

*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
- SiO<sub>2</sub> purification
- Solar panel de-installation
- Major US Government solar contracts – subsidy utilization

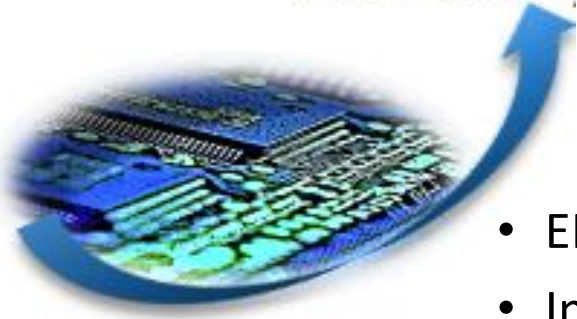
Processing sophistication – high technology tools – configured for efficiency

- 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

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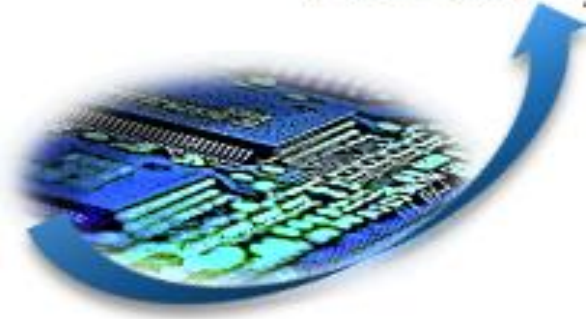


## Differentiation



- 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

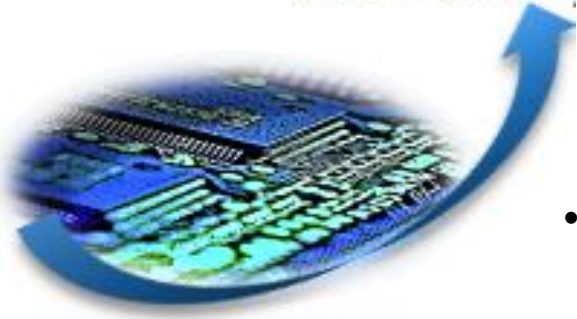
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# Value

- 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

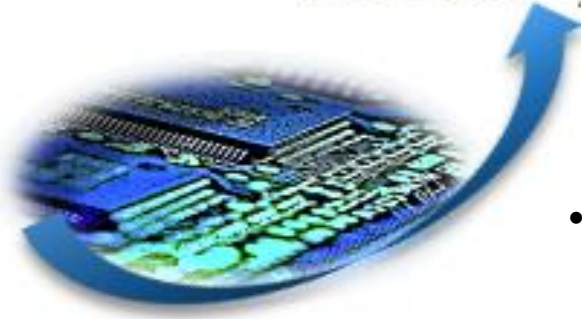
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## Solar Specific Pursuits

- 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, 1<sup>st</sup> 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 SiO<sub>2</sub>
  - Frame removal
  - Ag extract

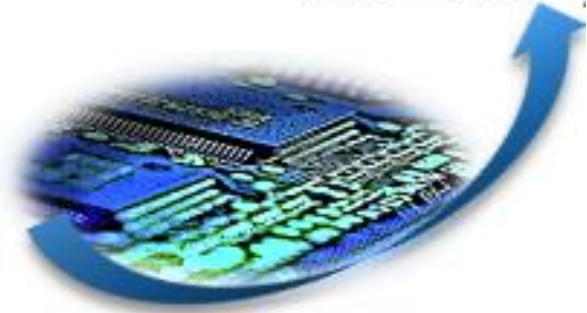
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- Panel wholesale distribution
  - Supply leverage
- Periphery electronic gear
  - Nextracker
  - Mounts/Posts
  - Cables
  - Transformers
  - Inverters
  - Charge controllers
- Large panel installations
  - Principally large account procurment – guided entities through strategic steps
    - Municipalities
    - State / Federal projects
    - ID Dept of Education
    - Military
- DIY – Off grid presence – local outlet – spread solar awareness

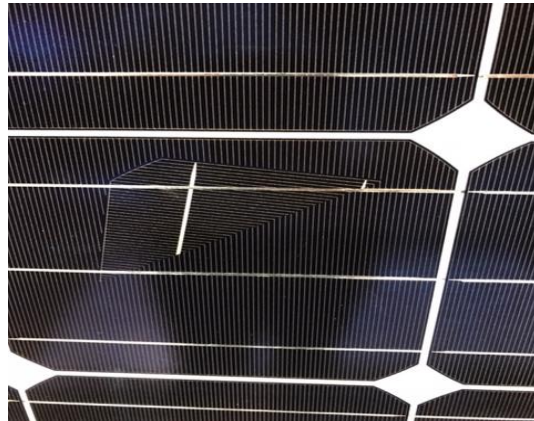
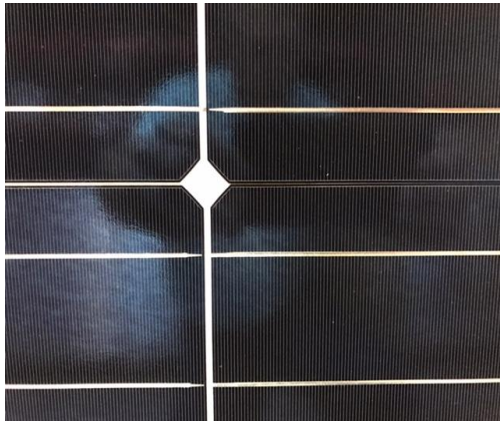
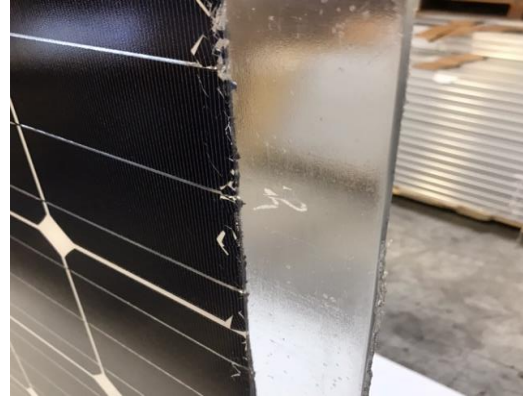
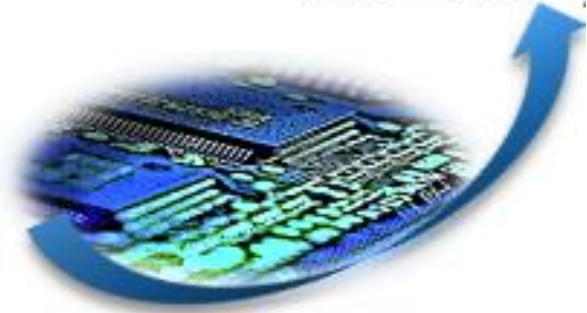


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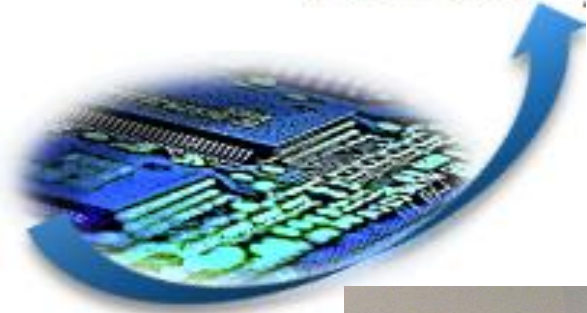




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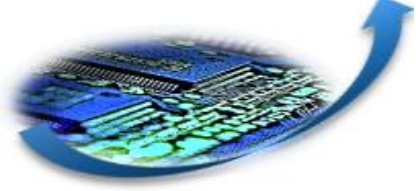


## 24 Hour x 7 Day/Week Surveillance



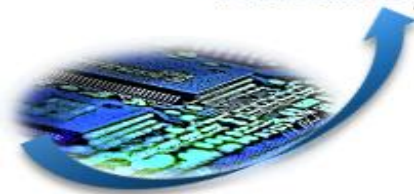


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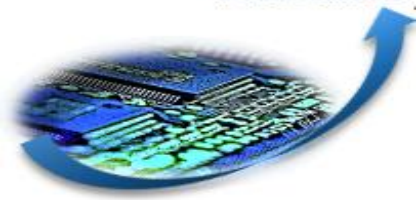


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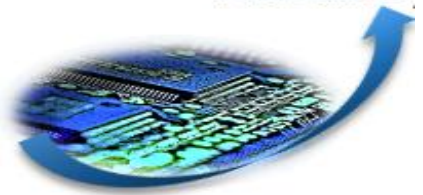


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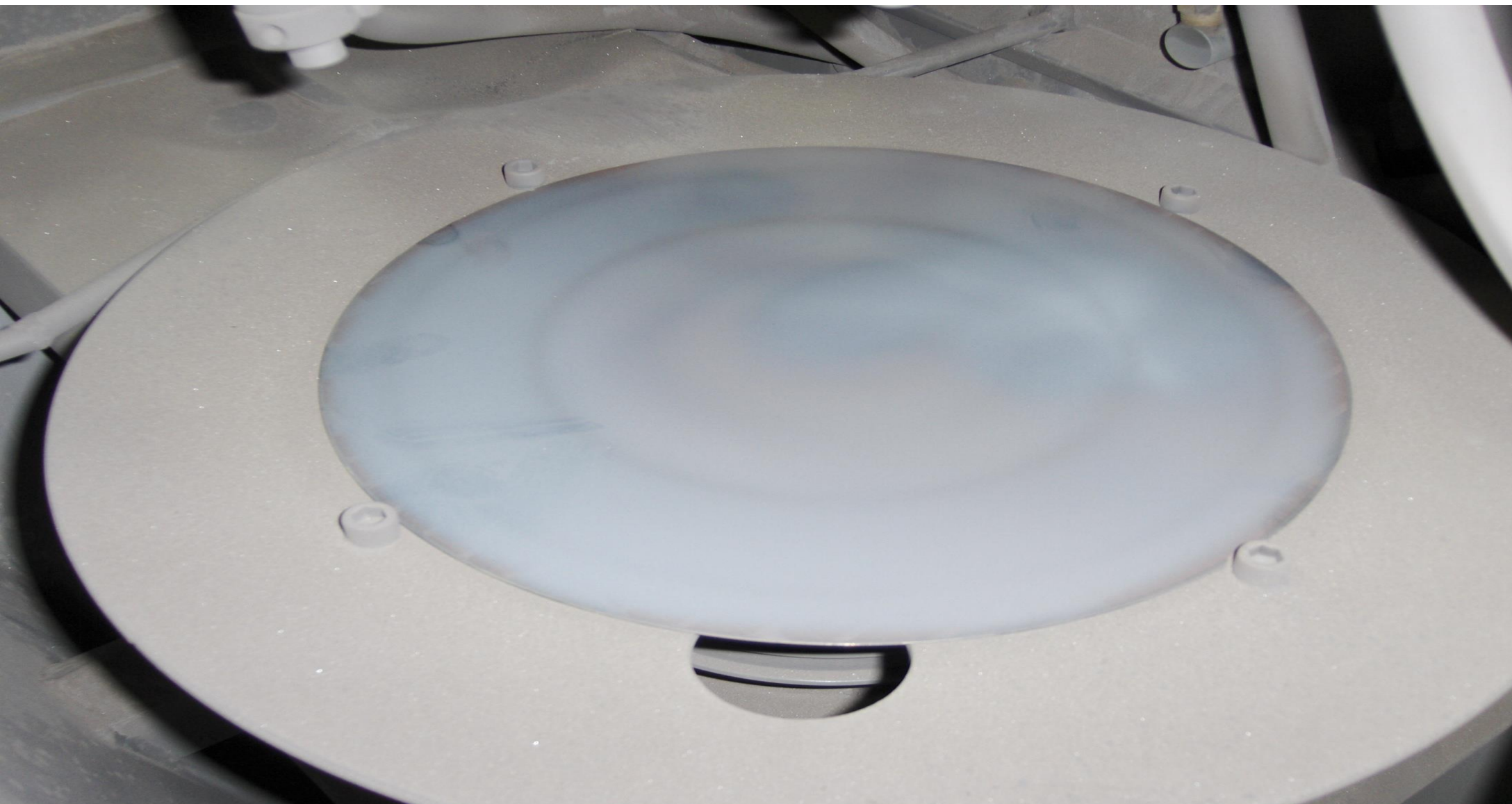
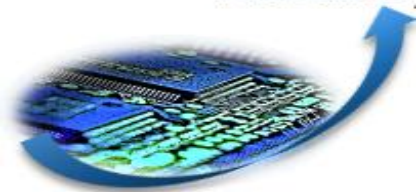
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WAFER – IP PRESENT

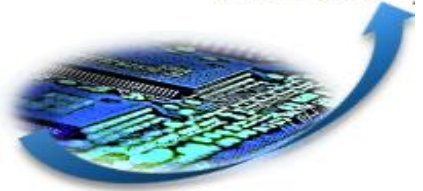


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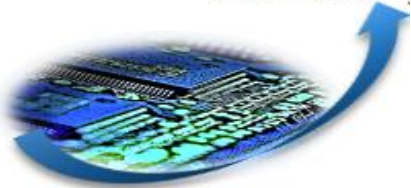
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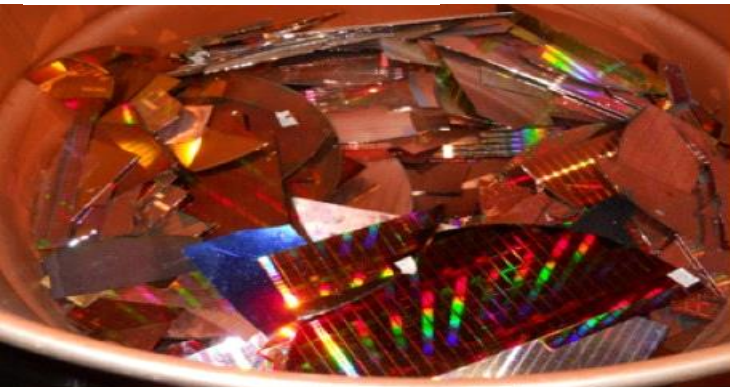
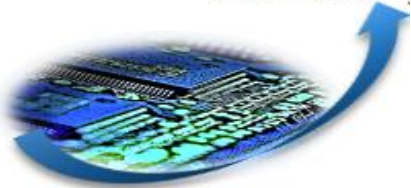


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# Panels

- Mechanical sequences
- Large media obliteration
- Chemical softening
- High pressure abrasives (environmental coatings)
  - Cured poly
  - SiN<sub>2</sub>
  - 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



<http://silicon2solar.com/>