

Interview with Phase IV Engineering CEO Scott Dalglish

Each month, BizWest asks a business leader to participate in a question and answer feature to help shed light on a business topic, an industry or add insight to a field of endeavor. This month, BizWest chatted with Scott Dalglish, CEO of Phase IV Engineering, a wireless sensor manufacturer that recently merged with global advanced industrial instrumentation leader WIKA Instrument LP. This interview has been lightly edited for length and content.

BizWest: Phase IV Engineering develops wireless sensors for a variety of industrial and commercial purposes. Those sensors play a crucial role in the function of the industrial internet of things, or IIoT. How do you explain the IIoT to the layperson and what makes it so important for an array of industries and markets?

Dalglish: The "Internet of Things" integrates sensors with processing ability into everyday objects, then connects them wirelessly so they can send and receive data. When the Internet of Things is used in an industrial setting, the "things" are usually machines, or parts of machines such as motors, conveyors, etc., and the "internet" is a software interface that can be hosted either in the cloud or on-site. Phase IV's Leap Sensors wirelessly collect and transmit performance information such as temperature, vibration, current, weight (and more) to help manufacturing operations managers and plant managers improve performance of their processes, or give advance notice that a machine is about to fail, averting expensive downtime. Because the sensor transceiver nodes are in harsh industrial environments, we designed them integrating the rugged sensor technology that our clients demand. In addition, the modular design of our sensor transceiver nodes streamlines making modifications to meet a user's specific needs. Since the Leap Sensors system doesn't require that wires be pulled to add a new sensor, it is much easier to install — within minutes versus days or weeks for traditional wired systems.

BizWest: Tell us a little about some of the specific products Phase IV has developed and what sorts of patents the company holds.

Dalglish: Our Leap wireless motor sensor is a great example.



Scott Dalglish, CEO of Phase IV Engineering

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Manufacturing operations standards have shown that a few weeks before a motor fails, its vibration, temperature, and electrical current draw will rise about 50% above its baseline readings. Our motor monitoring sensor has multiple sensors going to one transceiver node to monitor the motor temperature and electrical current draw. It also uses a sophisticated edge-computing vibration sensor that takes 50,000 g-force readings in about three seconds and edge-processes them into six key data points that are reliable in predicting rotating equipment failures. By doing this, the sensors provide actionable data to give ample notice to plan downtime to replace the bad motor — before it fails in the middle of a shift, which can be costly due to lost labor time, lost batches, and customer dissatisfaction. Our patents and patents-pending focus on hardware-software interface features that allow us to rapidly develop and deploy semi-custom wireless

transceiver nodes that our industrial clients often demand.

BizWest: How does a company like Phase IV Engineering fit within Boulder's wider technology and advanced manufacturing ecosystem? Has being headquartered here helped foster the success the company has seen in recent years?

Dalglish: Many of our clients and competitors are big companies located in the traditional manufacturing base in the Midwest. The established industrial suppliers in these markets often move slowly. There has been an inflection point with wireless technology in the past few years that transformed it from being complex and expensive to implement, to being easy to install with a quick return on investment. The Phase IV team has leap-frogged these established industrial suppliers by leveraging all the great things about Boulder — small teams of highly-talented engineers that

innovate quickly using the latest technology. We also leverage the entrepreneurial spirit to bolster confidence that our team is re-inventing industrial sensing. The software expertise in Boulder also gives us a major advantage over larger companies where software development isn't a core competency.

Phase IV recently won a \$381,000 Advanced Industry Grant from Colorado, so we are thrilled that the state wants to accelerate our leadership position in advanced manufacturing.

BizWest: Phase IV Engineering recently received a majority investment from WIKA Group. How has that investment changed the way the company operates? Has a cash infusion boosted research and development or scalability?

Dalglish: In my 12 years with Phase IV, I have been talking to industrial clients about the wireless sensor features that they desire. Three years ago, we took that market insight and combined it with our top-notch engineering team with decades of wireless sensor design experience to bring the Leap Sensors product line to life. When we released our minimally viable product, we got immediate confirmation that we were in the right place with the right product at the right time. We also knew that to fully take advantage of our situation, we needed backing to accelerate the completion of the product and an existing sales and marketing infrastructure to sell the product to its full potential. With WIKA's investment, we have now completed the Leap hardware and software product and we have one of the world's largest and highly respected industrial suppliers selling the Leap Sensors system. It has been a real win-win for Phase IV and WIKA.

BizWest: With the acquisition in the rearview mirror, what's next for the company? Any plans for expansion, new product lines, etc.?

Dalglish: One fundamental design concept of Leap Sensors is rapid and cost-effective custom configurability, and our engineering team is continually leveraging this to quickly create new products. However, now that we have a line of key sensors that will meet most users' needs, our focus is shifting to growing our business to meet client demand.