



# Flat Plates vs Evacuated Tubes



Innovating Today's Solar Technology  
for the Future of Tomorrow



# Flat Plates vs Evacuated Tubes

	Evacuated Tubes	Flat Plate Collectors
<b>Basic System Layout</b>	Evacuated Tube Solar Collectors are hermetically sealed within a vacuum sealed glass tube. This eliminates convection and conduction heat losses, and also isolates the collectors from any adverse weather conditions outside.	These collectors are built within a solid, sealed case, and covered with a tough tempered glass facing which helps to protect them from the elements. However, the air gap within the collector can lead to conduction and convection heat losses, especially on cold and windy days.
<b>Heat Loss Protection</b>	Evacuated Tube Solar Collectors use a heat pipe for super-efficient conduction and transfer. No water ever touches the solar collectors, eliminating corrosion and efficiency losses.	Flat Plate Solar Collectors circulated water through insulated areas within the collector. This makes them more prone to leakage, corrosion, and restricted flow.
<b>Heating System Type</b>	The heat pipe of an evacuated tube solar collector is safeguarded from overheating by the conduction properties of the special heating fluid within it. This overheat protection keeps your system safe from accidental heat damage.	Flat Plate Solar Collectors have no internal overheat protection methods in place, and rely solely on exterior overheat limiters. If these methods fail, damage can occur to the system.
<b>Ease of Installation</b>	Evacuated Tube Solar Collectors are easy to install, and can be carried to the job site, and onto the roof in pieces for a lighter, easier workload. Additionally, if one tube becomes damaged, only that tube needs to be replaced.	Flat Plate Collectors must be installed in one solid unit, and must be brought to the jobsite and onto the roof that way. Also, when a portion of a collector fails, the entire collector must be shut down and replaced.



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<b>System Design &amp; Placement</b>	Because of their 360 degree collector design, evacuated tube solar collectors are relatively adept at accepting most installation angles. This allows for more freedom and aesthetics in the system design and installation.	Flat Plate Collectors, like PV Panels, need to be placed directly at 12 degrees off south, and at roughly the same angle as the location's latitude. This means there are far fewer options for the installation, and aesthetics must often be sacrificed in order to protect performance.
<b>Climate Types</b>	Evacuated Tube Solar Collectors are perfect for nearly any climate, but really shine in northern climates with cooler temperatures, shorter days, and lower sun angles.	Flat Plate Solar Collectors can be used in most climates, but are significantly more effective in warmer, sunnier, southern climates, where freezing and solar angle are less likely to impact a solar water heating system.
<b>Investment &amp; Cost-Effectiveness</b>	Evacuated Tube Solar Collectors are often more expensive initially than Flat Plate Solar Collectors, but this investment will often be recouped quickly due to the increased performance of these collectors in a wider variety of climates and conditions.	Flat Plate Solar Collectors typically cost less from the outset than Evacuated Tubes. However, the lower performance ratings in many climates, and increased maintenance and replacement costs mean that they are generally less cost-effective than Evacuated Tube Collectors.
<b>Our Recommendation</b>	We recommend Evacuated Tube Solar Collectors for our clients anywhere where cold weather, and possible freezing is a significant factor in the weather.	We recommend Flat Plate Solar Collectors to our clients who live in southern climates where freezing is unlikely, and where solar angles, and the amount of sunlight does not justify the increased investment of an Evacuated Tube Solar Collector.