

WISC-UP



What's What In the WISC-UP Airstream Club

Find us on FACEBOOK!

[WISC-UP Airstream Club](#)

Find our WEBSITE!

[WISC-UP Airstream Club](#)
<https://airstreamclub.org/wisc-up>

Upcoming Events

(Click on event title to go directly to our website for more information.)

February 17 11:30 am

Luncheon

Tim and Patti Valenza will host a luncheon at:

Park Side Pub
McFarland, WI

Contact Tim and Patti:
thevalenzas@yahoo.com

May 2-5 - Sturgeon Bay Shipyard Tour and Campout

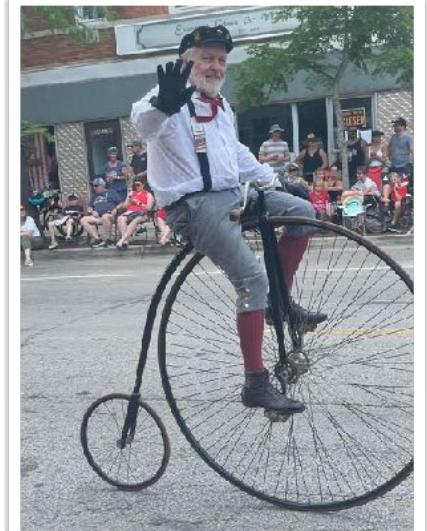
Potawatomi State Park
Sturgeon Bay, WI

Contact Ed or Sandy Emerick
semerick4425@gmail.com
edward.emerick@gmail.com

A Message from President Jim Guthrie

BRN 11970

Season greeting to everyone. Hard not to think about hitting the road when there's no snow on the ground or in many areas salt on the roads. Some fortunate folks in our group are, however, out and living in their mobile aluminum residences, or soon will be. As far as making your plans for the more local and probably warmer camp outings I suggest you check the Wisc-UP site at airstreamclub.org or elsewhere in the Newsletter, you'll notice that we have a number of campouts planned for the coming season, with a couple additional, yet unlisted activities pending. The activities are geographically dispersed which should help any of us to easily get to an outing. Hopefully each of us can get to at least one of these outings. That said, with an increase in the Wisc-UP membership and typically only enough accommodation for 20-30 units per event, we suggest you make campsite reservations as soon as possible as well as contacting the Rally Host(s) in order to help them plan for their event. Looking forward to seeing many of you over the summer in what appears to be an interesting year.



Upcoming Events (Cont.)

June 6 - 9 - Sip of Wisconsin, Sponsored by Grapes and Grains ACI Intraclub
Monroe, WI
Contact: Charles and Linda Meinholz
linda.meinholz@gmail.com

June 12 - 16 - Amana Colonies Rally, Amana, Iowa.
Contact: Bill Scheuerell or Ginny Janssen
bill.scheuerell@sbcglobal.net
vsjanssen@gmail.com

July 18 - 21 - Kids Kids Kids Rally, Fort Atkinson, WI
Contact: Matt Lee or Meghan Lee
thematt1981@yahoo.com
memjlee@gmail.com

August 1 - 4 - Mischief in Marquette, Marquette, MI
Contact: Ginger Slattery or Jane Carmichael
virginiabslattery@gmail.com
janecarmichael2000@yahoo.com

August 15 - 18 It's a Zoo Out There Rally, Green Bay, WI
Contact Pattie Cook or Mary Geyer
Registration Open
pattiejcook@gmail.com
mary.geyer@icloud.com

September 12 - 19 - Region 7 Rally in the Black Hills
Spearfish, SD
Contact: Chris Olsson
cwolsson@comcast.net

Message From the Editor

Ed Emerick (BRN 4425)

Welcome to 2024! Sandy and I hope that you had a great holiday season and that you are doing well so far this year. It looks like 2024 will be a busy year in the Wisc-UP, make sure you check out the Upcoming Events



article in this newsletter. You will want to register early, most of our events fill up and we don't want you left out.

So how have you been spending the winter, send us a short article and lots of photos so our members are up to date on your whereabouts. Did you get cool gift over the holidays? Our members need to know. Do have a new hobby? A new member of the family? Have you read a good book or have something for sale? Our members need to know!

Our Next newsletter will be published in March, the cut off for your contributions will be March 10, 2024. Get your news in early to get a spot in the next issue, you know we fill up quickly!

Thanks for all your help putting out another great newsletter because "Our Members Need To Know!"



Upcoming Events (Cont.)

September 12 - 15 - Let's Rally in Bayfield! Bayfield WI
Contact Jenny Bible
jenny.giles@att.net

September 26 - 29 - Up Nort in Da UP, Copper Harbor, MI
Contact Frida Waara or Ron Thorley
frida@fridawaara.com
rthorley@chartermi.net

Membership News

Pattie Cook (BRN 22562)

Here are the latest new members of the Wisc-UP!
Welcome!

Linda and Dean Frazier
BRN 18786
Prairie Village, KS

Lori Grant
BRN 6135
Plymouth, MN

Tan and Jon Konzen
BRN 12584
Eau Claire, WI

Doug and Mary-Jo Pierce
BRN 26465
Glenbeulah, WI

Blair and Patricia Warren
BRN 20881
DeForest, WI

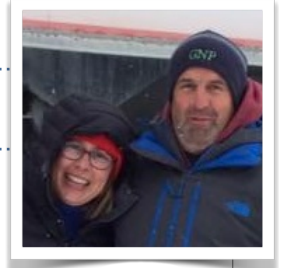
WISC-UP Airstream Club

Wisc-UP Events

We Eat Lunch Together!

February 17th Luncheon

By Tim and Patti Valenza BRN 9196



Tim and Patti Valenza are hosting the February Luncheon on the 17th at:

Park Side Pub

5016 Erling Ave.

McFarland, WI 53558

<https://www.parksidepub.net>

Arrive at 11:30 for drinks. Lunch begins at 12:00.

We would like to collect donations for the Dane County Humane Society. We ask those attending to consider bringing an item to donate or a cash donation (this can be done on-line as well) to support animals at the shelter.

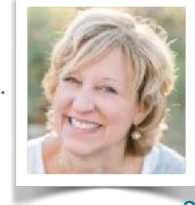
Here is a wish list: <https://www.giveshelter.org/how-to-help/wish-list>

Please RVSP by February 10th so we can give the restaurant a head count. Notify us on Facebook or thevalenzas@yahoo.com



Membership News (Continued)

Pattie is our Membership Chair. Her email is: pattiejcook@gmail.com



Wisc-UP Events

We Rally Together

The Amana Colonies Rally Wednesday, June 12 - Sunday 16, 2024



By *Ginny Janssen and Bill Scheuerell* BRN 3649

In 1855 German immigrants established the Amana Colonies, seven communal villages between Cedar Rapids and Iowa City, Iowa. Although the Amana Colonies are no longer communal, the history and much of the culture remains.

Amana Colonies: "Step into a world of authentic German ambiance that was created by the settlers of the Amana Colonies and preserved by their ancestors. Experience the unique culture that has its roots in Germany and flourished in the USA during a communal era for over 90 years.

Visitors have been coming to the seven scenic villages for over a century. Come for the food, wine, and beer – for the quality handcrafted products, art, and quaint shops – for the history and antiques."

To top it off, this is the weekend of the Wurst Fest including music, food, wiener dog races, and more.

Tentative schedule:

Wednesday, June 12, 2024

- Happy hour – bring a snack to share

Thursday, June 13, 2024

- Continental breakfast at campground, bring own beverage
- Heritage Society Caravan Tour. A guide will lead us in our vehicles from the Amana Heritage Society, to Middle Amana, Communal Kitchen, High Amana General Store, and Homestead Communal Church. The guide will explain the history and answer questions. Your tour price allows you to return to the museums and sites if you want to spend more time there. **optional, pay when you register**
- Family Style dinner at Ronneburg Restaurant. There will be a choice of 3 entrées, 6 sides, pie, tea, coffee, lemonade. Tax & tip included. Other beverages are extra. **optional, pay when register**

The Amana Colonies Rally Wednesday, June 12 - Sunday 16, 2024

(Continued)

Friday, June 14, 2024

- Continental breakfast at campground, bring own beverage
- Free Time
 - Visit shops – Amana Meat Shop & Smokehouse, Furniture & Clock shop, Woolen Mill, Heritage Designs Quilting & Needlework, the General Store, International Christmas Market, and more.
 - Quench your thirst at Wurst Fest, a microbrewery, or winery.
 - Burn off a few calories on a bike or hiking trail.
 - Return to places visited on the Heritage Society Caravan tour.
- Happy hour – bring a snack to share
- Dinner on your own or join us at a local restaurant **express interest when you register so we have a count for the restaurant**

Saturday, June 15, 2024

- Continental breakfast at campground, bring own beverage
- Free time - Attend Wurst Fest, hike, bike, shop, etc.

Sunday, June 16, 2024

- Continental breakfast at campground, bring own beverage
- Pack up and head home – or – stay longer

Please CALL the campground to make your own camping reservations. Say that you are with the WISC-UP Airstream group if you want to park with the group.

Amana RV Park & Event Center

3850 C Street, Amana, IA

(319) 622-7616

<https://amanarvpark.com>

The Amana Colonies Rally Wednesday, June 12 - Sunday 16, 2024

(Continued)

We think this will be a popular rally so please register early. We are limiting the rally to 30 Airstreams. Only WISC-UP members and affiliates may register before April 1. Non WISC-UP members will be put on a waitlist until April 1 when registration will be open to all. All registrations close after June 2.

[Click here to go to Registration.](#)

Rally Fee \$22 per adult

\$8 per child (under 12)

Heritage Society Caravan Tour (optional, register & pay by June 2)

\$8 per person

Ronneburg Restaurant Family Style Dinner (optional, register & pay by June 2)

\$33.00 per adult

\$14.00 child (under 12)

Friday night dinner at local restaurant (optional, please express interest by June 2, you pay at restaurant)

We look forward to seeing you in the Amana Colonies.



Ginny Janssen

Bill Scheuerell

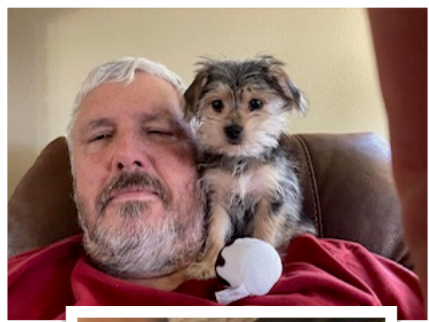
Meet Our New Wisc-UP Member

*Kujo Williquette
(BRN 14148)*



Kriss Williquette describes Kujo as a “100 pound dog in a 4 pound body”! Kujo is what they call a Morkie, a mix of York and Maltese.

Welcome Kujo, hope to meet you in person/dog at the next rally!



Wisc-UP Events

We Rally Together



Kids, Kids, Kids Rally

Wishing Well RV Resort, Fort Atkinson, WI.

July 18-21

By Meghan & Matthew Lee (BRN 24601)

Coming next summer is another Kids, Kids, Kids Rally from July 18th-21st. This year, it will be hosted by Meghan and Matthew Lee at Wishing Well RV Resort in Fort Atkinson, WI. This resort boasts many kids activities such as a remote car race track, jumping pillow, inflatable obstacle course, 3 playgrounds, 2 pools, horseshoe, dunk tank, and so much more! They also have themed weekends and the theme for the rally will be Christmas in July! Ten spots have been reserved and more information on how to register will be coming sometime in February, so mark your calendars and get your name on the list because this is sure to be a great time!



Vintage Camper Restoration LLC Expands

By Steve Prouty (BRN 1173)

Vintage Camper Restoration LLC is excited to announce we are adding Midwest Airstream Service LLC to the family. The website is slated to come online this month, which will detail the services we offer targeted toward the newer Airstreams and show examples of our work.

The addition of Midwest Airstream Service should help owners of newer campers to locate our repair shop. The name Vintage Camper Restoration is not the first name an owner of a late model Airstream would search for when looking for a service or shop. It has come to my attention that there are many owners out there looking for a place to have work done that do not know we even exist. The team decided not to change our name, so we added the new LLC. Same service, but more searchable on Google.

We continue to be located at the Vintage Camper Restoration Shop in Cazenovia, WI, and have the same crew doing quality work. Lucas, one of our employees, is heading to RV tech certification training this spring. We had over 100 projects through the shop

Wisc-UP Events

We Rally Together

Mischief in Marquette

Gitche Gumee RV Park,
Marquette, MI August 1-4

Hosts Jane Carmichael (BRN 219) & Ginger Slattery (BRN 2041)

Isn't it about time you returned to Marquette, MI for an Airstream event? Or isn't about time you went to Marquette, MI for your very first Airstream event? Wisc-UP #116 is pleased to invite you to the "Mischief in Marquette Rally" to be held August 1,2,3 at the Gitche Gumee RV Park, Marquette, Michigan.

First: Reserve a site! Sites are available by calling Jeff Glass, owner of Gitche Gumee at [906-249-9102](tel:906-249-9102) (Office) or [906-250-6123](tel:906-250-6123) (Cell). Please mention that you are with the Wisc-UP Airstream Club and pay for your site. Water & Electric is \$59 Full hook up site at \$69.

Please register on-line and the rally fee is \$25 per person.

[Click here to go to registration.](#)

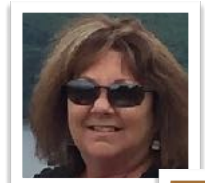
The rally fee will provide the attendees with 3 morning coffees, a welcome dinner, pasta, salad, bread, dessert.

There will be a Potluck Dinner at Ginger's site, bring an item to grill & dish to pass. A couple tours will be provided including a waterfalls view, scenic overlooks, and an Airstream dealership tour. Also included will be some door prizes and a goody bag.

There will be a separate \$10 per car fee for the Wooden Sculpture Troll tour. Dinner out on Friday night will also be a separate charge.

Contact: Ginger: virginiabslattery@gmail.com

Contact: Jane: janecarmichael2000@yahoo.com



Vintage Camper Restoration LLC Expands (Cont.)

By Steve Prouty (BRN 1173)

during 2023 and hope to continue to grow by adding more services and products.

The web address is midwestairstreamservice.com and it is launching soon.

Thanks to everyone who was so supportive towards us over the last year; here's hoping for a great 2024.

Steve, Julie and Clayton Prouty, Owners of Vintage Camper Restoration LLC

vintagecamper.org

Midwest Airstream Service LLC
midwestairstreamservice.com
(launching soon)

608-495-9978



For Sale!

2021 Airstream Caravel 19 CB

By Marcia Baylin (BRN 1264)

My trailer, affectionately known as “Lulu”, is housed in Neenah, WI. In addition to standard features, Lulu is equipped with two lithium batteries and three solar panels, essential for non-electric camping and boondocking. She is in excellent condition, well-maintained, and perfect for someone who likes a cozy space.

Special upgrades include; Three 90 watt Zamp solar panels, Two 170 Ah LiFePO4 batteries, for a total of 340 Ah capacity, Convection Microwave

Asking price \$67,900

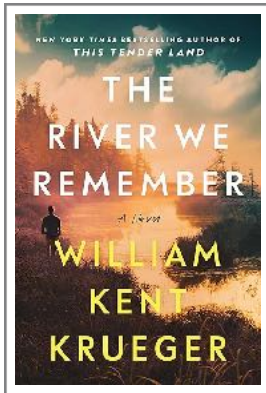
Lulu rides like a breeze through mountains and plains, towed by a perfectly matched 2021 GMC Canyon Denali crew cab, also available. Please inquire by email:

marciabaylin3101@comcast.net



Good Reads for the Airstream

By Kurt Jorgensen.
(BRN 6104)



I finished a great book recently. "The River We Remember" by William Kent Krueger. This is a mystery, like most but not all of his books, but it is so much more. For those that know the author, it is a stand alone mystery, not one of his Corcoran O'Conner series. It has wonderful, complex characters. And it has strong themes in regards to Native American issues as well as themes about war and the aftermath, and the power of human beings to adapt to difficult circumstances, and love, anger, and forgiveness. Its setting is a mythical small midwestern town in southern Minnesota just north of Spirit Lake in Iowa. Reading this author is like having coffee or a drink with an old friend.

New Member Spotlight

Richard & Peggy Feyen (BRN 19172)

Greetings from Richard and Peggy Feyen. We joined in the fall having just purchased our second Airstream, a Flying Cloud 27 FBQ. Our first was a Basecamp 16x and we decided we spend too much time in it to be confined to such little space.

Currently we are in southern New Mexico where we will be for three months then on to south Texas where we will be for another month before returning home.



Home is east of Green Bay just south of Door County. Both of us are retired ministers in the United Church of Christ. We are looking forward to meeting many of you and taking part in events and gatherings as much as we can. We are already signed up for the Rally in Sedalia in October.

Safe Travels All!



Meet Wisc-UP's New Quartermaster Rob Tweed (BRN 29184)



Quartermaster you say? Just what is a Quartermaster? You know that is a good question and after looking through the ACI website and the Wisc-UP website, I don't really find a definition. I know when I was Quartermaster in 1999 I was given an old suitcase full of badges, berets, some Wisconsin flags and some other "Stuff" I was now in charge of.

Now, not having a documented way of completing "duties" has never stopped a Wisc-UP member from moving forward. Rob Tweed is no different! I'm sure Rob will clarify this further, but I think if you need a badge or a Wisc-UP flag or something like that Rob will help you get it.

For now I want to thank Rob for taking on this responsibility and I hope you get that suitcase from 1999!

WISC-UP Airstream Club

Some Member Holiday Photos!



The Zellermayers at Christmas Eve Service with their youngest granddaughters Betsy & Molly



Greg Hyer at the Santa Rampage, Madison, WI



Vicki Engelstad, Dave Sherman, Mike Cooney, Mary Geyer at the Canopener Rally in Florida.



President Jim getting into the holiday spirit!



Bree, Charlie, Pearson, Brennan, and Eme Lawrence



Ed & Elaine Emerick at the Thanksgiving Parade, Jacksonport, WI

December Luncheon

**Hosted by Chuck and Janet Zellermayer
BRN 10230**

On December 2nd 25 folks gathered at Hi-Way Harry's in Johnson Creek (or crick as it's know locally). We have a great time of conversation, food, beverage, and just pure de fun. A bunch of new members were in attendance.

There were a number of donations of nonperishable food items and cash for the local pantry and outreach program. We're so proud of our members. They really do care.



Rev. Deacon Bill Dunlap from St. Paul's Episcopal Church Watertown and Chuck Zellermayer



Repairs, Restorations & Cool Airstream Things

Replacing Airstream Shades with Budget Blinds

*By Janet Zellermayer
(BRN 10230)*



Zellermayers replaced original shades with honeycomb shades from Budget Blinds. Magnets secure shade to window bottom.



Our Members' Travel Adventures

By John Cooper (BRN 1336)



Northern Lights and Polar Bears Caravan 2023

One thing is certain about the Northern Lights and Polar Bears Caravan -- you will be busy! The caravan hosts, Gail and Bruce Harrower, have put together an itinerary that keeps you hopping all through Manitoba.

The fun started in Carberry, Manitoba and progressed slowly north as a regular Airstream caravan to Thompson. Then the Airstreams were left behind and it became a train and hotel adventure to Churchill and back. Churchill claims to be the polar bear capital of the world. And from Carberry to Churchill to Winnipeg, the final stop of the caravan, the Northern Lights can appear at any time.

As we drove north from Carberry to Thompson we passed through prairie and boreal plains to boreal shield ecozones. We visited a potato farm in the prairie zone and moved from fertile farmland in the south to boreal forests with white spruce, larch, and tamarack to rock, sand, muskeg, and permafrost in the north. On our way north we not only made new friends among our fellow caravaners, but we also learned about the history, geography, plants, and people living in Manitoba.

Riding the train from Thompson to Churchill, staying at the Tundra Lodge, seeing the Northern Lights, and hunting for polar bears in a Tundra Buggy was a bucket list adventure.



Our Members' Travel Adventures

By John Cooper (BRN 1336)

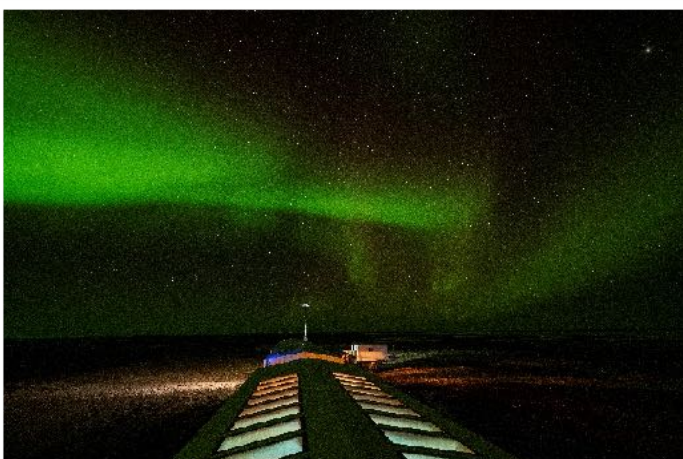
Northern Lights and Polar Bears Caravan 2023 (Cont.)

Polar bears are considered marine mammals because they live on sea ice. They congregate near Churchill because that's where the sea ice first forms and the last place it melts. They mainly hunt bearded or ringed seals, and only come back on land after the sea ice melts in the spring. They are opportunistic, and may eat eggs, birds, small mammals, carrion, or even other polar bears (especially cubs), but for the most part they fast from the time the sea ice melts until it freezes again. Polar bears are the largest carnivores in the world, and one of the only apex predators which will actively hunt humans.



According to Polar Bears International, polar bears in good condition can fast up to about 130 days before they begin to starve and mortality rates increase, especially for cubs. In today's world of climate change the sea ice is gone for about 107 days, and that number is getting larger. As the fasting period increases, polar bear moms have fewer cubs since their bodies will only conceive as many cubs as their fat stores can support. Indeed, if they don't have enough fat their embryos will not implant at all.

The timing of the caravan was perfect. The polar bears were just starting to congregate near Churchill, and we saw five different bears. The fall colors were absolutely amazing as we drove through Riding Mountain National Park. And along with the polar bears we saw red foxes, snow geese, and seals while we rode in the Tundra Buggy. Would we do it again? You betcha!



Our Members' Travel Adventures

Meghan & Matthew Lee (BRN 24601)

Our Summer Adventure to Yellowstone!

Matthew and Meghan Lee, along with their children Olivia and Camden and Meghan's parents, traveled from Milwaukee to Yellowstone National Park this summer with many great stops along the way. The trip started off a bit rocky as Meghan's parents got a flat about one hour from home, but that didn't stop the family from having a good time! With an hour to spare before sunset, they made it to their first destination at Fort Abraham Lincoln State Park in ND. This is a must see, folks! So much history here and beautiful views in a meticulously maintained campground. A nice walk along the river to watch the sunset was just what the doctor ordered after a long day of travel and tire issues.



From there, they made a pitstop for lunch at Kroll's Diner to try Knoephla Soup and finally made it to Theodore Roosevelt National Park in Medora for a few days. Although the bugs were pretty crazy there, they made the best of it and enjoyed the river, a nice hike, and the Medora Musical.



After about 3 days in Medora, they moved on and stopped in Billings, MT where they enjoyed amazing pizza at MAD Pizza and walked through the amazingly huge Farmer's Market on Saturday morning. At the market is where they spoke to a few locals and learned that the best way to travel from there to Yellowstone was over Bear Tooth Pass and it did not disappoint!

Yellowstone was full of amazing scenery and adventures, including a Bison walking right through their campsite at Fishing Bridge RV Resort and an amazing sunset coupled with a double rainbow at the top of an overlook on Yellowstone Lake. Even the drive home was full of great stops like Big Lost Meadery and Brewery in Gillette, WY and of course, Devil's Tower.



Repairs, Restorations & Cool Airstream Things

Adventures in Buying a Hail-Damaged Airstream - Part II



By Steve Prouty (BRN 1173)

In the last newsletter article, I detailed the process of purchasing a hail-damaged 2020 Globetrotter 27FB. Since then, I have been able to acquire both a Wisconsin title and full coverage insurance (through State Farm). Before my purchase, I researched insurance coverage for a "total loss" camper, because I was concerned that it may be an issue. The policy I have has both collision and comprehensive but the panels that have hail damage on them are not eligible for replacement if there is any further damage. I supplied the agent with detailed pictures of the hail damage for reference if I have a claim in the future.

I consider the experiment a success. Julie and I plan to keep the Globetrotter for our personal camper. We will be going to several Wisc-UP get-togethers, and I will attend both the

September Region 7 Rally in South Dakota and the Missouri International Rally in October.

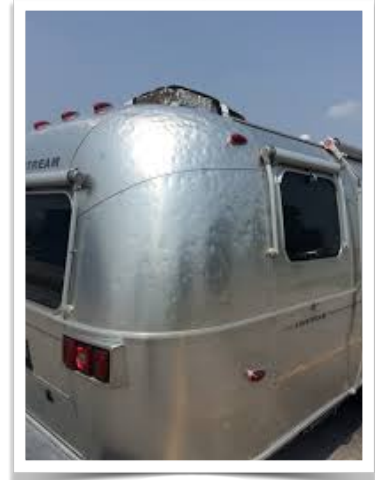
Please feel free to come on over and check out the "live dimpled" Globetrotter when you see us at the events.

I have my eye on more hail-damaged Airstreams. Coming up for sale in the next few months are a 2022 Basecamp 20X, a 2021 Caravel 19' corner bed and 2016 23D International Serenity. If we are successful, we will title it through

Vintage Camper Restoration and offer it for sale at what should be a substantial discount over retail value. Of course, VCR will complete a thorough inspection, leak test and fix the small issues, so that the buyer can be confident that it is ready to hook up and take camping. If you or anyone you know is interested in any of these campers let me know.

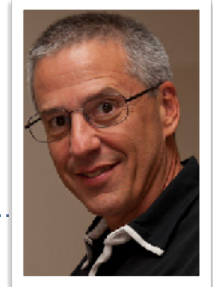
Steve Prouty, Owner

Vintage Camper Restoration LLC - Midwest Airstream Service LLC



Airstream Electrical Upgrades - Solar Panels and Charge Controllers

By John Cooper (BRN 1336)



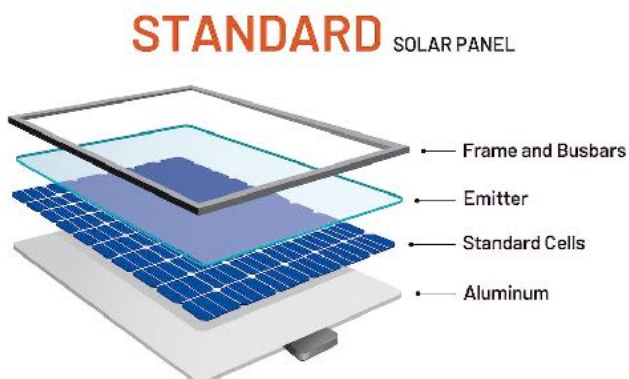
This is the third in a series of articles on Airstream Electrical Upgrades. The first (July 2022 newsletter) was a general overview of what can be done to increase your boondocking capability, and what components might be included in your electrical system. The second (January 2023 newsletter) was about batteries and battery banks and discussed lead-acid and lithium iron phosphate (LiFePO4) battery types and their differences. This article covers solar panels and the charge controllers that can contribute to your electrical independence.

Introduction

As with batteries and battery banks, there are many types of solar panels and many ways to connect them, so I'll explain them and try to shed some light on what you might want to choose from all the options available. Technology is changing, but not so fast that a good introduction won't help when it comes time to choose.

First, what is a solar panel? Well, it is a collection of solar cells, which convert solar energy to electricity, assembled by a manufacturer into a panel to make connecting the individual cells simpler and easier to do. There are different types of solar cells, including monocrystalline, polycrystalline, and Thin-Film, with half cut or full cut cells, with PERC, HJT, and TopCon fabrication methods, built into flexible, rigid, and portable panels.

In very general terms, monocrystalline panels are usually more efficient than polycrystalline, and rigid panels are usually more durable than flexible panels. Flexible panels that mount directly to a roof (i.e. no air gap) may be less efficient due to heat buildup since crystalline solar cells work better in lower temperatures. Solar panels do not store any energy – they only generate electricity – and their capacity to generate is measured in watts.



Panel Construction

Solar panels are built to perform under varying conditions. For example, a solar farm with hundreds or thousands of panels has very different requirements than what might be used on a sailboat. To meet these varying requirements manufacturers have come up with different assembly methods for solar cells.

The cells used in a panel can be monocrystalline, polycrystalline, or the panel can have amorphous photovoltaic material. A monocrystalline cell is

Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

By John Cooper (BRN 1336)

made from a single silicon crystal. A polycrystalline cell simply contains multiple crystals. Monocrystalline cells are the most efficient at converting sunlight to electricity and carry the highest cost.

Rigid panels are made with high-strength glass over the solar cells to protect them from impacts like hail or wind-borne debris. They can be made with either mono- or polycrystalline cells. The sandwich of glass, solar cells, wiring, and backing is mounted within an aluminum or other rigid frame. They do not bend easily and are well suited for installations where the panels are not required to flex, and where weight is not a problem. Rigid panels are typically much heavier than flexible panels because of the glass. The panels mounted from the factory on all but the latest Airstream roofs are rigid panels.

Flexible panels are made with a flexible plastic covering over the solar cells to protect them from impact. The plastic has evolved over time to become more resistant to yellowing and scratching but does not stay as clear as glass over time. For this reason and because solar cells and their connections do not really like flexing, flexible panels do not tend to live as long as rigid panels. However, they can be used in places like on sailboats where it would not make sense or might even be dangerous to use a rigid glass panel. Like rigid panels, they can be made with either mono- or polycrystalline cells. The sandwich of plastic, solar cells, wiring, and backing may be mounted in a flexible plastic or fabric frame. The backing material may also include a contact adhesive layer to allow the panel to be mounted directly to a roof or other semi-flat structure.

Thin-Film is another flexible construction method. Thin-Film panels do not use crystalline silicon. Instead, they are made with a continuous layer of photovoltaic (PV) material across the panel. They can be very thin, light, and flexible, but are not very efficient – about half of what monocrystalline cells can provide. Their lifespan is also about half of other types of panels. They are easier and less expensive to manufacture so they are inexpensive compared to other types of panels.

Portable panels may be either rigid or flexible. The term “solar suitcase” generally refers to a set of two rigid panels where the frames are joined using a hinge so that the panels can be closed for transport or storage, and then opened for ground deployment when needed. Newer portable panels tend to be flexible, in part to take advantage of the lighter weight flexible panels provide. They typically fold along a fabric hinge and may have two to four sections that fold



Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

By John Cooper (BRN 1336)

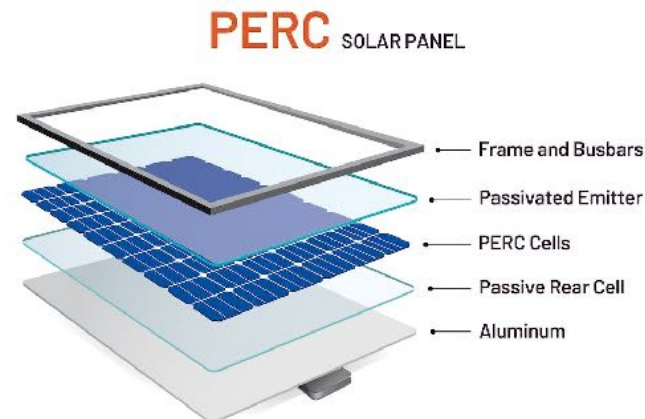
out. Portable panels generally have some built-in way to angle them toward the sun when placed on the ground and may come either with or without a charge controller. Some manufacturers include connections for their portable panels that allow them to be easily chained together to provide additional capacity, or USB connections that can be used to charge a phone or portable battery directly from the panel.

Manufacturers are constantly working on making solar panels more efficient. They have improved durability and performance by improving the way the cells are connected within a panel as well as how the layers of the panel sandwich are formed. In the past, most cells were full-cut, meaning the solar cells were whole and complete. These days you are more likely to find half-cut cells. Half-cut means the cells are precisely cut in half, usually by a laser, and then wired so that there are redundant circuits. This redundancy improves durability since a primary cause of solar cell failure in a panel is a broken wiring connection and it improves performance by limiting the number of cells that are not producing electricity due to shading or a broken connection.

Additional advancements have been made in the last few years, and you may find solar cells that are PERC, HJT, or TopCon. All of these are variations of the layer construction method, with a goal of making the solar cells more efficient while keeping manufacturing costs down.

PERC (Passivated Emitter and Rear Cell or Passivated Emitter and Rear Contact) cells are very similar to standard cells from a manufacturing perspective, but they have an additional layer which reflects unabsorbed light back through the PV layer to produce additional energy. They also block specific wavelengths of light which normally generate heat when absorbed by the last layer of the solar sandwich. PERC cells have a higher energy density and better low light and high temperature performance than standard cells.

HJT (Heterojunction) panels add additional PV layers which reduce recombination, or power loss due to electrons recombining with the surface of the PV layer before they can be collected to become part of the electrical current flow. HJT panels also have improved low light and high temperature performance over standard panels. HJT panels require a completely different



Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

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manufacturing process than standard, PERC, or TopCon panels, requiring significant cost to change from standard or PERC manufacturing processes.

TopCon or Tunnel Oxide Passivated Contact basically adds a top layer to PERC cells which reflects light back down through the PV layer, like what PERC cells do on the bottom layer. Because the manufacturing process is so similar to standard or PERC cells, TopCon does not add a lot to the manufacturing cost.

The solar cells in a panel are connected in series to add voltage from each cell so that it can be used to charge a battery. A single cell does not provide enough voltage – typically only .5 to .6 volts. Each of these series connected cells is called a string. A single panel has multiple strings, and each string typically has a bypass diode which effectively drops the string out of production when one or more of the cells in the string is not producing as it should. This protects the cells in the string from damage from overheating and keeps the other strings producing when shading occurs on one or more cells in a string.



Connectors

Panels may be configured with many types of connectors. The connectors all have different strengths and weaknesses, and understanding them will help you decide which is right for your installation. The “standard” solar panel connector (if there is such a thing) is called an MC4. There are male and female MC4 connectors, and many panels have a short cable that has one male and one female MC4. In order to connect the panel to your system you must use MC4 terminated cables, at least on the end that connects to the panel. The other end can be whatever works for your system. MC4 connectors are bulky, require special tools to disconnect, are waterproof, and are shielded from accidental discharge. They lock together and are difficult to separate accidentally. They are not proprietary and are very common.



SAE connectors are less common than MC4 but are used on some ZAMP panels and rooftop combiner boxes.

Many newer Airstreams also have SAE (ZAMP) plug-ins on the battery box for adding portable panels. They are small and easy to connect and disconnect, which can be a benefit on a portable panel, but this also makes them easy to disconnect accidentally. There is no way to lock them together.



Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

By John Cooper (BRN 1336)

ZAMP has attempted to make their SAE connectors proprietary by rounding the profile and making it difficult to use the squared off profile of a normal SAE connector. I use standard SAE cables but use my trusty razor knife to pare the square side down to fit the ZAMP rounded profile in their combiner box or portable panel connector. SAE connectors also have an exposed conductor which can cause a short circuit if you are not careful, and they are not waterproof. I am not aware of any way to get SAE connectors without buying them as part of a pre-built cable assembly.

ATP connectors are less common but seem to be gaining in popularity. They are used on some newer ZAMP panels. ATP connectors have male and female pins and housings. The housings lock together, are waterproof, and you can buy them and attach them to any appropriately sized wire with a crimping tool. They are less bulky than MC4 connectors, eliminate most of the issues that SAE connectors have, and can be disconnected without special tools.

Anderson Power Poles (APP) have several form factors based on the amperage required. They are similar, but have different size pins, and the larger amperage sizes (175-amp size at left) have one housing that contains both pins. The smaller amperage connector (at right) can accept pins for 15/30/45 amps. APP connectors come in many different colors, but I stick with red and black in the 45-amp size to keep things simple and to make it easy to identify polarity. I use the built-in dovetails to connect the red and black connectors together. These 45-amp connectors are sufficient for almost any load in an Airstream trailer, are easy to add to any wire size, can be temporarily (dovetails) or permanently (glued) connected to each other to make a modular plug, cannot be connected with reverse polarity when you build them consistently, and are reasonably inexpensive. You can also get clips to lock them together, so they are not easily disconnected. However, they are not waterproof, and the pins require a special crimper. Anderson Power Poles are commonly used in HAM Radio power cables, and are also used in some of the Goal Zero Yeti power stations. They are less common on solar panels.

Solar Panel Size

Because solar panels are quite sensitive to shading, and Airstream roofs have limited real estate, it is important not to install panels close to an air conditioner or antenna that might shade some of the cells. Several manufacturers have specialized sizes for Airstreams. This is one of the reasons that ZAMP panels were so pervasive on Airstreams for a few years. They made a narrow panel (14-15 inches wide) that was the perfect size to fit next to the air conditioner, but not so close that it would be shaded. Because solar panels for most Airstreams must be narrow, there are only a few manufacturers that offer the necessary physical sizes. ZAMP has been joined in recent years by Merlin Solar in offering a 100-watt panel that fits well in the narrow spaces available on the roof. Airstream has moved from ZAMP to Merlin on

Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

By John Cooper (BRN 1336)

factory solar installations, and with good reason. Merlin is state-of-the-art, with massive redundancy in the solar cell connections, half-cut monocrystalline PERC cells, light weight, and enough flexibility in the panel to mount them directly on the curved roof. Merlin also offers narrow panels with 120 and 180 watts for adding additional rooftop capacity, along with 100, 200, 500, and even 1,000-watt portable panels.

Power Production

As with anything that produces electricity, solar panels output volts, amps, and watts. These will vary with the amount and angle of sunlight reaching the panel. Specifications for a panel will refer to open circuit voltage, short circuit voltage, and operating voltage, as well as operating current (amps), and wattage. Only operating voltage, current, and watts are important to us. The open circuit and short circuit voltages don't factor into how much electricity the panel can produce. You may remember that the relationship between volts, amps, and watts is called Watt's Law, and is expressed as $\text{Power (in Watts)} = \text{Voltage (in Volts)} \times \text{Current (in Amps)}$. With differing amounts of sunlight reaching a panel these measures will all change, but the relationship between them does not. The operating voltage multiplied by the operating current will always equal the maximum theoretical watts produced by the panel. This will seldom be what the panel produces in real life.

The output of the system will be affected not only by the sunlight reaching each panel in the system, but also by how well matched the panels are, and whether or not any strings in any panel are being shaded. Because solar panels in a system are usually connected in parallel to minimize the effects of shading, Kirchoff's rules tell us that the amps will be additive, but also that the voltage of each panel will be limited to the lowest voltage of any panel. So, if your panels are not closely matched with regard to operating voltage, you will lose some capacity. For example, if you have four panels and three have an operating voltage of 21 volts and operating current of 4.76 amps (100 watts), and the other has a operating current of 18 volts and operating current of 5 amps (90 watts), you will not get 390 watts for the system. Since 18 volts will be the highest voltage from any of these parallel connected panels you can produce $18 \text{ volts} \times 4.76 \text{ amps} \times 3 \text{ panels}$ (257 watts) plus the 90 watts from the fourth panel for a total of 347 watts. This is the maximum theoretical output of the system and represents a capacity loss of over 10% simply due to non-matching panels.

Charge Controllers

One or more solar charge controllers are required to take the electricity produced by your solar panels and charge your batteries. A charge controller takes the voltage produced by your solar panels and changes it to a voltage appropriate for charging the type of batteries

Airstream Electrical Upgrades - Solar Panels and Charge Controllers (Cont.)

By John Cooper (BRN 1336)

you have. While solar panels produce around 20 volts, your battery charging profile will require a maximum of 14.6 volts for LiFePO4 and 14.3 volts for lead-acid batteries.

Solar charge controllers come in either MPPT or PWM variants. MPPT stands for Maximum Power Point Tracking while PWM stands for Pulse Width Modulation. I won't go into the technical differences, but MPPT will do better with what your panels produce and charge your batteries faster. Choose MPPT. The only thing PWM has going for it is price.



I said one or more solar charge controllers above. Only one is required, but if you have both roof-mounted and portable panels you may want to consider using more than one if your roof and portable panels are not closely matched (operating voltage) or if you expect to be able to get full sun on the portable panels and only shaded sun on the roof. With a single controller the portable panels in full sun will be limited to the voltage produced by the shaded roof panels.

I recommend Victron SmartSolar MPPT (not BlueSolar) charge controllers, either singly or when multiple controllers make sense. They are capable of using Bluetooth communications between them to enable the best combination of charging between the roof and portable systems. The network must be configured in one controller and joined by the other in order to make them work together, but it is a simple process. I use two of the Victron 100/30 SmartSolar MPPT controllers in my trailer.



John Cooper – BRN 1336

This and That (Region News)

Ginger Slattery Region 7 President (BRN 2041)

Happy New Year Everyone! I hope you all had a fabulous holiday season and are staying in good health! After the Baraboo, WI rally, we had so much happen in our personal lives (both good and not so good), I had to hang up my Airstream hat for a while. So much so that I have even gone for a few days without having time to even check emails! Back to work now!



We enjoyed all the rallies we attended in 2023! Each one was different, had lots to see and do. The best part is just spending time with our fellow 'Streamers! Thank you to everyone who hosted for giving us such great memories!

The last IBT meeting was November 30, 2023. Here are some of the items addressed:

President Eric McHenry announced the organization of a Finance Committee to assist the International Treasurer to manage club assets "similar to sustainable non profits and public entities". Members include Alan Rabb, R3; Christine Kirk, R11 & Ken Johannsen, R11.

A partnership with Harvest Hosts to manage Courtesy Parking program was presented. Harvest Hosts will have a separate area on their website that is only accessible to ACI members. Courtesy Parking hosts will be able to manage their own calendar on the site and block off times when their homes are not available for courtesy parking. Members will also be able to book courtesy parking on the website. An announcement was made in the online November Blue Beret. Courtesy Parking hosts may have already received an email describing the new program. It isn't up and running yet but in time for summer travel.

Under Executive Council reports:

Margaret Saylor, R2, was introduced as the new International Publication Chair following in the footsteps of Hedda Smithson.

John Becker read the ACI Political Policy and reminding members that all ACI functions should be politics free.

Jenny Schnettler, reported that outside funds were being raised to pay the cost of the feasibility study for the proposed RV park at Jackson Center. (All funds have now been raised and that study will proceed. The IBT will be looking for an update at the February IBT).

Lori Plummer presented her Corporate Manager's Report. As of November 13, 2023 there were 9,415 memberships (17,324 memberships).

Training of new employee, Justina, is almost complete. She is fitting in very well.

This and That (Region News)

Ginger Slattery Region 7 President (BRN 2041) (Cont.)

There has been an increase in “offensive, belligerent behavior towards staff members”.

(Let’s all work on being kinder to one another in 2024! Those who answer the phones at HQ are employees who only want to serve members in anyway they can. They are not policy makers or voting members of the IBT. If you wish to express an opinion of something, please start with your Region President who is a voting member!)

New postcards are available for use by Clubs/Members for outreach.

707/709 Building Purchase

The first bid for remodeling was rejected. Waiting on 2nd bid.

Orders for the 2024 printed Membership Directory are being taken until January 31, 2024.

The following motions were approved:

Motion #2023-49 House keeping motion to remove all references to Delegates/meeting during Internation Rally.

Motion #2023-51 Region elections house keeping motion.

Motion #2023-46 Motion to allow Past Region 8 President Sisk to have a 200 series # assigned.

Motion 2023-47 Clarifies time a Region President is allowed to choose a 200 series number.

Motion 2023-48 Low Country Airstream Club Permanent Charter

Motion 2023-52 The title of the corporate manager of WBCCI shall be established as Executive Director.

I did want to make one (maybe 2) comment re: the printed Membership Directory. It has been a hard fight just to keep the printed directory for this year. None of us the Special Committee wanted any fee for it because it has always been covered by dues and not everyone is on line. That was before Covid and just like all other aspects of our lives have been hard it by rapidly increasing costs, so it has been with the directory. The online printing services looked at were not much cheaper than traditional printing. A decision regarding a printed 2025 issue will be made after evaluating this year’s demand. Please contact me with any questions, comments, suggestions. (viriniabslattery@gmail.com; 906-250-6931). Thank you!

I am really looking forward to this year’s rallies and hope to see you all down the road!