



DIAMOND WIRE
MATERIAL TECHNOLOGIES

Principles of Successfully Competing in a Global Marketplace

October 21, 2011



A member of Meyer Burger Group

Diamond Wire Background



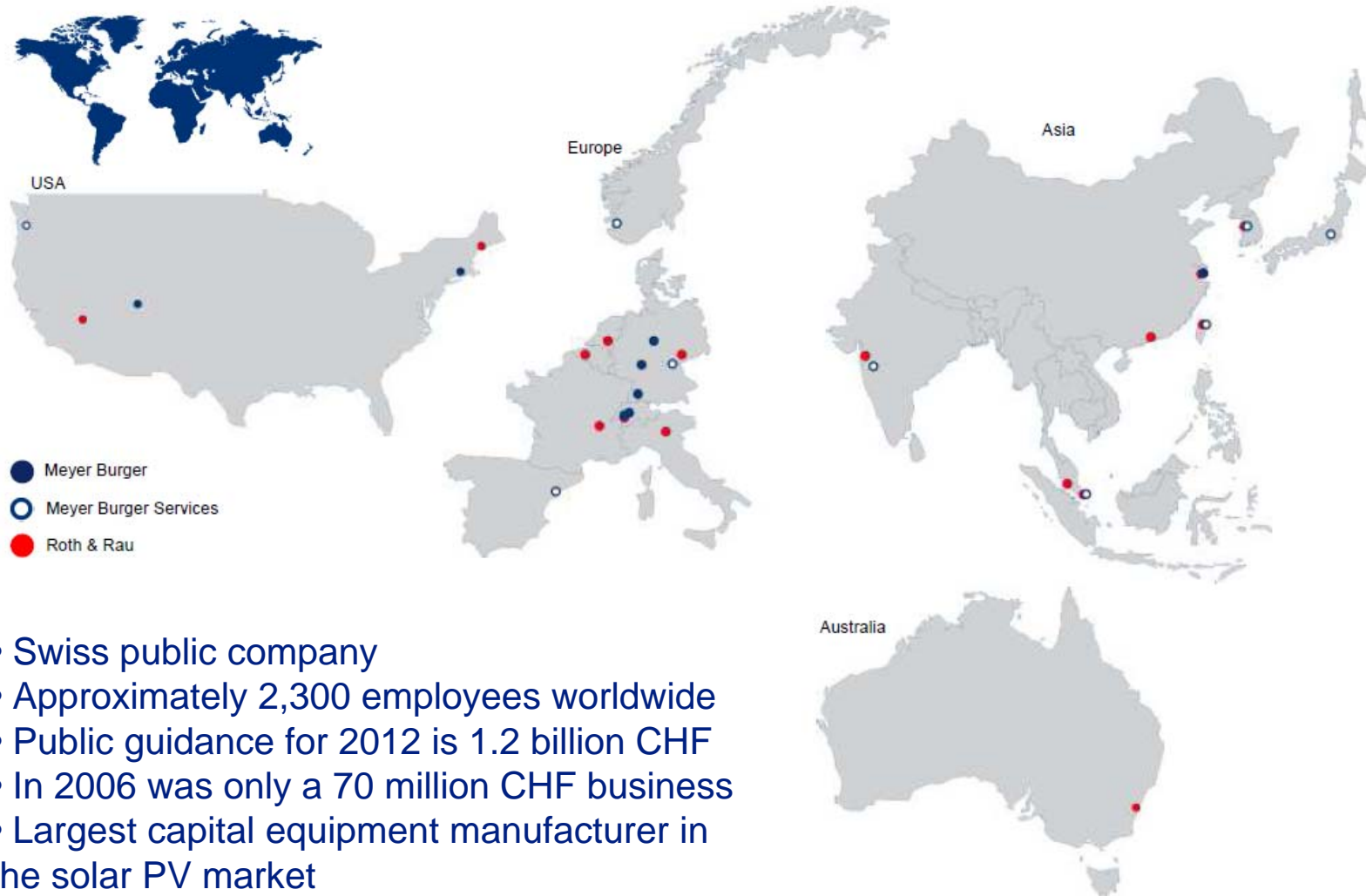
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- Started in 1963 in a garage in California to develop laser technology
- For 45 years the company was essentially an R&D shop and has had several names and product lines
- Company relocated to Colorado Springs in the early '90s
- Invented diamond wire product in the 90's, which spawned a new industry
- Was acquired by publicly-traded Swiss company, Meyer Burger in September 2009
- Since the acquisition, Diamond Wire has been focused solely on manufacturing and selling diamond wire and other consumables (cutting fluid, sacrificial beams, adhesives)
- Late 2010 and early 2011 a mostly new executive management team has been put in place to transition the company to the next phase
- Diamond Wire employs ~250 people and will add more than 1,000 people in the next 3 to 5 years

Meyer Burger Worldwide



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- Swiss public company
- Approximately 2,300 employees worldwide
- Public guidance for 2012 is 1.2 billion CHF
- In 2006 was only a 70 million CHF business
- Largest capital equipment manufacturer in the solar PV market
- In August 2011 acquired Roth & Rau

Diamond Wire Overview – Part 1



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- Located in Colorado Springs, Colorado, USA at 3505 N Stone Avenue
- 130,000 Square Foot Facility (approx 12,077 m²)
 - Wire Manufacturing
 - Research & Development
 - Administration
- ~250 Employees
- Future Expansion Planned:
 - Colorado Springs
 - Asia



Diamond Wire Overview – Part 2



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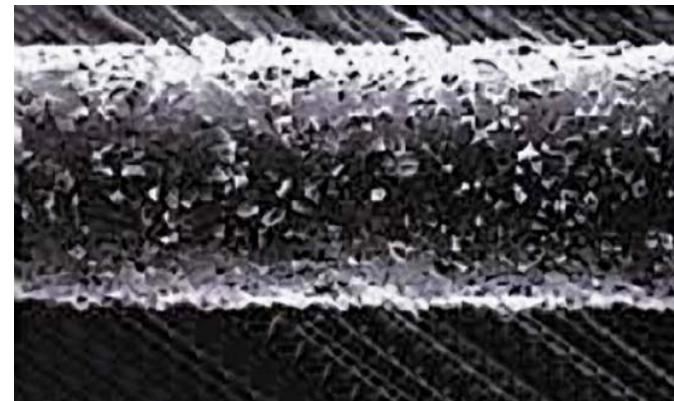
- Manufacturing and selling of diamond wire and associated consumable products
- Diamond wire is used to slice extremely hard materials
- Our primary customers are in the following industries:
 - Solar PV wafering market 65%
 - Sapphire wafering market for LED 25%
 - Semiconductor electronics market 5%
 - Miscellaneous 5%
- Geographically our customers are:
 - Asia 80%
 - North America 15%
 - Europe 5%

Diamond Wire Products



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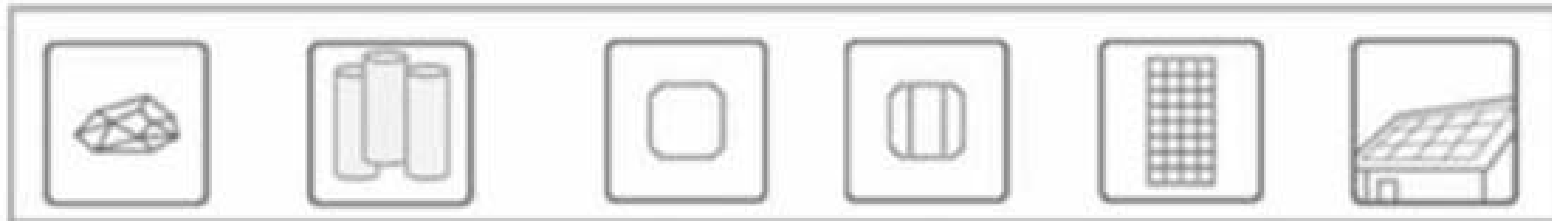
Nominal Wire Size	Kerf Size	Application
<u>mm</u>	<u>mm</u>	
.140	.150	Si Wafer
.200	.220	Sapphire
.250	.270	Sapphire
.310	.340	Shaping
.350	.385	Bricking



General Solar PV Process



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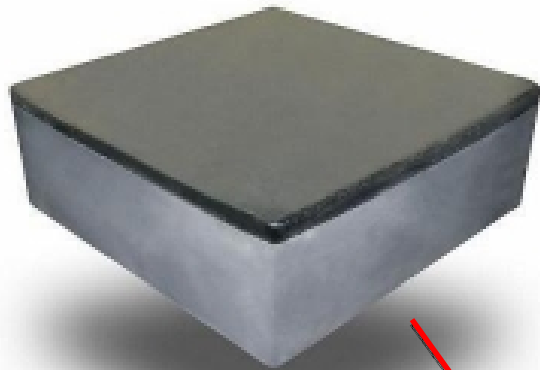


Solar Wafer Creation – Step 1

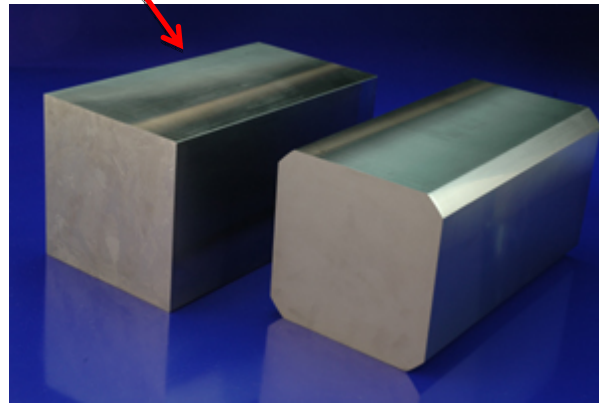


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Poly-Silicon Ingot



Mono-Silicon Ingot



Solar Wafer Creation – Step 2

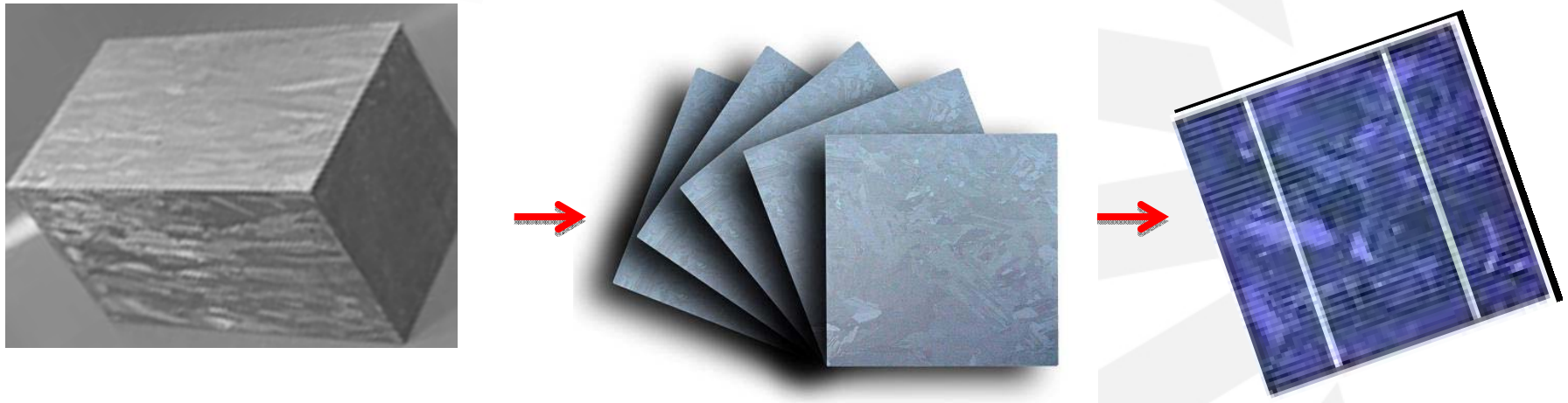


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Mono-Silicon



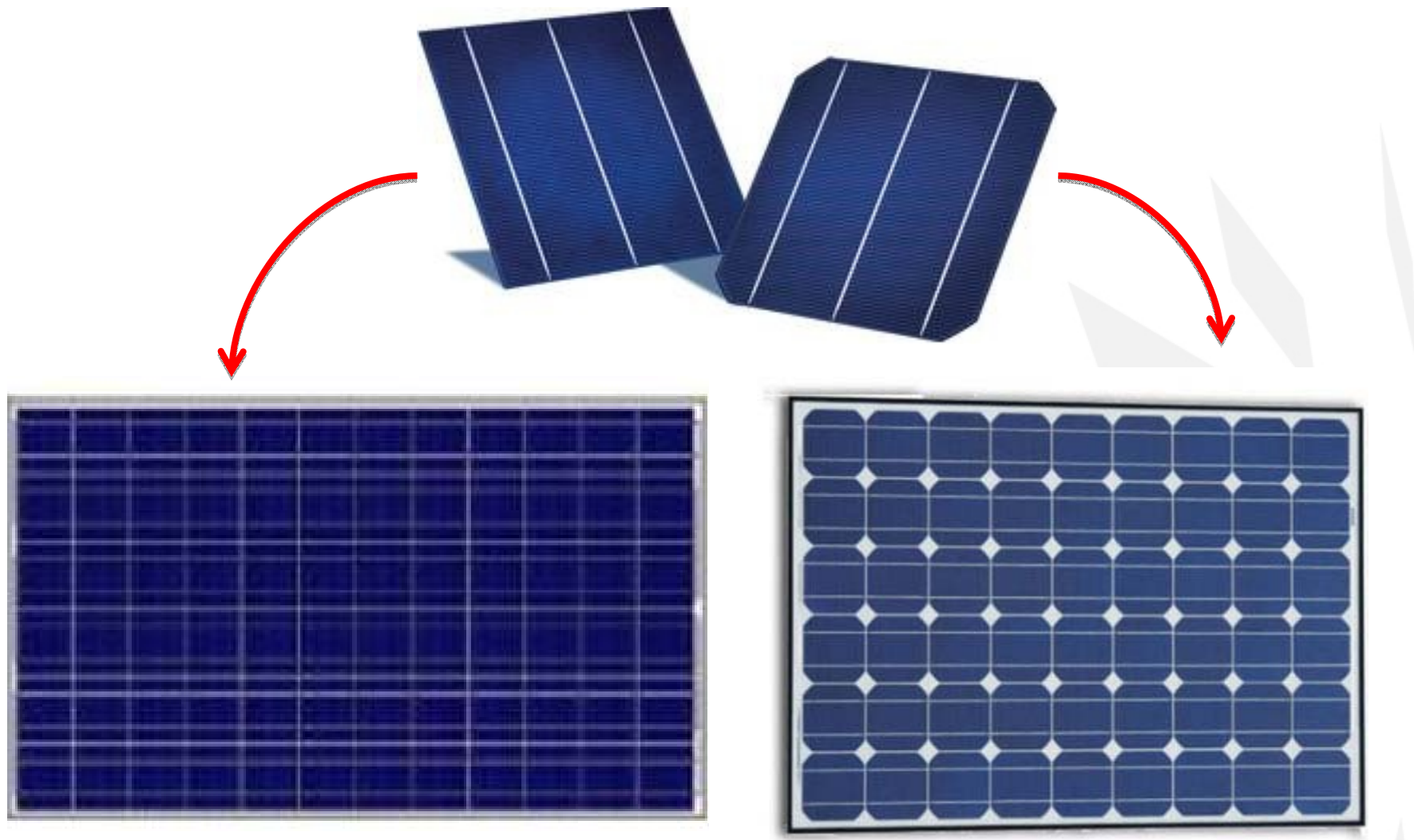
Poly-Silicon



Solar Cells to Solar Modules (Panels)



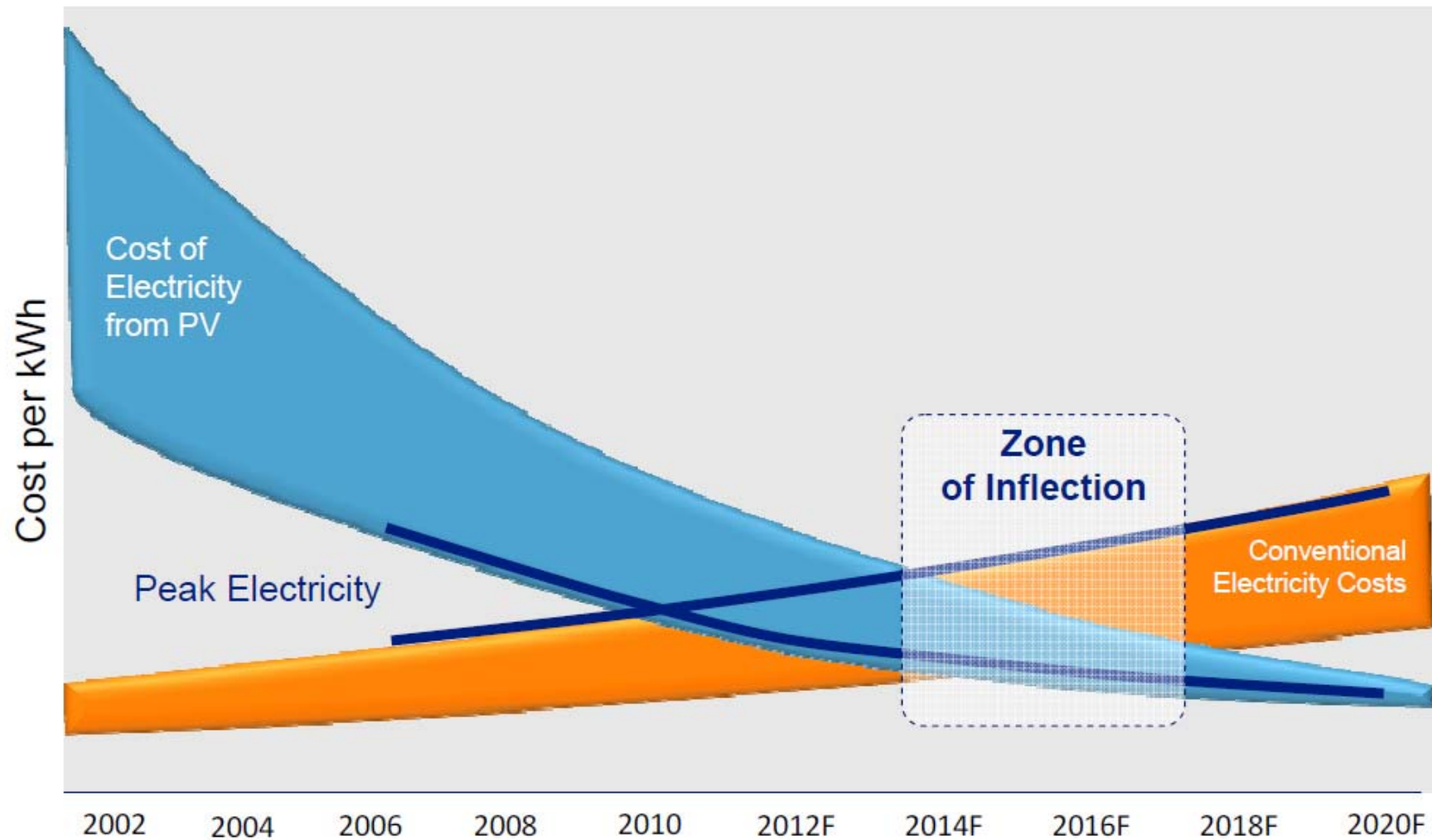
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Grid Parity is Real



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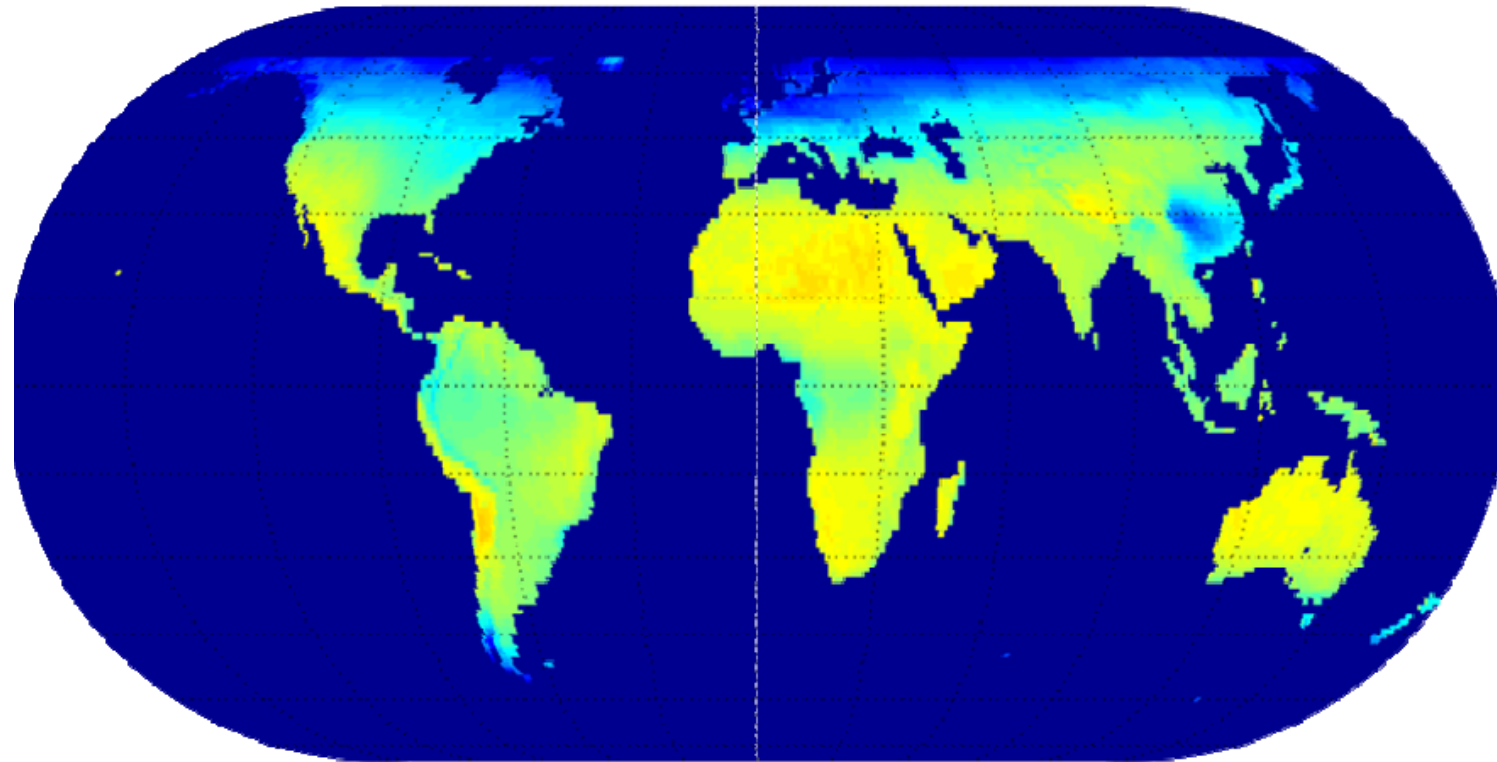


Market potential development

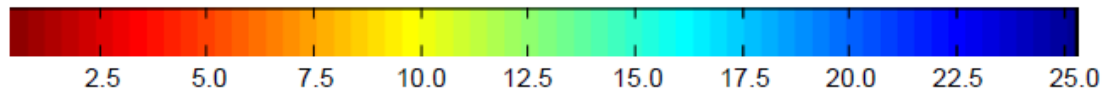
Grid Parity is Accelerating



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Cost of PV
€cents/kWh



2010

18GW
installations

Source: C.Breyer, A. Gerlach, D. Schäfer, J. Schmid, Fuel-Parity: New very large and sustainable Market; Segments for PV Systems; IEEE EnergyCon 2010

Courtesy of Charlie Gay, President Applied Solar

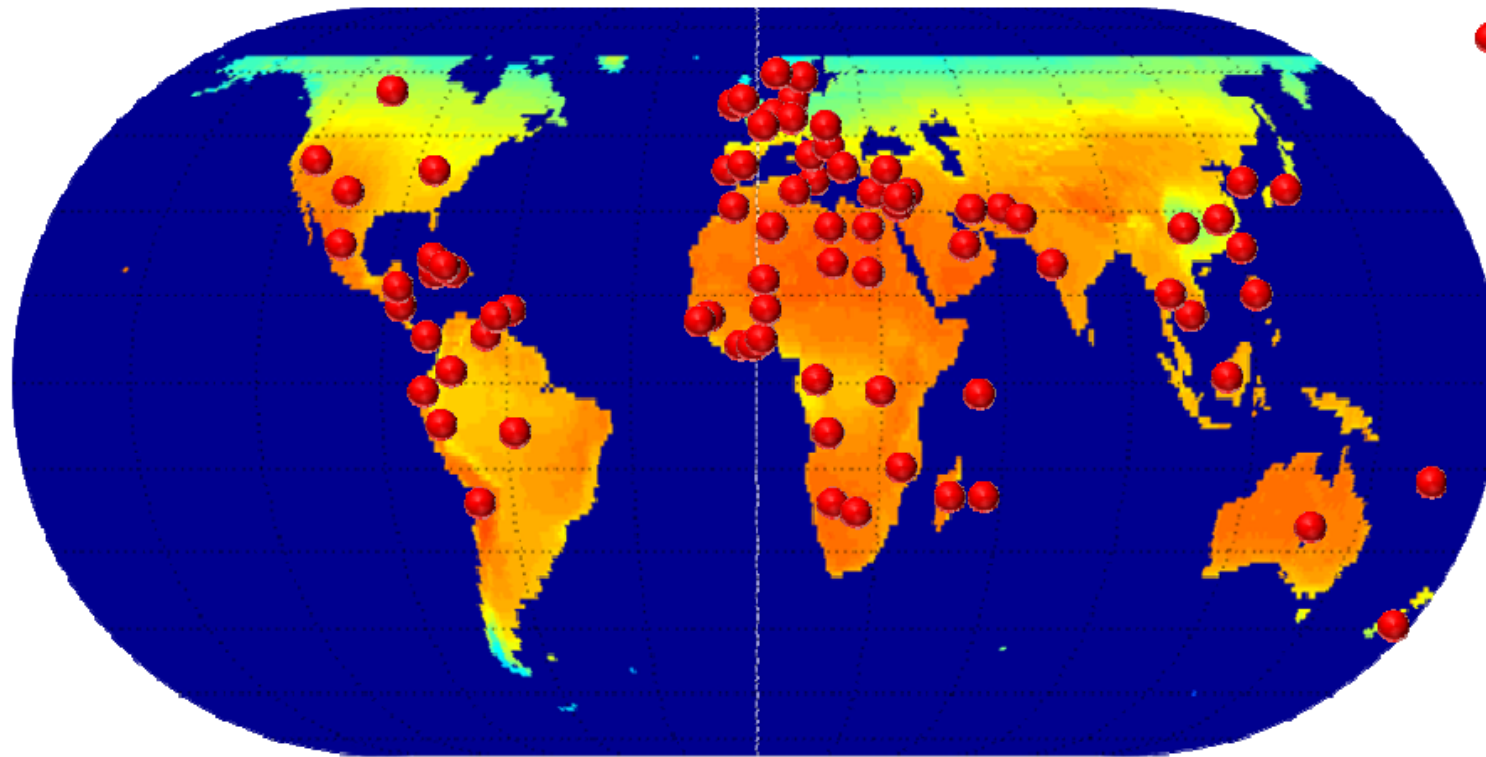
September 2011, Meyer B

Market potential development

Grid Parity is Accelerating



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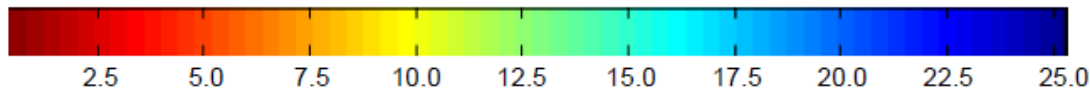
BY

2020

78

countries
will have
reached
grid parity

Cost of PV
cents/kWh



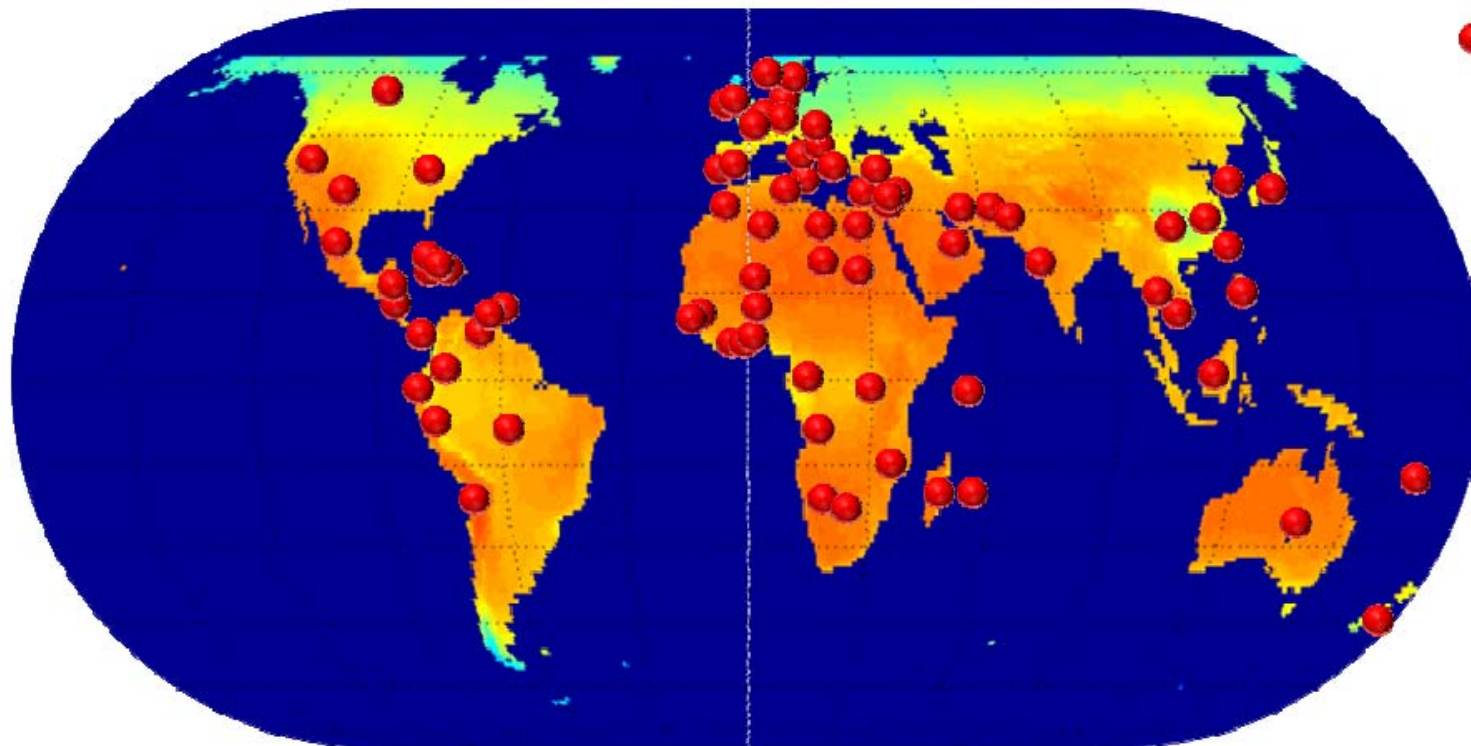
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Market potential development

Grid Parity is Accelerating



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These countries represent

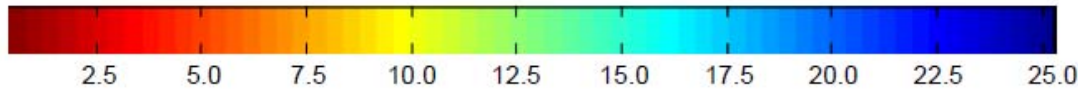
98%
of world population

99.7%
of world GDP

99.2%
of energy related
CO₂ emissions

99.5%
of global residential
electricity
consumption

Cost of PV
€/cents/kWh



September 2011, Meyer B

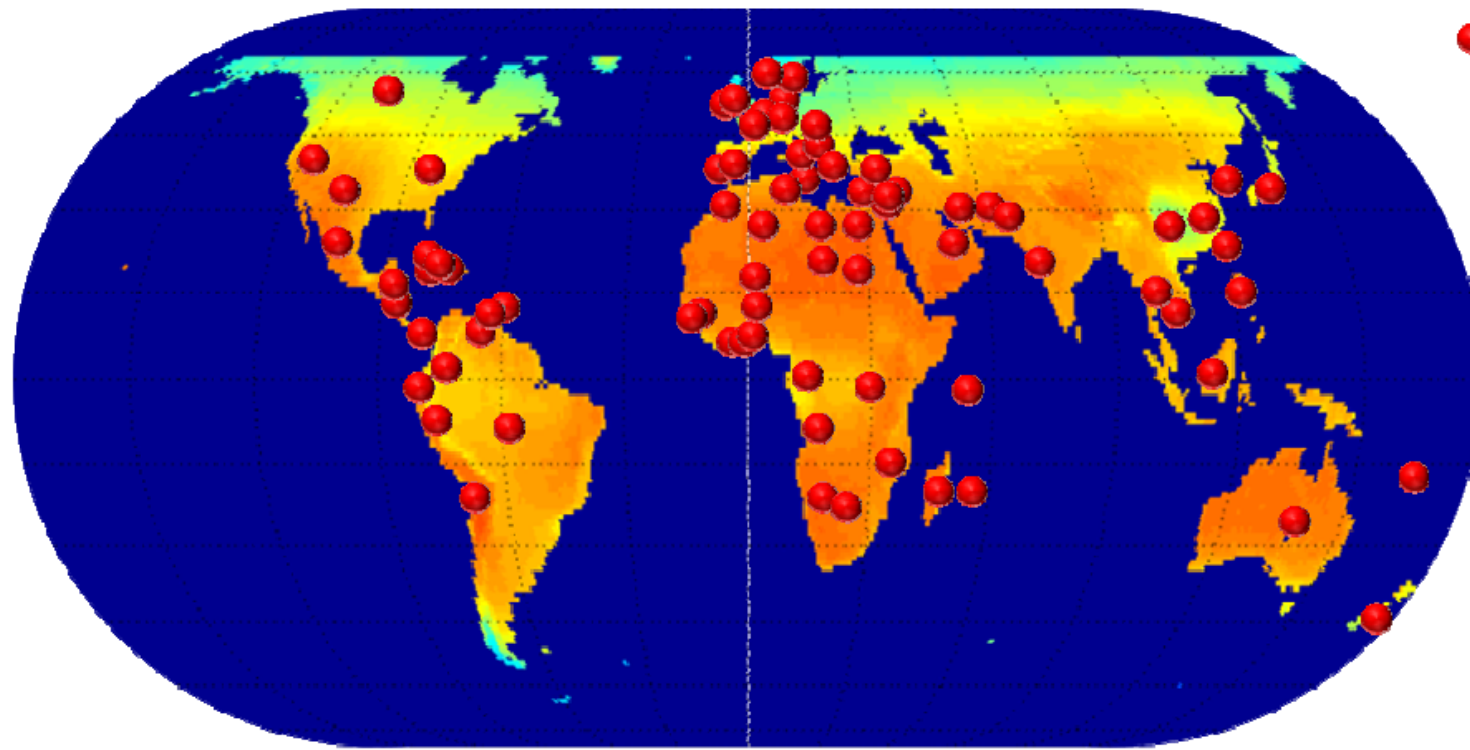
Courtesy of Charlie Gay, President Applied Solar

Market potential development

Grid Parity is Accelerating

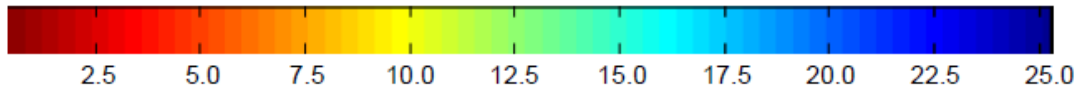


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BY
2020
400_{GW}
of annual
new market
potential for
PV

Cost of PV
€cents/kWh



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10 Principles of Successfully Competing in a Global Marketplace

October 21, 2011



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10 Principles of Successfully Competing in a Global Marketplace



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Principle #1: Demonstrate value to your customers

- Diamond Wire attempts to accomplish this through better overall “Cost of Ownership” (CoO) product performance
- We are a technical organization, not a selling one
- Models are developed to show how the proprietary diamond wire process produces an overall lower cost to our customers

10 Principles of Successfully Competing in a Global Marketplace



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Principle #2: Be incredibly financially driven

- An in-depth, thorough understanding of your cost position is critical.
- Management of the supply chain and working capital are keys to success

10 Principles of Successfully Competing in a Global Marketplace



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Principle #3: Be easy to deal with

- We are not local to our customers, so we need to have systems and processes that seem local
- We invest in applications engineering to assist our customers in developing and refining their processes

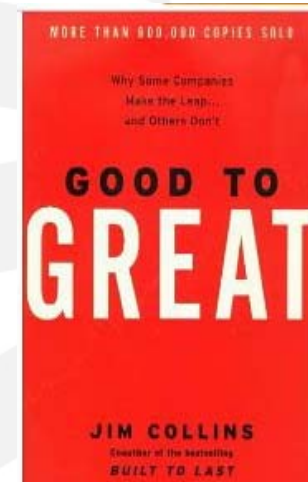
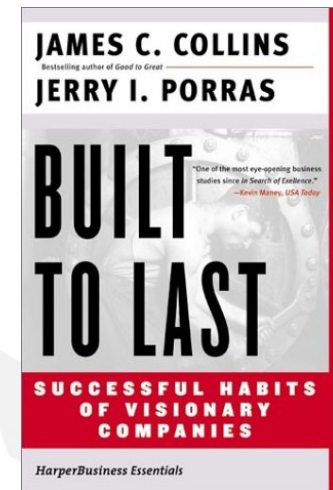
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Principle #4: Institute BHAGs

- BHAG stands for Big Hairy Audacious Goal
- An idea conceptualized in the book, “Built to Last” and later expanded in the book, “Good to Great.”
- A BHAG is a long-term goal that changes the very nature of a business’ existence.
- A true BHAG is clear and compelling, serves as unifying focal point of effort, and acts as a clear catalyst for team spirit. It has a clear finish line, so the organization can know when it has achieved the goal; people like to shoot for finish lines.



Matching Game

Some past and present BHAGs

- Every book, ever printed, in any language, all available in less than 60 seconds
- Bet the company on the 707 and 747
- “This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to earth.”
- Invent a way to sell 100,000 TVs at \$179.95; Attain six-sigma quality and win Baldrige Award
- Organize the world's information and make it universally accessible and useful
- A computer on every desk and in every home
- Change the worldwide image of Japanese products as poor quality; create a pocket radio
- Democratize the automobile
- To become the pulse of the planet



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MOTOROLA

amazon.com[®]

Google[™]

JFK

twitter

Microsoft[®]

SONY

BOEING



DRIVE TO FIVE

- ***Drive down our wire cost to 5 cents per meter***
- ***5 cents per meter means \$50 per kilometer, but “Thrifty Fifty” just doesn’t sound as good as “Drive to Five.”***
- ***“It’s not just another program. It is a major initiative that will involve everyone at DMT. It means producing high quality products at the lowest possible costs. It will be the central tenant of how we will compete with Asia” – Tom Devine, September 26, 2011***

“Far better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to take rank with those poor spirits who neither enjoy much nor suffer much, because they live in the gray twilight that knows neither victory nor defeat.” – Theodore Roosevelt

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Principle #5: Learn from other companies

- Examples for Diamond Wire are Western Digital, Linear Technology, and Toyota

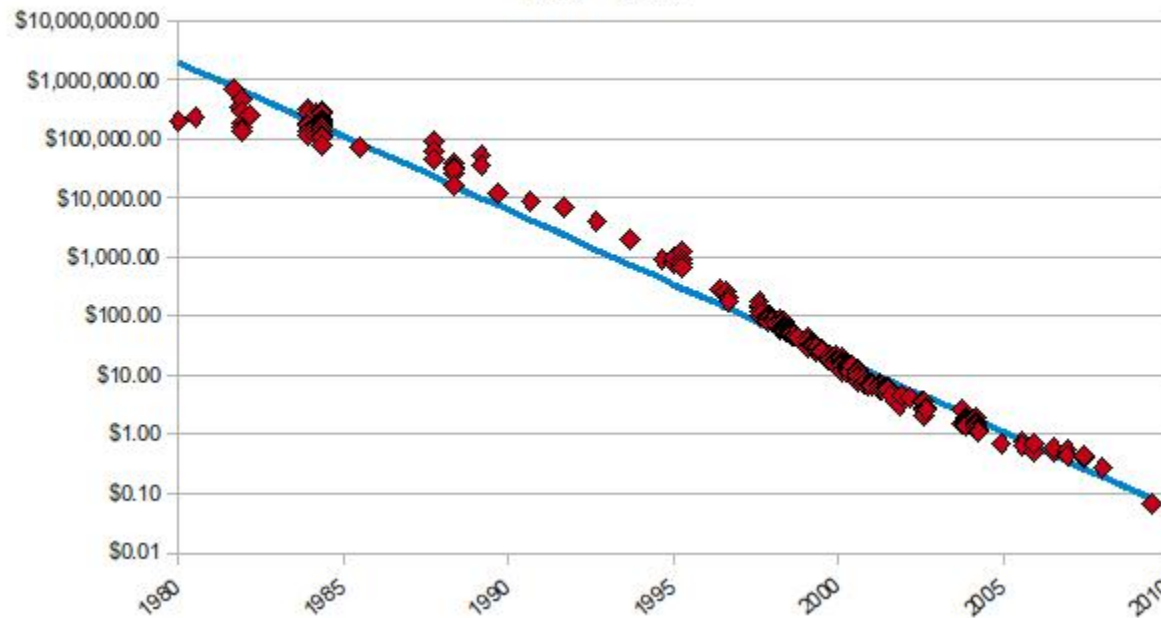
Others have had a tougher path



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Hard Drive Cost per Gigabyte
1980 - 2009



- 1,500,000X reduction in the cost of hard disk space over the last thirty years (not adjusted for inflation), from \$100,000 per gigabyte in 1980 to only \$0.07 by 2009.

Others provide a good example



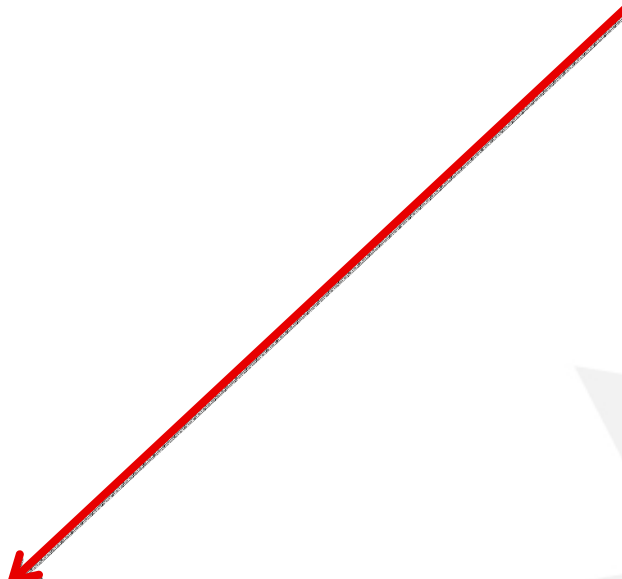
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Linear Technology Corporation



Type	Integrated device manufacturer
Founded	1981 ^[1]
Founder(s)	Robert H. Swanson, Jr. Robert C. Dobkin
Headquarters	Milpitas, California, USA
Number of locations	12 (10 U.S. design centers, Munich and Singapore)
Key people	Lothar Maier (CEO), Robert H. Swanson, Jr. (Chairman), Robert C. Dobkin (CTO) ^[1]
Products	Over 7500 products ^[2]
Revenue	▲ US\$1.17 billion (2010) ^[3]
Net income	▲ US\$361 million (2010) ^[1]
Total assets	▲ US\$1.59 billion (2010) ^[1]
Employees	4,191 (June 2010) ^[1]
Website	http://www.linear.com/

Wow! How do they achieve these results?



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Principle #6: Invest and employ known best practices

- Some of best practices being developed at Diamond Wire:
 - **Six Sigma** to eliminate variation
 - **Lean** to eliminate waste
 - **ISO 9001** to manage overall system
 - **Stage Gate** for comprehensive product launches
 - **Balanced Scorecard** to balance and track execution

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Principle #7: Get the right people on the bus and in the right seats

- Invest in the right combination of experience, knowledge, and fit
- Move people out that don't "get it" (i.e. get ineffectual out of the organization)
- Trust in people and let them do their jobs

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Principle #8: Align, cascade, and measure strategy

- Overall strategy must me:
 - Aligned
 - Cascaded
 - Consistent
 - Have KPIs
 - Have KPIs tracked
 - Have misses against KPIs acted upon

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Principle #9: Think outside traditional systems

- If Americans want to compete globally, we're going to have to think about things differently
- Diamond Wire example with compensation systems

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Principle #10: Win by staying humble

- Americans typically have trouble with this principle
- Under promise and over deliver (but don't sandbag)
- Quiet competence wins

10 Principles of Successfully Competing in a Global Marketplace



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All 10 Principles

- 1) Demonstrate value to your customers
- 2) Be incredibly financially driven
- 3) Be easy to deal with
- 4) Institute BHAGs
- 5) Learn from other companies
- 6) Invest and employ known best practices
- 7) Get the right people on the bus and in the right seats
- 8) Align, cascade, and measure strategy
- 9) Think outside traditional systems
- 10) Win by staying humble