

Ag Technologies Inc

Home to Solarcam solar systems

Discussion on Solar Technology, Financing and Implementation

December 3, 2020

A Quick History

Ag Technologies does complete solar system installations. Since 2013 we've installed almost 600 systems, some large, some small. We only do 'Ground Mounted' systems using our patented SolarCam stand. We partner with Collier Solar for rooftop installs. We're located in Rochester, IN.



SOLAR TECHNOLOGY

Three Fundamental Component – Solar Panels, Inverters, Mount (or racking) need to be considered

Solar Panels – Three fundamental types – Monosilicon, Polysilicon and Thin Film

Thin Film has some advantages – mainly cost and heat tolerance but struggle in the battle against mono and poly panels in the efficiency area. We don't recommend them for Indiana.

Polysilicon – similar to monosilicon but lower in cost and lower in efficiency. They have a place for customers who need keep acquisition costs down but in the long run, lower efficiency is going to result in less energy produced

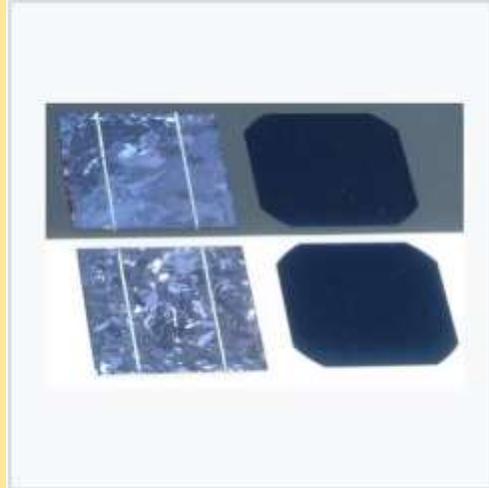
Monosilicon – 'Pure' silicon cell provides highest efficiency available. Cost vs. polysilicon has come down. Since 2017 we only install monosilicon.

Note: Bifacial panels are gaining traction. Backside is glass like the front side. Energy yield boost varies by area. Currently cost hike is an issue but stay tuned.

Cell Technology Comparison



Polysilicon Image



Poly/Monosilicon cell comparison.



Monosilicon Ingot

Inverters

Two Fundamental types – microinverters and ‘string’ or ‘central’ inverters

Fundamental operation is the same as these devices convert Direct Current (DC) Energy into Alternating Current (AC) energy.

‘String’ or ‘Central’ inverters are less expensive. Negatives are a “single point of Failure” which means that when the inverter goes down or loses some efficiency the entire system suffers or goes down.

Microinverters – The High End of the Market

Micro Inverters have one inverter per panel or a limited number of panels (like 2 or 4).

Advantage is improved efficiency as each panel/inverter is not impacted by problems with other inverters.

Also, each panel will have Maximum Power Production Tracking – meaning that the inverter will adjust voltage and current to get the best production from the panel.

Photos of Inverters



Micro Inverter – one on each panel



String/Central Inverter – many panels on each Inverter

Per-Panel Reporting is a Huge Benefit for O&M



With a string inverter that one panel failure would take out an entire string. We can see that the other panels are producing and are producing consistently. All of this is via the internet.

Mount or 'Racking'

Two fundamental types – Roof Mount and Ground mount

Roof Mount offers a place to put solar when there is no option to put solar on the ground. Disadvantages are many – starting with roof liability from solar panel weight. Incorrect angle is usually a problem as is heat trapping. Shading from a chimney, nearby tree etc is often an issue.

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Ground Mounts Are Taking Over Due to Size

Ground Mount offers improved efficiency due to correct angle placement and cooler operating temperatures.

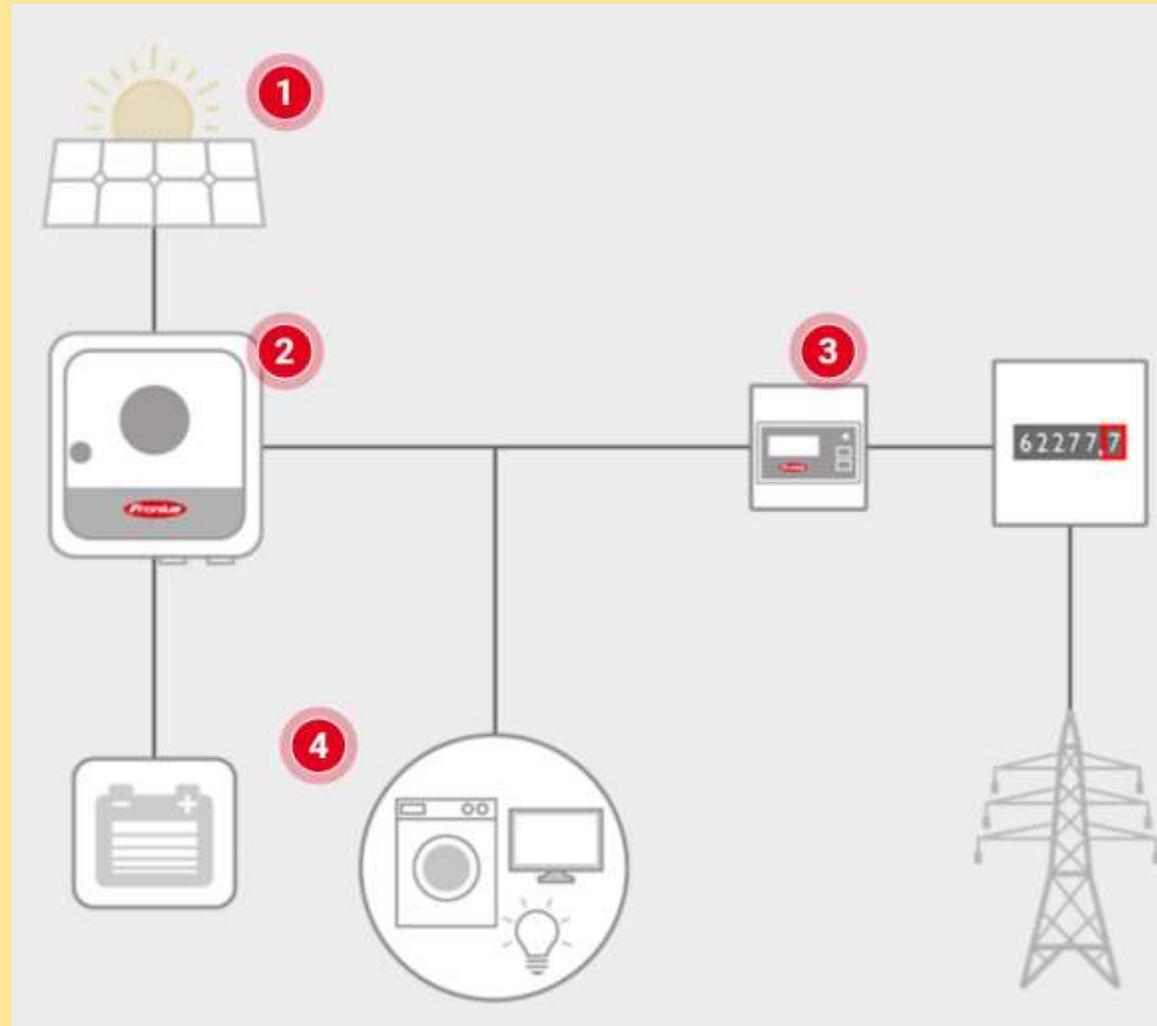
Ground mounting also allows 'tracking' and size is not limited by roof space.

Disadvantage is that normally cost to mount is higher than roof mounting

Examples of Roof and Ground Mount Racking



Battery Storage Is The Current Hot Topic



Batteries Aren't Useful In Every Situation

If you have a fair interconnection rate the utility becomes your 'storage' entity

A back up generator is still less expensive than battery backup – but the gap is closing

Batteries make sense if you have a high retail rate – i.e. 12 cents/kwh or more – and the utility credit rate is in the 3-4 cent range. Stored energy is then worth the difference of about 8 or 9 cents. Grid down backup is a benefit along with 'Self Consumption'.

Financing Is A Big Deal



Proudly Serving Customers In Indiana

- ✓ \$0 Down Payment
- ✓ \$2,000 Cash Back

CALL FOR A FREE QUOTE

855-506-0713



Find Out How Much You Could Save

Request a free quote today.

STEP 1 STEP 2 STEP 3

Why are you interested in solar panels?

- Cost savings
- Environmental impact
- Energy independence
- Other

How much is your monthly energy bill?

\$50/Month

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Types of Financing Options

Conventional Financing – i.e. Standard Home Improvement Loan or Commercial Loan is the best option. Finance a system for 10 years and it should be ‘cash neutral’.

Power Purchase Agreement (PPA) is a good alternative for Commercial and Public Entities
PPA financing works for churches, government entities etc. that are non-profit. Leases are simpler and work when the lessee is a tax-paying entity. Some utilities won't let a PPA arrangement happen with net metering.

Leases are available but a lease is merely another ‘loan’ path.

The Path To Solar Has Many Stops

Permitting – Most jurisdictions require a permit. Some of those can be difficult to get. Have the installer commit to handle permitting.

Energy Audit – We tell people to spend money saving energy before spending money producing energy. Saving always pays faster. Energy Audits are great but there are pitfalls, especially if the auditor is the entity selling solar

Zoning – As with permitting, zoning is a concern although usually the process is not a big problem. Roof mounts in suburbs are an issue with zoning.

Spend Your Time Before Spending Your Money

Advice- no matter what, make sure you'll own the system at the end, get a guaranteed 'minimum annual production number' and a written warranty that is clear.

Maintenance costs for 10 years should essentially be insurance costs.

Don't make a 'Deposit' or Pre-payment.

Get more than one quote and check out references before making a decision to GO SOLAR!

Thanks for Listening

Questions?

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