Advance Tech
Silicon2Solar
Profile

Location: 312 Main, Caldwell, ID 83605

Products/Services:
- NAND/DRAM – Micron distribution program
- Solar silicon – multi – mono crystalline
- NAND/DRAM – whole wafer – uncut die
- Elemental, precious metals extraction (silicon & solar panels)
- Blue tape – processing, sourcing, sales
- Poly silicon distribution
- SiO2 purification
- Solar panel de-installation
- Major US Government solar contracts – subsidy utilization

Processing sophistication – high technology tools – configured for efficiency
- EH&S compliant – US based policy
- Proprietary chemical/mechanical sequencing
- Heavy capital automation – low cost structure WW
- Process automation – speed, efficiency, low cost

EH&S conscious and compliant – end-to-end (Hallmark)
- Audit compliance – largest/leading IC corporations in the industry
- Acid containments, safe storage, advanced delivery systems, waste stream control, heavy metals, work area ambient particulate counts, bulk drainage neutralization, Ph monitoring, Air abatement – scrubber, air evacuation/filtration, respiratory protections
Differentiation

- EH&S focus – end-to-end
- Integrity – Commercial success through principled ethical interactions
- Deep IC networks – genesis of product depth
- Technology / Creativity / Imagination / Commitment to new solutions
- Low Cost – Process sophistication, high-end capital, automation
- Loyalty from ‘major’ corporations
- Broad base of supply – multiple companies, sites, international locations
- Deep technical knowledge of intrinsic materials – true cost variables – electrical properties of silicon, metals, disposal, landfill, etc.
- Advanced material testing and QA equipment
- Comprehensive data capture and retention
- QA responsibility toward partners
- Rich networks create powerful transition to new material and markets with speed and ease
Value

- Market vs. Index price returns (Silicon ‘re-melt)
- Volume leverage – significance of supply
- History of changing returns expectation for extracted materials
- Pass back transparency
- Volume leverage and supply assurance
- Market intelligence – unique networks &
- Base capabilities --- largest Si focused sourcing, supply, processing operation WW
Solar Specific Pursuits

- Silicon recovery
  - Ptype
  - Monocrystalline
  - Multi-crystalline
  - Boron doped
  - Financial driver ---- IC silicon, fall-out substrates, wafers (8” and 12”)

- Precious metals extraction - Broken cells
  - Collaborative alignments – refiners, 1st tier segregation & sorting houses
- Panel de-installations – decommission
  - Residence
  - Commercial
  - Solar Farms (Swinerton, Hanwa Q-cell)
- Panel material optimization – Process – subsequent slides
- Panel removal and processing
  - Broken/shattered Si02
  - Frame removal
  - Ag extract
• Panel wholesale distribution
  • Supply leverage
• Periphery electronic gear
  • Nextracker
  • Mounts/Posts
  • Cables
  • Transformers
  • Inverters
  • Charge controllers
• Large panel installations
  • Principally large account procurement – guided entities through strategic steps
    • Municipalities
    • State / Federal projects
    • ID Dept of Education
    • Military
• DIY – Off grid presence – local outlet – spread solar awareness
24 Hour x 7 Day/Week Surveillance
WAFFER – IP PRESENT
Panels

• Mechanical sequences
• Large media obliteration
• Chemical softening
• High pressure abrasives (environmental coatings)
  • Cured poly
  • SiN2
  • SiC
• Ball mill
• Large cu. ft. turning
• Centrifugal Disc
• Centrifugal barrels
• Media ‘shakers’
• Bulk size screening
• Heating / incineration ----- Induction furnaces
Materials

- Aluminum: 10%
- Glass: 74%
- Silicon: 3%
- Polymers: 7%
- Ag: .006%
- Pb: .01%
- Tin, lead, Zinc Copper = trace levels
Challenges

- Upcycling vs. Downcycling
- Poor economies of scale
- Disparate consolidation
- Volume of supply
- Consistency of supply
- Commitment
- “Cherry Picking”
- Profit rewards – encouraging profits – commodity upswings
- Custom vs. Index pricing
- Time – patience – cooperative engagements
- Purity refinement process and chemical cleans (SC-1, SC-2)
  - Environments impacts
  - EH&S footprint
- Automation = capital intensive

High ecological index – high eco-efficiency – environmental relief (vs. impact)
  - Pilot systems
  - Automation
  - Shredder
  - Waste incineration