



## Bob Evans

### Product Engineer, Trackmobile

**Profile Data:** Bob Evans is a product engineer for Trackmobile, where he has worked for 18 years. He is responsible for electronic, hydraulic and pneumatic design, as well as quality control and testing. Mr. Evans is a member of the IFPS Executive Board.

#### Q: When and where did your career in the fluid power industry begin?

**A:** It actually began while working my way through college. One location was a Porsche dealership. They were very high on technical training. Their philosophy was if you didn't understand how a system worked, there was no way you could repair it efficiently. Another position I had was at a marina and boat dealership. Most of the larger boats had small hydraulic systems onboard to operate performance features. These were very small, very quiet, self-contained hydroelectric power supplies. They always amazed me in the force they were capable of producing.

I began my professional career after graduating from college with an underground mining equipment manufacturer located in Southwest Virginia. We manufactured a battery powered "scoop," which is basically a front-end loader that is flattened to an overall height of 24 to 30 inches. It used DC motors to power the drive and hydraulic systems. The hydraulics operated the steering, bucket lift and eject functions.

Since it was battery powered, there had to be a quick way to change out the batteries. The batteries aren't your normal automotive grade; they weighed over ten thousand pounds and measured approximately eight by five feet. They often operated up to three shifts, so the batteries had to be removed and replaced quickly. A set of hydraulic cylinders was used to raise and then lower the battery onto a tray. This is where I got my first patent. If the battery weren't held in place, it would bounce in the frame due to the rough terrain. When this happened, things usually broke. I developed a latching

system that was part of the battery lift cylinders. It was really pretty simple, and it surprised me the company wanted to patent it.

I didn't have much formal fluid power training in college, but luckily this company had designers and engineers who were passionate about what they did and were more than happy to mentor me.

#### Q: What is the most memorable moment in your fluid power career and what did it teach you?

**A:** There have been many memorable moments, both good and bad. I would guess it would be a hydroelectric system I designed for Trackmobile. A Trackmobile does the same operation as small switching locomotive-it pulls railcars. It's very small compared to a locomotive but gets its tractive effort by hydraulically lifting up on the railcar coupler it's connected to and transferring weight onto the Trackmobile axles. This is kind of like throwing bags of sand in your trunk to gain better traction in snow. Before the system, the operator had to know if the car he was coupled to was loaded or empty. If empty, the valve is brought to the hold position or the railcar could be lifted off the trucks (rail wheels). The system I developed "looks" at the pressure rise during the weight transfer process. There's a certain signature the pressure rise has when no more weight is available and the valve is automatically returned to the hold position. It locks in on this pressure and adjusts the valve up or down to maintain that pressure while the Trackmobile is moving the car.

The idea came about one evening in Valdosta,

Georgia. We were there conducting field tests and that evening, while killing some time in the bar, we got into a discussion on how we could overcome this control problem. Before the night was over, we had it all figured out. I still have the bar napkin that I sketched the original idea on. It sounded really simple that night, but that was in 1992 and I'm still tweaking the system. It took many hours of trial and error to finally get a workable system. In my opinion, if a system can't be improved it's obsolete.

#### Q: What do you feel is the most important achievement in the fluid power industry?

**A:** The last decade has seen an explosion in computer technology. Electronics have become small, reliable and inexpensive. Using this technology to control fluid power has solved many problems and has allowed the engineers to design systems that would've been impossible 15 years ago. In the mobile segment, many OEM's have switched to CAN Bus control. The CAN network allows the engines, transmissions, and hydraulic and pneumatic systems on board the unit to be linked together. Basically a small microprocessor is dedicated to each system and each processor is networked together. This eliminates much of the wiring associated with conventional electrical systems. Once these systems are linked, the designer can add options or features in the software verses adding relays, switches and wiring.

If our industry had decided to ignore electronics, we would have been left behind. But utilizing the technology allows us to be on the leading edge.

**Q: How and why did you get involved in the IFPS?**

**A:** I started receiving *Fluid Power Journal* in the early 90's and enjoyed all the technical and career enhancement articles. I soon joined the Society. At that time I worked with Scott Nagro, another Board member. Scott was in sales with Parker, and Trackmobile was one of his accounts. He told me he was taking the test to be certified for Fluid Power Specialist. After looking into the certification, I decided to study for and take the test myself. To be honest, I didn't think it would be too difficult. How could it be? I work with this stuff every day! Wrong. It took me months of studying to the point where I felt confident I could pass the test, which I did.

**Q: Why would you encourage industry professionals to join the Society?**

**A:** The IFPS is a professional organization made up of individuals from the fluid power and motion control field. Any organization or individual that is not a member is passing up the chance to improve their self or their employees.

**Q: What have you personally gained by being a part of the Society?**

**A:** When I first got involved with the IFPS, I acquired technical knowledge that wasn't available anywhere else. I'm currently studying for the Pneumatic Specialist Certification and after that, hopefully, the Fluid Power Engineer Certification. My company doesn't require certification, as do some companies, but I look at it as challenges to myself to better perform my job. Trackmobile knows by supporting me, I will be able to give them the latest in technology.

**Q: Where do you see the fluid power industry heading in the next 10 years?**

**A:** The industry is going to see major innovations in the control of fluid power. I think we've just seen the tip of the iceberg with systems such as CAN Bus. We'll be doing things in ten years we haven't even thought of today.

The International Fluid Power Society is ready for the coming changes. We're constantly updating current certifications to meet today's technologies and creating new certifications such as the Electronics Certification. We'll be ready and waiting for the future.

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