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## Randy Moore, President
## EaglePicher Technologies

Joplin
www.eaglepicher.com

*Long before the first solar installation, before the first modern wind farm, EaglePicher Technologies of Joplin, Missouri, was working on improving energy storage. Randy Moore, President of EaglePicher, talks about the company's origins and its future.*

"EaglePicher has been around for over 160 years, and it came together as two companies. One was doing paint and the other was doing lead mining. We got into energy storage in the 20s with lead acid batteries. Today we are an energy storage company focused on advancing technologies in the industry.

"There are a lot of changes going on in energy storage, because of things that are happening at the consumer level. Consumer devices are becoming more and more energy-demanding, medical implantable devices require more energy and longer lasting energy. And, what's happening with electric vehicles and alternative energy storage…all of these things are creating demand for more energy storage with a smaller footprint. The demands for portable energy storage and electro-chemical energy storage are increasing day after day."

*EaglePicher is also finding its role increasing in the human health sector.*

"In the implantable medical device arena, there are a lot of advancements in neuro-modulation. Historically, neuro-modulation devices were used for pain management, but now there are devices that are being used to treat everything from Parkinson's disease to obesity. So the number of devices being used for neuro-modulation is increasing.

"But it's not just neuromodulation. The first implantable devices were cardiac devices, things that either monitored the heart's function or would pace the heart or would actually stimulate the heart with implantable cardiac defibulators.

"One of the challenges with cardiac defibulators has been that the leads actually have to touch the heart tissue in order to deliver therapy. There are new devices [being made] with a lead that's actually between the ribcage and the skin, so the leads don't have to touch the heart tissue. You can imagine that if a device like that is not touching the heart tissue, it's going to have to have more power to deliver the shock therapy, and that's where the battery and the energy storage system comes into play."

*Longer-life batteries are helping people live longer, better lives.*

"We currently have the longest certified life-span battery. It can go up to 10 years with some of our technology implanted. The longer the battery can last, the longer the device can stay implanted before it has to be replaced. So that's a very important part of the R&D we're doing.

"Batteries are getting smaller, too, because the energy density and the power of the new, improved chemistries. For example, one chemistry that we use — we call it CFX — has about half the mass requirement of what it's replacing. So we can produce the same amount of energy in half the space or we can deliver twice the amount of power in the same amount of weight and space."

*These physical changes in batteries are important for new and changing battery applications.*

"One of the areas that we have worked in extensively has been satellite batteries. EaglePicher powers most of the satellite batteries for the United States today. But we're starting to see the cost of satellites coming down, and so the cost of the energy storage component also needs to come down, because there's more and more demand for communications satellites, weather satellites, observation satellites…

"We're also seeing technological changes in portable power for soldiers. The average soldier carries 13 pounds of batteries into the battlefield. And future combat systems will require more energy, more power. The soldier, of course, wants to carry more food and more water than they do batteries. So we're looking at trying to reduce the weight and volume of the batteries they have to carry."

*Moore came to EaglePicher — and Missouri — in 2008. He talks about the area and the people.*

"People here have an excellent work ethic. And there's a sense of extended family in the area. It's feels like a wholesome, down home country atmosphere with the amenities that you would expect in a metropolitan area.

"The talent's good, too. Our big thing is technical talent. Probably a quarter of our people are involved in engineering and R&D. It is a critical aspect of our business to be able to attract and retain talent in the engineering disciplines. And we don't seem to be having any problem doing that. People like coming here for all the reasons I just said. It's easy to get people to come here. And once they're here, they tend to stay.

"We hire out of the universities in the area. And we're working on a program where we're helping the universities tailor some of their graduates to our needs. For example, we're involved in the launch of a new initiative called MOCAP, which is Missouri Center for Advanced Power. With MOCAP, we've teemed up with four of the Missouri universities to create a degree program in battery technology. That's a first in the country.

"In addition to being a member of MOCAP, we're involved in providing adjunct professors to the university and giving our engineers some time to work on their class plans during the day. This is very advantageous for us, because we see this as being a pipeline for future talent."

*Because it caters to several business sectors, EaglePicher is going to need that talent. Randy Moore talks about what lies ahead for the company.*

"We have expansion plans in several areas. First, alternative energy. The grid is going to need a balancing through energy storage in order to handle the variability of alternative energy sources such as wind and photovoltaic. Energy's going to have to be stored when these energy sources are plentiful. We see that as a big growth area.

"Medical is going to be another tremendous growth opportunity. As new devices are certified — currently a lot of them are in trial — it's going to create new production demands.

"Finally, we see the aerospace arena — where they're currently using nickel cadmium batteries — shifting to lithium ion, and we think this is going to be a very good market opportunity to help out with that shift.

"So we're looking at expanding our production capability in the future, and Missouri's going to be the place we do that."