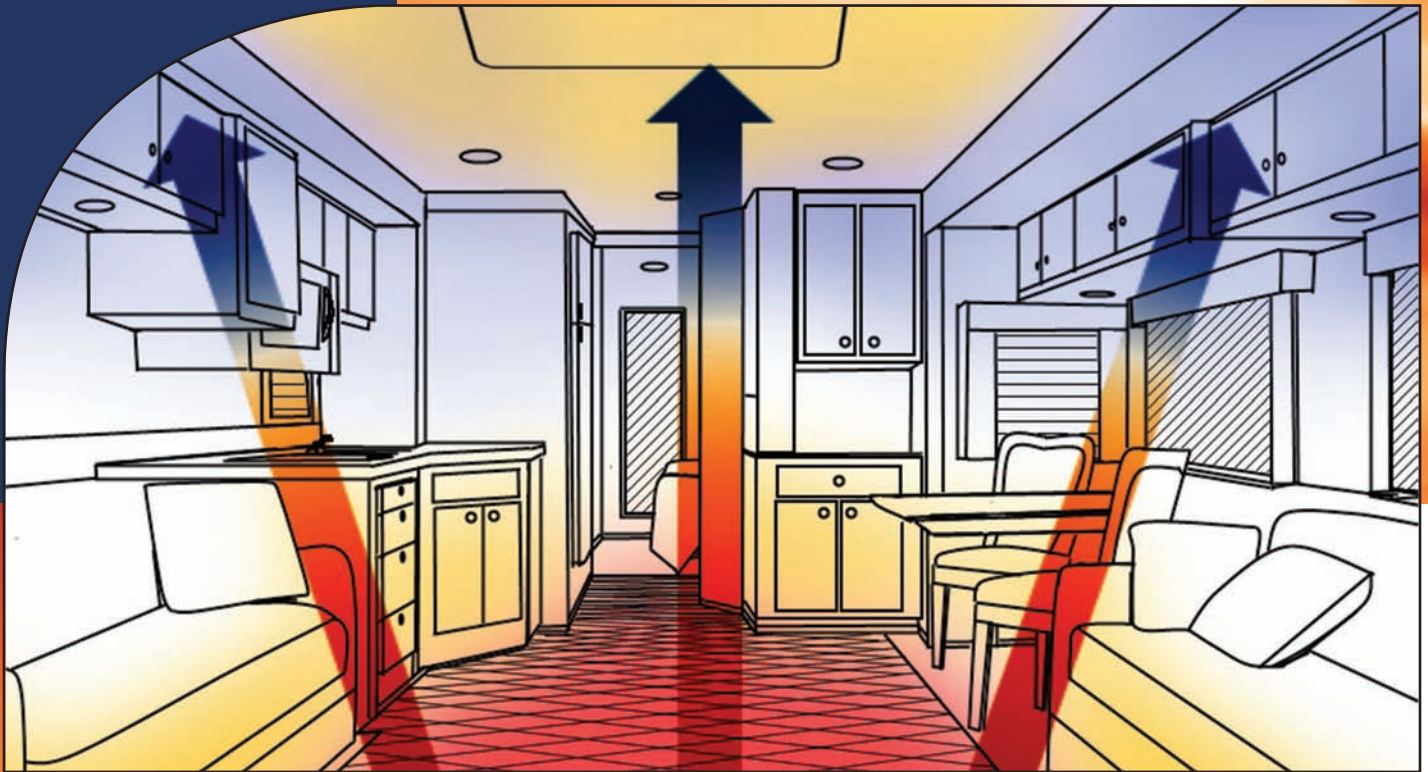




The Gold Standard of RV Heating



A growing trend in high-end motorhome design has been the addition of radiant heat. Consumers universally love the feature, and RV builders are taking notice.

Comfort vs Luxury

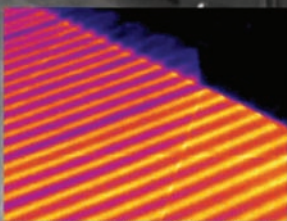
With their expansive windows, extensive A/C ducting, slide-out seals and thin walls, most RVs can be cold and drafty even in temperate climates. Feeling "At Home" in their home-away-from-home is a constant struggle for many RV owners.

"People spend a fortune making their coaches luxurious, but often overlook making them comfortable," says Ken Millard, founder and president of Aries Engineering. "Regardless of the impeccable trim level, once the slides are pushed out they become small, drafty homes completely exposed to the elements." He continues, "Couples travel less and less and never

realize it's because they can't get comfortable in their coach."

In 2002 Millard developed a radiant flooring product called Gold Heat. His system is now a feature in many Class A luxury models. Installed under tile floors as original equipment, the thin Gold Heat mats lay flat and undetected by RV owners while heating the tile under their feet. Like a sunbeam, that expansive warm surface radiates warmth to the coach's occupants.

"Radiant Heat changes an owner's relationship with their coach," says Millard. He continues, "Adding radiant heat to a room makes it fundamentally more inviting. Once you turn it on, your elbows come out from your sides, where they have been held close to trap heat. Your entire posture opens up. It's only then that you start to realize how much effort you have been putting into protecting yourself from what is essentially a hostile environment."



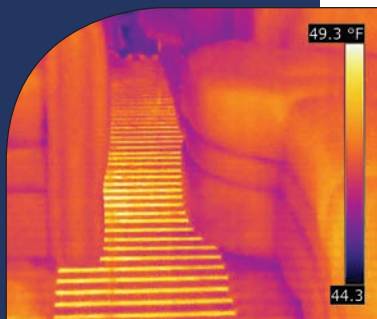
IR detail of Gold Heat in a 2012 Monaco Dynasty



2014 Tiffin Allegro Bus



Thin Gold Heat heating wires are cemented permanently into place directly beneath ceramic tiles.



The Gold Heat Revolution

Country Coach was the first RV manufacturer to adopt Gold Heat. Other customers followed. Gold Heat is now a standard option with many high-line motorhome manufacturers including Newell Coach, Foretravel, Newmar, American Coach, and Renegade's IKON series. In 2013 Tiffin Motorhomes began offering Gold Heat radiant heat in their Zephyr, Allegro Bus, and Phaeton models. As usual, customer response has been strongly positive.

Since its introduction, Millard has watched Gold Heat gain in popularity, survive a recession, and even influence how luxury coaches in the upper price bracket are designed and built.

"When we got into the business, nobody was doing a full-tile coach. A so-called full tile coach had carpet in the living room and in the bedroom," Millard says. "Since the introduction of Gold Heat, almost everybody at our price-point – the luxury 40- to 45-foot Class A's that offer tile floors – have introduced full-tile floor plans with a radiant heat option. People have figured out that a heated tile floor is more comfortable than carpet, more beautiful, and easier to care for. All that was needed was a radiant heat product large enough, thin enough, and consistent enough to support heated floors that large."

Millard, with a background in mechanical engineering, developed Gold Heat mats with the RV industry in mind. "I saw an opportunity and developed my own product, got a UL (Underwriters Laboratories) listing and brought it into the market with Aries Engineering," he says. The company is based in Hillsboro, Oregon, but they and their reps, Elwell Corp., frequently visit the Central Indiana area to see to the needs of their customers.

Focused on the RV Industry

OEMs appreciate the Gold Heat system for its ease of installation and advanced diagnostic and troubleshooting tools. However, Millard says he is most proud of Aries Engineering's responsiveness. "The RV industry is very demanding. There have been times we've done a layout, built it and shipped the same day," he says. "I have, on more than one occasion, driven a rush order to the UPS Center at the airport because we missed all of the regular pickups."

"We work hard to make sure that whether on the build end, or the service end, we're never stalling a coach on the line," Millard says. "One of the tenets of the industry: You don't want a million dollar coach waiting on a \$100 part."

Designed to Deliver Maximum Comfort

Gold Heat mats radiate 15 watts of power per square foot, which is the legal maximum for radiant systems of this type.

"I met an RV owner with Gold Heat that had been motor-coaching for 35 years and had bought four different coaches," Millard says. "He said radiant flooring was the biggest improvement to the comfort of his coach he ever made. I have to think he was probably overlooking air conditioning, but that's OK. It was still wonderful to hear," Millard says with a laugh.

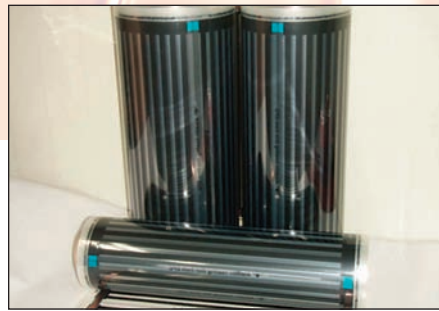
Fastest to install

Gold Heat mats are fabricated in 5- to 100-square-foot sizes customized to fit any floor plan design.

"When it comes out of the box, it's already made to conform to all of the nooks and crannies and complicated geometries inside a coach, which makes it the fastest and the easiest electric radiant to install, bar none," he says. "We respect the line roll schedule."

Usually, two or three mats are used to cover the floor of a Class A motorhome, separating the coach's interior into individually controllable zones. To illustrate how easy Gold Heat is to install, Millard recalls a visit he made to Monaco Coach several years ago, where he witnessed an installation first-hand. He watched as a two-hour floor install was underway, before Monaco's production workers installed the cabinets in the coach.

"The chassis rolled into the station and the crew pulled a 100-square-foot Gold Heat mat out of the box," he says. "It was a big custom mat for the Living Room and Galley area. They had that mat installed in 12 minutes. They pulled it out of the box, and 12 minutes later the mat was installed and they were throwing mortar and setting tile."



Available in three widths, Black Gold heating elements are cut to length during installation.

New Product for Vinyl, Laminate, and Carpet

A new product introduced by Aries, called Black Gold, makes radiant flooring possible even under wood flooring, vinyl, carpet and engineered flooring.

"With the Black Gold product, we're trying to offer Top-Tier fifth-wheels and Class A's down below the \$200,000 price point this level of comfort," Millard says.

"Now, radiant heat is no longer limited to ceramic tile floors. And our existing customers with tiled floors can add Black Gold in carpeted areas, like under the dinette in a conventional slide-out. We can cover an entire coach with a very consistent heat output, regardless of the flooring or floor covering."

Introduced three years ago, Black Gold is a carbon fiber heating system that can be installed beneath vinyl, laminate, wood, carpet and engineered flooring. Unlike Gold Heat, which uses an open weave mesh of resistance wires that's ideal for mortar bonded tile flooring, Black Gold uses a paper-thin laminated heating element that can be glued down or stapled into place. Black Gold is very compatible with most construction adhesives or vinyl flooring adhesives. OEMs can also mix the two products in the same coach, installing Gold Heat under tile floors and Black Gold under carpet or vinyl in slide-outs, bedrooms, and under dinettes.

In addition to the weight savings and its versatility, what makes Black Gold attractive is its cost effectiveness. "There's a little more installation effort," Millard says. "But at the same time, the cost per coach is down to about half or two-thirds of the price for Gold Heat. That's a significant improvement in the materials cost."

Supplier Supports Easy Implementation

Millard understands when some RV manufacturers are initially cautious before implementing Gold Heat.

"People who haven't had the opportunity to work with the product think it's harder to work with than it is," he says. "They're expecting more service troubles and more install troubles. I can understand that manufacturers hesitate to introduce a new product because they don't want to muck up their production flow."

That's why the Aries Engineering team makes it easy for manufacturers that are new to the product.

"Typically, when a new OEM comes on, we will go onsite and train their crews," Millard says. "Once a customer has been trained, our manufacturer's reps will audit installation to make sure that they're following all of the steps and have all the tools they need to make sure it's a clean install."

When a purchase order is made for Gold Heat, Aries Engineering works with designers who send floor plan measurements to the shop. A check print is then developed. Once approved by both companies, the fabrication process begins. Typically, Aries Engineering requests a two-week lead time, or 10 business days, to fulfill an order.

"Sometimes a buyer will call in because the wrong part was ordered, and they need the mat by tomorrow. We can do that, and on occasion we do," he says.

"It's all a matter of understanding the industry and really embracing the challenges and strengths of the industry," he says. "The RV industry can hit you with short lead times, with design changes and challenges, but it's also a really good bunch of people to work with. We're all happy to be a part of the process."

Chalet RV demonstrates Black Gold installation on a custom truck camper



Reliable Diagnostics and Troubleshooting

Service centers are happy to work with Aries Engineering, too. That's because, when there is a problem, it doesn't last long. Aries Engineering boasts the best diagnostic support of any radiant heat supplier.

"Sometimes somebody does something they're not supposed to do – either spikes the wire with a trowel, or slices a couple of wires with a razor when they're cleaning out the grout lines," Millard says. "I help them with some diagnostic tools and a little back-and-forth to pinpoint the break." Working with readings from a diagnostic tool called the TDR – which Aries can loan to customers who do not own one – Aries creates an 'X' marks the spot diagram showing the location of the damage.

"My customers tell me that locating and repairing a break usually requires about two tiles to be removed," Millard says.

This system has served Gold Heat customers well, but Millard isn't satisfied. He described a second-generation diagnostic tool currently under development which pinpoints the wire damage with the help of an infrared camera.

"It usually is just a tiny little flicker of heat – just a half a degree different – but it shows up like a bull's-eye. The technician knows exactly where to lift a tile to make the repair," he says. "A little more development work and pinpointing a broken wire will be a ten-minute process."

Exploring Radiant Heat For Your Product

Aries Engineering provides simple pricing for Gold Heat and Black Gold. Manufacturers can consult a price list, which breaks down the square-footage and base rates. Prospects can also send the company a floor plan design and Aries Engineering will quickly respond with a quote. Manufacturer's representative Joe Elwell says he fields inquiries from the smallest remodelers to major OEMs.

"We try not to surprise anyone. Our prospects know the ballpark of where we're going to be with pricing. If a customer comes to us early enough, we can even help value-engineer their best solution."

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