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Business Spotlight: A bright idea for lighting up runways

Nov 29, 2015

The ThawRig, which is a self contained unit that supports the ThawHead where needed. It houses a generator, electric heater, water pump battery charger, water tank antifreeze storage tank, pressure washer and the ThawHead itself.Photo Courtesy Cameron Gackstetter

By Dorothy Chomicz

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It's easy to take things for granted. Take airplane runways, for instance. We've all had the experience of flying into an airport and seeing rows of runway lights welcoming us home, but how many of us have thought about how those lights are maintained?

It turns out it's a pretty hard to keep runway lights running in cold, extreme climates like Alaska, but thanks to Cameron Gackstetter, it recently became a lot easier. Gackstetter is the inventor of the ThawHead, a portable machine that quickly and safely thaws the metal canisters that house each light's transformer and wiring.

To understand how the ThawHead works, it's important to understand the anatomy of a runway light. The light itself is a contained, sealed unit that screws to the top of each canister, and is relatively impervious to the ravages of weather. The 12-inch round, 2-foot deep canister is sunk into the ground so the light is flush with the surface, and this is where the system runs into problems. Since the seal between the light and the canister is not perfect, the canisters routinely fill up with snow, water and gravel, freezing into a solid mass that must be removed before the light can be serviced. In the past, this has involved a laborious process of chipping away with a hammer, chisel and screwdriver. Not only does this take about two hours to do, but the transformer and wiring are often damaged in the process.

In March 2014, the State Department of Transportation and Public Facilities approached Gackstetter and asked him to to come up with a solution to this problem. Gackstetter, a “mostly self-taught” man with a “pretty wide background in mechanical stuff” works at Alaska Rubber and Riggings and is known for his innovation and ability to build custom equipment. Within one week of DOT’s request, Gackstetter designed, built and tested a prototype of the ThawHead, a device that shoots hot water through a high-pressure nozzle to quickly melt the ice. The resulting slurry is then sucked out through a discharge hose into a receptacle or designated area.

The process takes about eight to 13 minutes, Gackstetter said.

“Now you have a clean container with no ice in it, the wires are warm, and the electrician can go in and do his job. He moves on in a fraction of the time it normally would take,” Gackstetter said.

Gackstetter also designed and built the Thaw Rig, a self-contained ThawHead support system housed in an insulated trailer that can be pulled behind an ATV or snowmachine. The trailer contains a pressure washer, electric heater, water tank, water pump, generator, battery charger and antifreeze storage tank, and has room inside for the ThawHead apparatus itself. The unit carries enough fuel to support four hours of operation and can operate in temperatures down to 20 below zero, making it ideal for use in remote, rural Alaska runways.

Gackstetter’s future looks bright thanks to his new device. The ThawHead won first place in the University of Alaska Arctic Innovation Competition in October, and Gackstetter already has sold one device to the state. He has patents pending in both the United States and Canada, and he and his wife, Shannon, recently formed their own company, Central Alaska Metalworks Inc.

Gackstetter credits Shannon with helping him navigate the tricky and often confusing patent process and praised her research, marketing and technical writing skills.

Shannon said the odyssey from inception to reality has been an “exhaustive, become-an-expert as demand warrants” process that “certainly stretches ones capabilities.”

Gackstetter said no matter how big the company gets, the ThawHead and Thaw Rig will always be an Interior Alaska product.

“I’m a proud Alaskan and I want to build them in Fairbanks,” Gackstetter said.

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