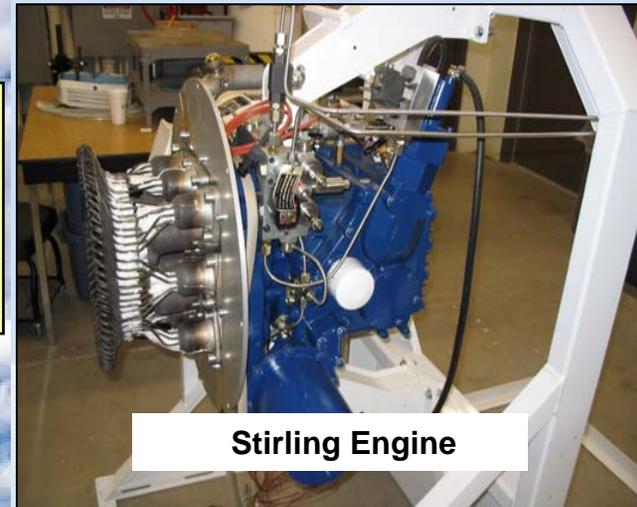
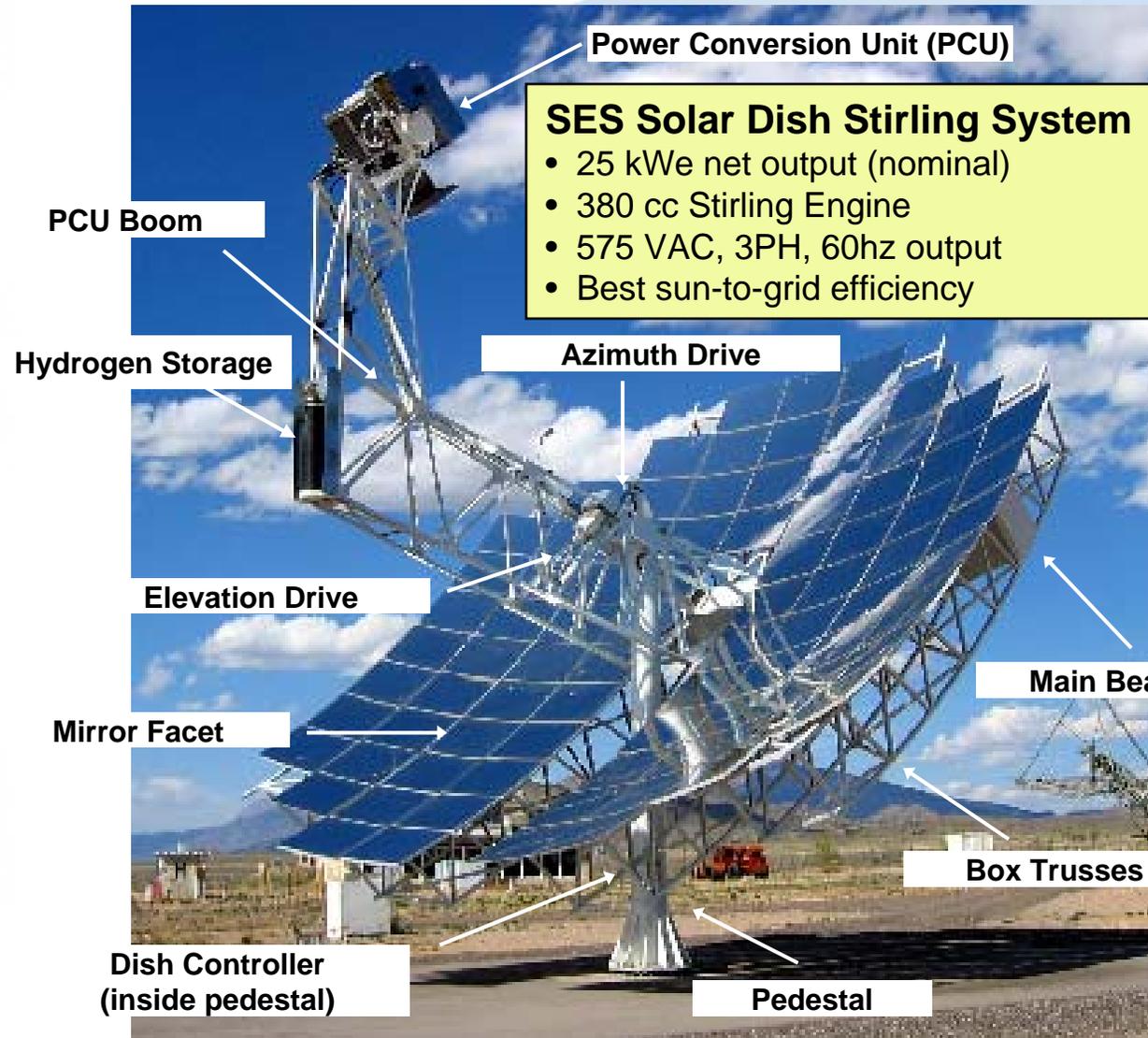
2008 Solar Annual Review Meeting

Session: CSP – Dish Systems
Company: Stirling Energy Systems, Inc.
Topic: SES Solar Dish Stirling - Commercialization

Dan Martin: VP – Engineering
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*Creating a
brighter future
for humanity through
SOLAR ENERGY*

SES – Dish Stirling Technology Overview



SNL/SES: New Record at 31.25% Sun-to-Grid Efficiency !!

Awarded Two Major Solar Power Contracts

SCE Contract: 500 - 850 MW

- 20,000 – 34,000 Systems
- 20-Year PPA
- Mohave Desert – CA

SDG&E Contract: 300 - 900 MW

- 12,000 – 36,000 Systems
- 20-Year PPA
- Imperial Valley – CA



SES selected based on “Best Fit – Least Cost’ Criteria

Deployment Plan and Status

✓ SES Solar Two (SDG&E Project)

- 900 MW Full Capacity
- First 300 MW – No T&D expansion
- Siting and Environmental Complete
- AFC Filing in June-2008
- Begin Site Construction Q3-2009
- First Dishes In Ground Q1-2010



✓ SES Solar One (SCE Project)

- 850 MW Full Capacity
- Requires Transmission Upgrades
- AFC Filing in August-2008
- Begin Site Construction End of 2009
- First Dishes in Ground Mid-2010



Current Contracts Represent 1.75 GW



Past... Today
“Technology”

“PATHWAY”



“Commercialization”

Starting Point

- ✓ 20 Year History
- ✓ Development units
 - HB, NV, SA, SNL
- ✓ Model Power Plant
 - 6 Systems
 - SES Supply Chain

Commercialization Program

- ✓ Product Commercialization
- ✓ Design for High Volume Mfg
- ✓ Supply Chain Development
- ✓ Validation Testing
- ✓ Company Infrastructure

Goals

- ✓ US & International Markets
- ✓ Supply Chain—US Based with Global Reach
- ✓ Ultra-Low Cost Systems
- ✓ High Volume Manufacturing
- ✓ Advanced Systems

Commercialization Program is the pathway to successful Deployment !

Commercialization - Phase 1: Project Overview

✓ Scope

- VAVE (Value Analysis - Value Engineering) design changes
- Various reliability enhancements
- SCADA system development
- Supply chain development
- Test units of Phase 1 configuration

Title: Phase 1 - Commercialization
 SNL Contract # 595957
 SES Account # 5035-4050

✓ Resource Plan

- SES Engineering: 25,019 manhours
- SES Consultants: 14,328 manhours
- Total: 39,347 manhours

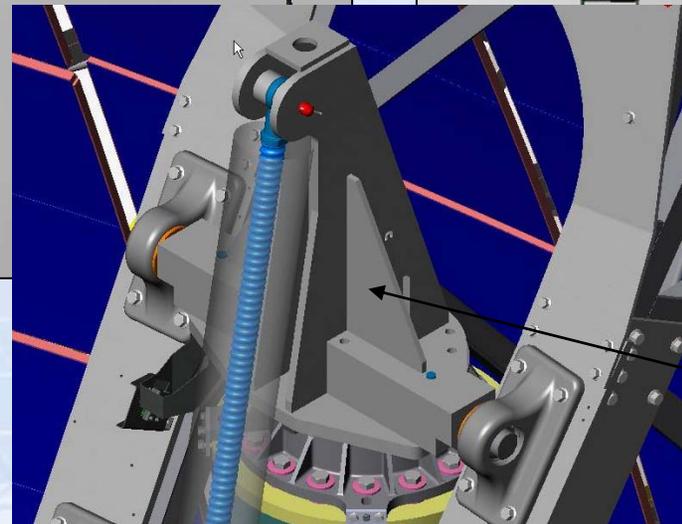
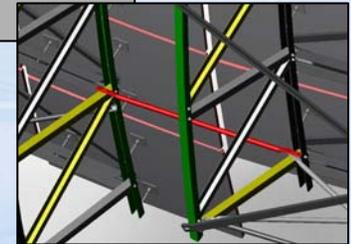
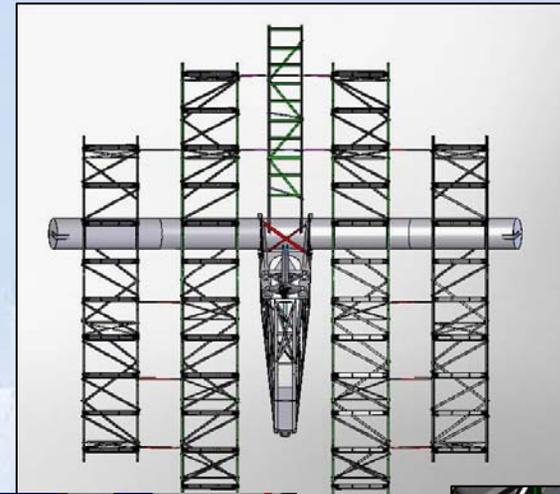
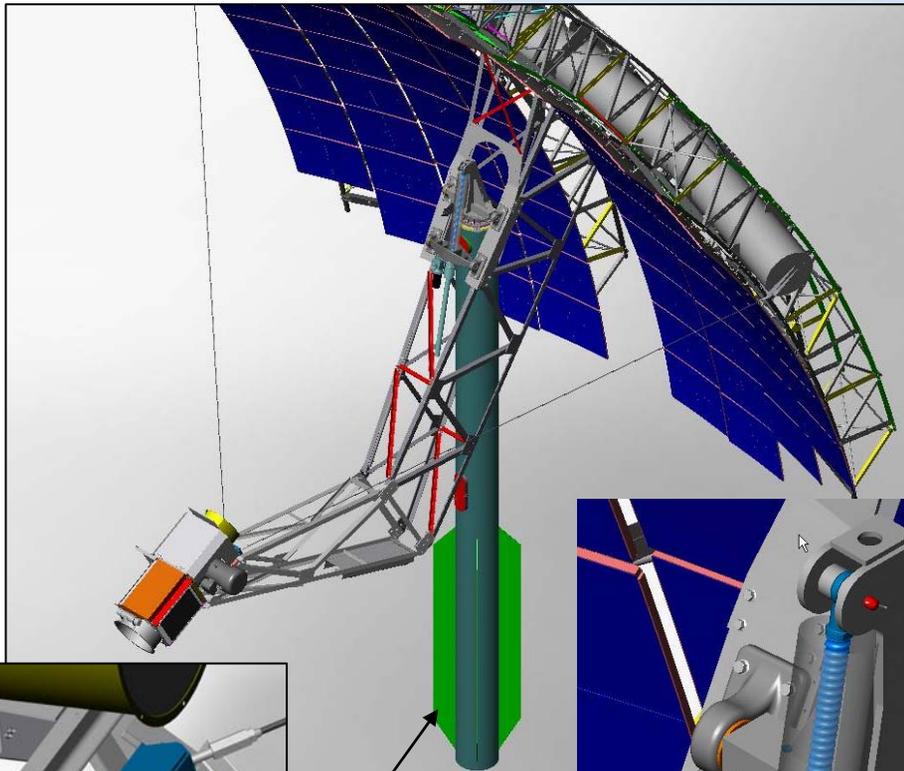
✓ Cost Budget

- Labor and Consultants: \$ 6.5 MM
- Parts and Materials: \$ 3.9 MM
- Total Projected Cost: \$ 10.4 MM

- DOE Total Cost-Share: \$ 3.1 MM (30%) – Phase 1 Only
- DOE Funding to Date: \$ 1.9 MM

DOE funding less than 3% of total commercialization cost

Dish Subsystem - Phase 1 Highlights



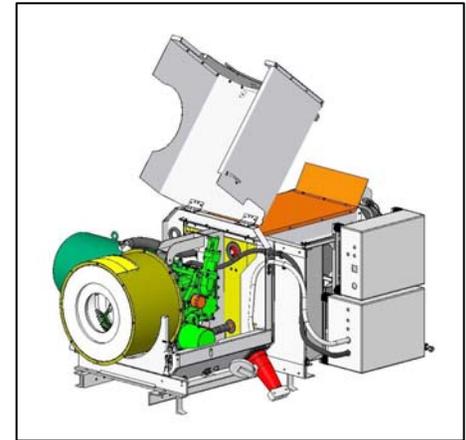
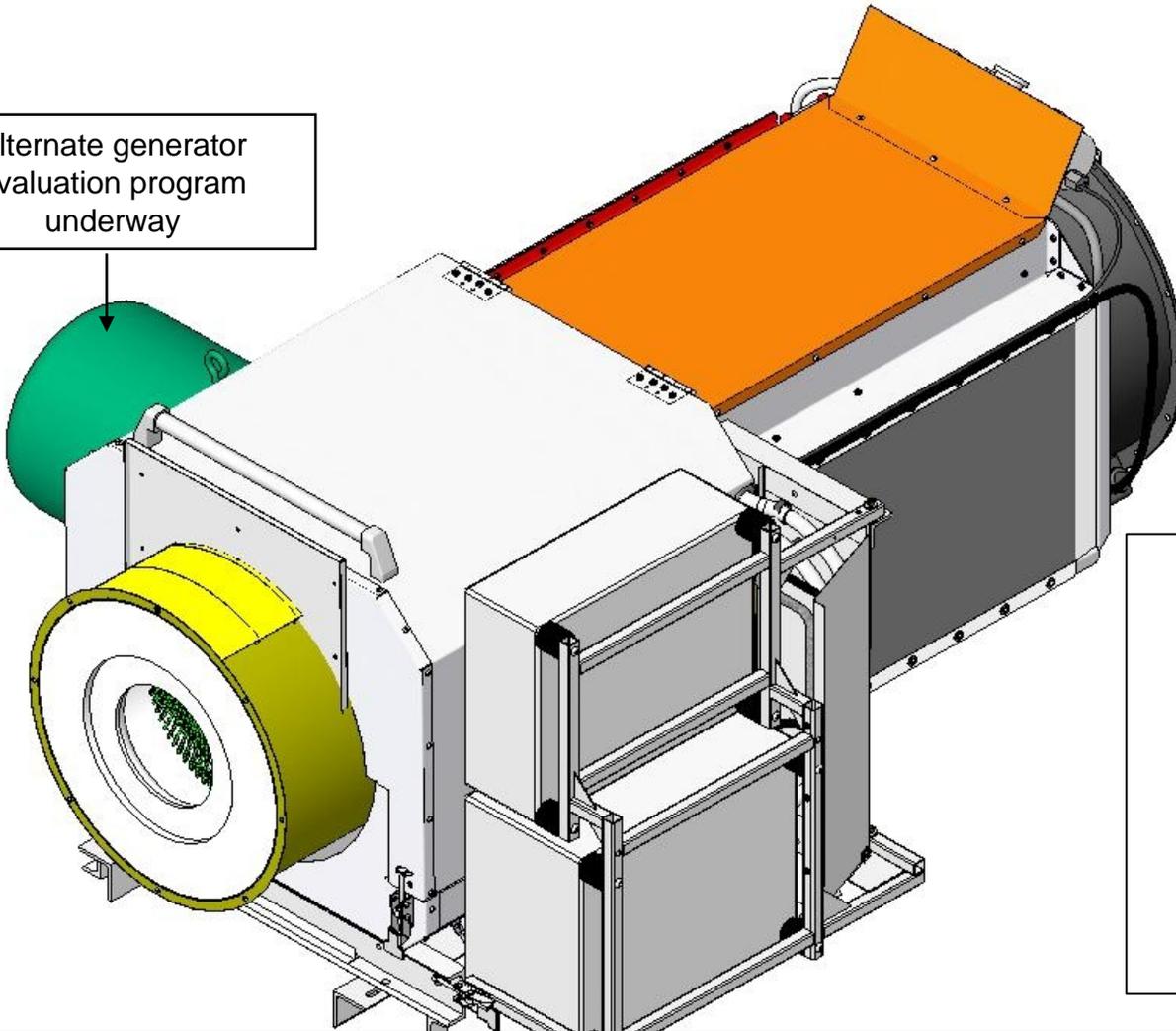
Foundation

- ✓ New yoke
- ✓ New azimuth drive
- ✓ Seismic attenuation

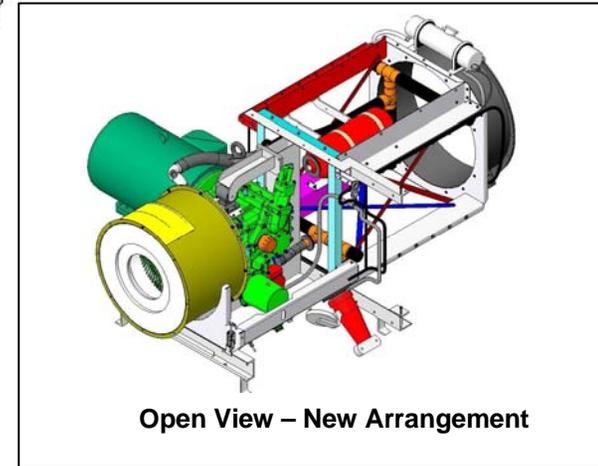
- Phase 1 dish subsystem design complete
- Dish structure factory layout completed; manufacturing processes defined
- 4000 lb weight reduction; improved optical performance; seismic/wind capabilities

PCU Subsystem – Phase 1 Highlights

Alternate generator
evaluation program
underway



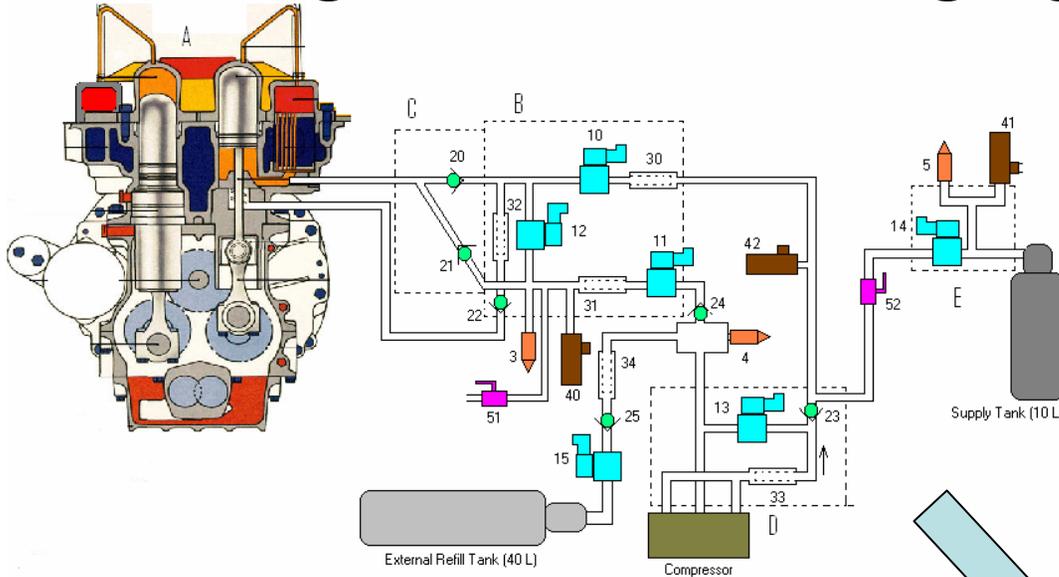
Canopy up for Service



Open View – New Arrangement

- Engine drawing package 100% complete
- Significant enhancements to Gas Management System
- Major enhancements to packaging for serviceability and assembly

Gas Management – Phase 1 Highlights

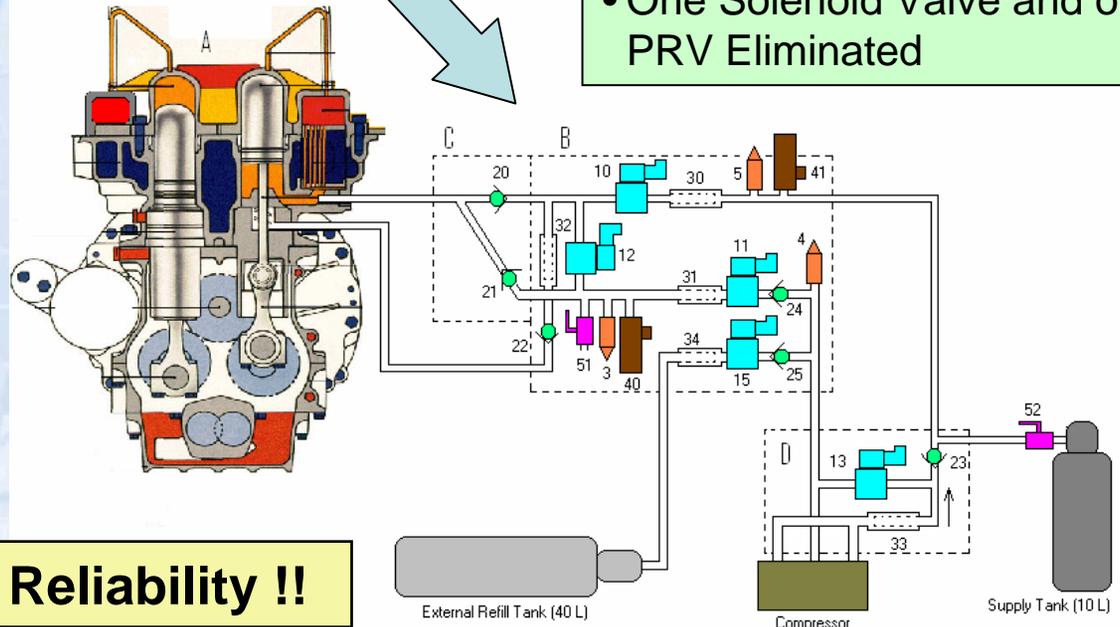


System Consolidation

- 6 Manifold Blocks to 4
- All In-Line Components Moved to Blocks
- 12 Tube Connections Eliminated
- 6 Tube Segments Removed
- Tubing reduced by ~7'
- One Solenoid Valve and one PRV Eliminated

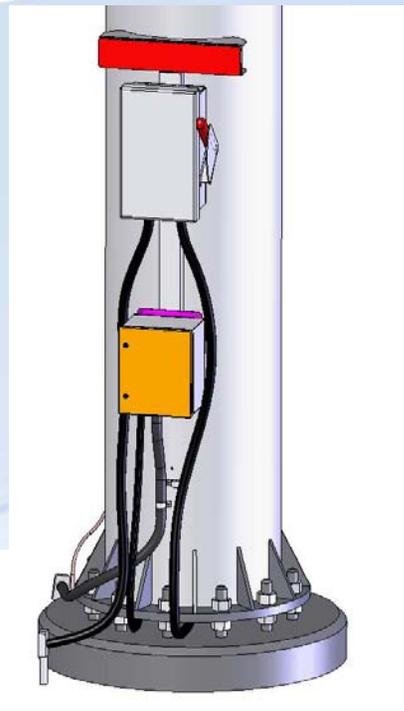
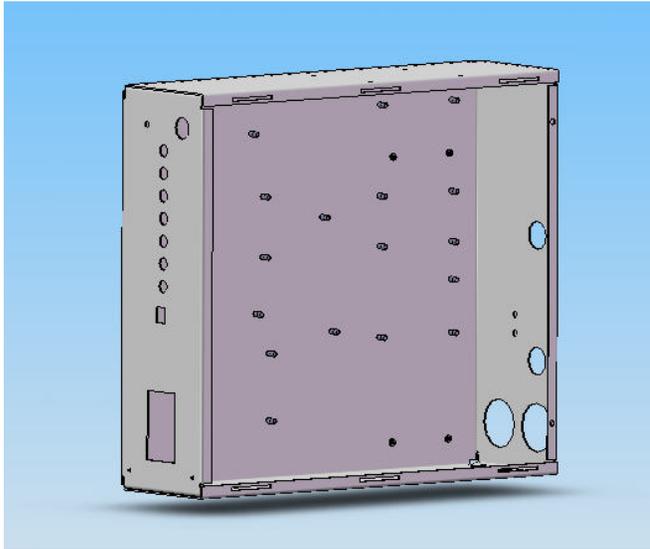
Component Improvements

- Inexpensive, Reliable Solenoid Valves
- Reliable tube fittings
- Inexpensive, effective, filter elements
- Inexpensive, off the shelf soft seat check valves

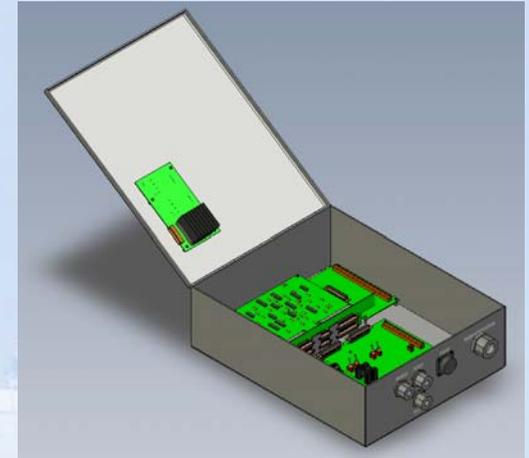


Lower Cost, Higher Reliability !!

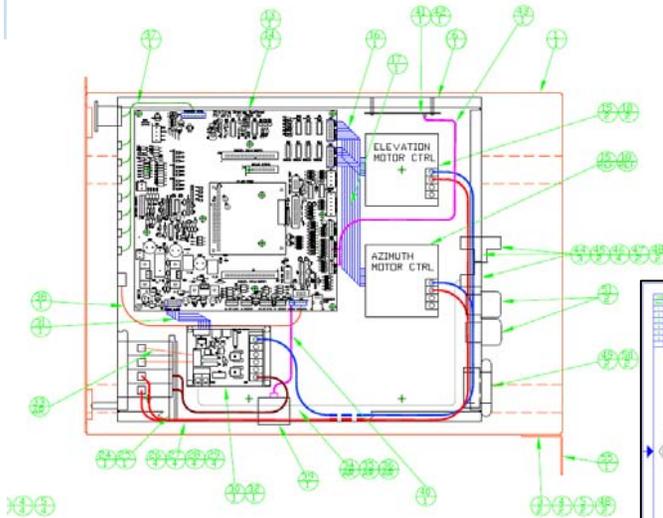
Controls – Phase 1 Highlights



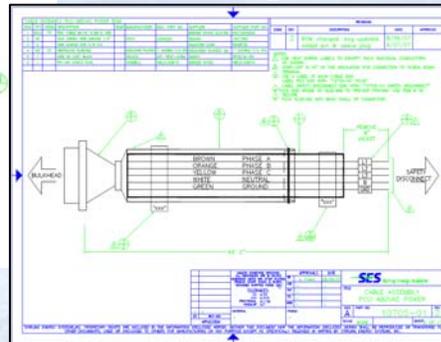
**575VAC Assy.
and Battery
Charger**



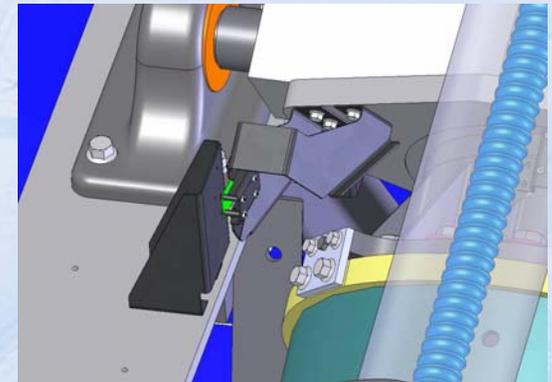
PCU Control Enclosure



Dish Control Enclosure Assy



Cable Drawings



New Limit Switch Brackets

- Phase 1 Controller package is 100% complete
- Significant software reliability enhancements

Key SES Milestones (Next 6+ Months)

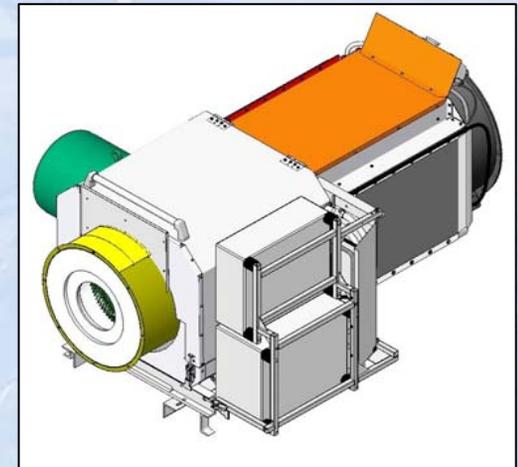
✓ Dish Subsystem

- | | |
|---------------------------------------|-----------|
| • Structure – Phase 1 Scope of Work | Completed |
| • Structure – Finalize Phase 2 Scope | Apr 2008 |
| • Mirror Commercialization Review | May 2008 |
| • Complete Geotech Survey (Solar Two) | May 2008 |
| • Complete Key Supply Agreements | Jun 2008 |
| • Complete Phase 2 Engineering | Nov 2008 |



✓ PCU Subsystem

- | | |
|--------------------------------------|-----------|
| • PCU – Phase 1 Scope of Work | Completed |
| • PCU – Phase 2 Scoping | Completed |
| • Finalize PCU Validation Test Plans | May 2008 |
| • Complete Key Supply Agreements | Jun 2008 |
| • Complete ALT Rig Designs and Plans | Sep 2008 |
| • Complete Phase 2 Engineering | Nov 2008 |
| • Launch Final Validation Testing | Dec 2008 |



Dish and PCU Strategic Suppliers Identified and On-Board !!

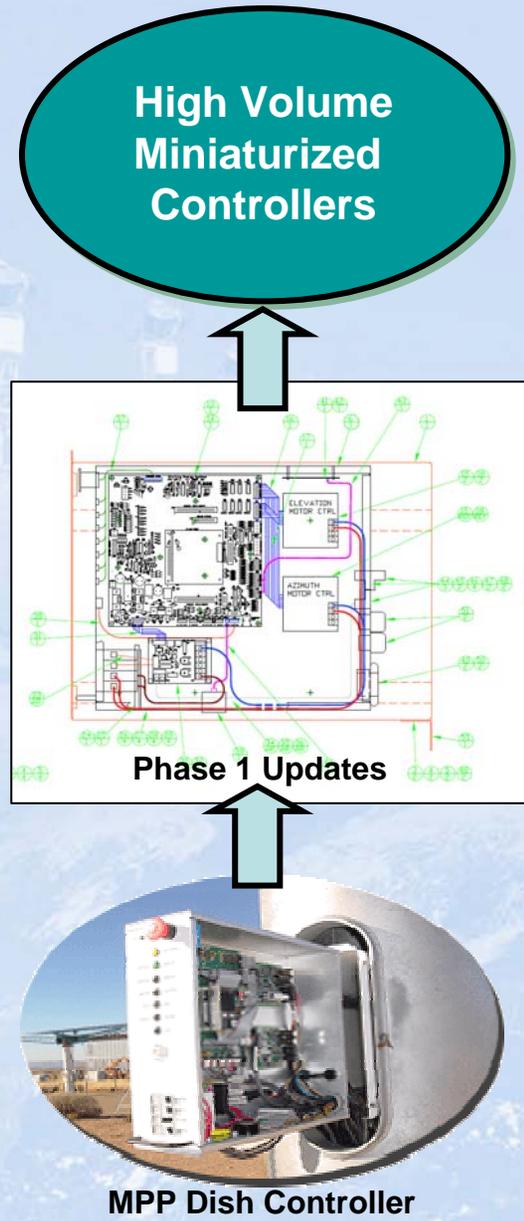
Key SES Milestones (Next 6+ Months)

✓ Controls and Electrical Subsystems

- Controls – Phase 1 Scope of Work Completed
- Controls – Finalize Phase 2 Scope May 2008
- Complete SCADA – Part 1 of 6 May 2008
 - Part 1: Requirements & Alternatives
 - Production SCADA Development
- Define Key Suppliers / Consultants May 2008
- Complete Dynamic Transient Modeling Jul 2008
 - Startup, Cloud, Off-Design transients
 - Power factor control and LVRT models
- Complete Phase 2 Engineering Dec 2008
 - Production microprocessor system
 - Development software – Ver.0 completed

✓ Balance of Plant (BOP)

- Complete Remaining BOP Trade Studies Jun 2008
- Complete 3rd Cost Analysis of BOP Jul 2008
- Launch RFQ's For EPC Contractors Aug 2008



Summary

- ✓ World's record for highest “sun-to-grid” efficiency at 31.25%
- ✓ Existing two contracts represent 1.75 GW of solar power
 - Additional GW's in queue and being worked
- ✓ Commercialization is the pathway to successful deployment
- ✓ DOE funding has provided a steppingstone to Deployment
 - Phase 1 work has resulted in significant enhancements
 - Represents less than 3% of total commercialization cost
 - Discussing go-forward DOE funding and scope of work
- ✓ SES is on-track to achieving cost targets in Phase 2
- ✓ SES primary funding is in place and we are greatly accelerating

Accelerating Deployment... Thank you for past DOE support !