

Biocomposites Have a Motive to Grow

BY C.J. WILKINS

When California-based Motive Industries relocated to Calgary, it wasn't because Calgary is a hot spot for prototyping new vehicle technologies, rather, asthma played the biggest role. "My wife is from Calgary and whenever we were in town from California, the kids would feel better," says president Nathan Armstrong. "We simply decided to move to where the air and water were cleaner. It's made a big difference in our lives." Another difference Armstrong was surprised to find was the collaborative nature of the technology sector in Calgary.

"Coming to Calgary from California was like day and night," says Armstrong. "In Calgary everyone in industry and government is supportive. They share ideas, resources and the attitude is one where people want to work together."

To help him build connections, Motive Industries worked with Kevin Dahl, manager of business networking and cluster development with Calgary Technologies Inc. (CTI). "We hit it off right away. Kevin and CTI constantly send us relevant information and contacts to help our business."

In the mid-1990s – long before making the decision to relocate – Armstrong was working for a company that was building prototype vehicles for the auto manufacturers in Detroit. "We were building production-level vehicles in six weeks with three engineers and a million-dollar budget. It was exciting, but exceptionally frustrating as the car companies were taking our concept cars, putting them on display for a week and forgetting about them." In 2004, Armstrong founded Motive Industries with a focus on taking concept car technologies to production.

One of the more recent technologies Motive is working with is biocomposites –extremely strong materials derived from plants such as hemp, flax and wheat straw. Using biocomposites, Motive is involved in a pair of projects to bring auto manufacturing to a new level in Canada. First, they are responsible for the design and engineering of the body, interior and platform for a biocomposite electric vehicle being developed by the Canada Car Initiative – a collection of government and private industry players who are attempting to build a Canadian-based automotive industry without repeating the same mistakes that have plagued the domestic auto industry in the past.

Second, Motive is working with the National Research Council's IRAP program along with partners such as Enmax and SAIT to develop an electric or natural gas hybrid



automotive program for Alberta. "The Alberta project is interesting because we are not trying to supplant existing infrastructure. We're trying to help it grow by working with Enmax and looking at the potential electric vehicles have to balance or even contribute to the electrical grid. SAIT is on board, in part, because if we begin to manufacture these vehicles, we need a new set of skills to maintain and repair them."

It took the collapse of the auto sector in North America for people to start paying attention to new technologies and production capabilities. With steel stamps for new vehicles checking in at nearly \$1 billion, Motive can develop tooling for a composite vehicle for less than one tenth the cost. "Car companies can't change direction with those sorts of costs; they are stuck. It's up to the smaller companies to prove new concepts and get them into production," says Armstrong.

This means an entirely new profit model. Traditional manufacturers need to produce millions of vehicles to make any profit. With biocomposites, production can be as low as 5,000 to 10,000 vehicles. Realistically, that's low enough to support a vehicle being manufactured in Calgary. Motive is working with CTI through the Alberta Innovation Voucher Program to complete a market research study to prove the market potential in Canada.

Armstrong is convinced Calgary is the place to grow his business and expand the auto sector in Canada. "We want to develop the infrastructure to do it in Calgary. In a couple of years I would love to see a few thousand electric or natural gas hybrid biocomposite cars driving around our streets. We can do it in Calgary."