

# VIBRATION SPECIALTY CORPORATION



//  
A Trusted Leader in  
Predictive Maintenance  
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Jeff McGuckin  
CEO and President



**T**oday, data has been dubbed as the new gold. Companies that hold large amounts of data are much more valuable than conventional organizations. Vibration Specialty Corporation (or VSC) is one such company that has made a positive mark by harnessing the potential of Artificial Intelligence and industrial machinery's vibration data. This powerful combination with analytics enables them to identify correlative anomalies that highlight mechanical faults in client machinery.

**VSC - Widely Acclaimed for Proficiency**

VSC has been around for over a century. It was originally founded by Mr. N.W. Akimoff, a Russian immigrant who laid the innovative foundation upon which VSC has built a powerful legacy.

Mr. Akimoff invented and patented the first-ever dynamic balancing machine in the United States of America. When he released his invention, the world was in its last Industrial Revolution and this product helped significantly shape industrial history. With a dynamic balancing machine, it was now possible for firms to precisely balance mechanical rotors such as pumps, turbines, fans, and motors, increasing their longevity while keeping them in optimal operating condition.

Mr. Akimoff's inventions captivated many industry titans of the times such as Thomas Edison and Henry Ford. VSC was responsible for balancing Mr. Edison's motors and generators and Mr. Ford's model T crankshafts. This precision rotor balancing drastically improved these products' operation and life expectancy.

VSC also played a pivotal role during World War II. The company was responsible for not only conducting precision balancing services but also manufacturing their balancing machines that were vital to the war effort and were found in nearly every shipyard across the free world. Furthermore,

every VSC employee was exempted from serving in the armed forces as their job was considered critical in supporting the war. The company's rich history is deeply rooted as a reputed industrial company.

VSC has continued to evolve and innovate over the years, while still providing the services that were availed by Edison and Ford. In addition, VSC has positioned itself as a pioneer in advanced predictive maintenance technologies. The company is developing an industrial metaverse that includes digital twins, extensive usage of Artificial Intelligence, and dynamic machine data that is an integral part of a larger industrial ecosystem.

**A Whole Host of Challenges**

Despite its fruitful history, VSC has experienced a rough path in developing some of its technology. The biggest challenge facing the company is the time gap between coming up with innovative technological ideas and the time to bring them to the market. In the past, VSC's innovations were already in the marketplace by their larger competitors so VSC lost its advantage. Recently, VSC was able to overcome this issue when their amazing partner, StrongForce, approached them about focusing their knowledge on developing an extensive patent portfolio centered around their industrial IoT ideas. Unfortunately, such an extensive patenting endeavor would be prohibitively expensive and VSC lacked any such funding.

By teaming with StrongForce, VSC had the best of all worlds by bringing their unique perspective for innovative ideas combined with their brilliant partner's own ingenious ideas, profound patenting methodology and considerable financial backing. At the nascent stages of the partnership, they were patenting just singular ideas to get started. Over time those ideas flourished compounding toward a nearly 500 patent portfolio in the end, covering nearly every aspect of the industrial ecosystem ranging from signal communications, databases, data storage, signal processing, signal manipulation, data presentation, Artificial Intelligence, digital twins, the industrial metaverse and many more avenues relating to industrial IoT.

**The Pandemic Effect**

The issues presented by the COVID pandemic were real. VSC had to adapt to the new norms. It was not easy for the company as it was a time when industrial clients still required VSC's services in order to continue their business.

Employees of VSC did not object to working from the office as opposed to working from home. Just like with the rest of the world, this was a tough time but the teamwork within the company paid dividends as the whole team at VSC came out stronger from this experience. In addition, the partnership with StrongForce was, also galvanized through monthly remote Zoom innovation meetings that saw an explosion of revolutionary ideas with new patents being granted on a nearly weekly basis.

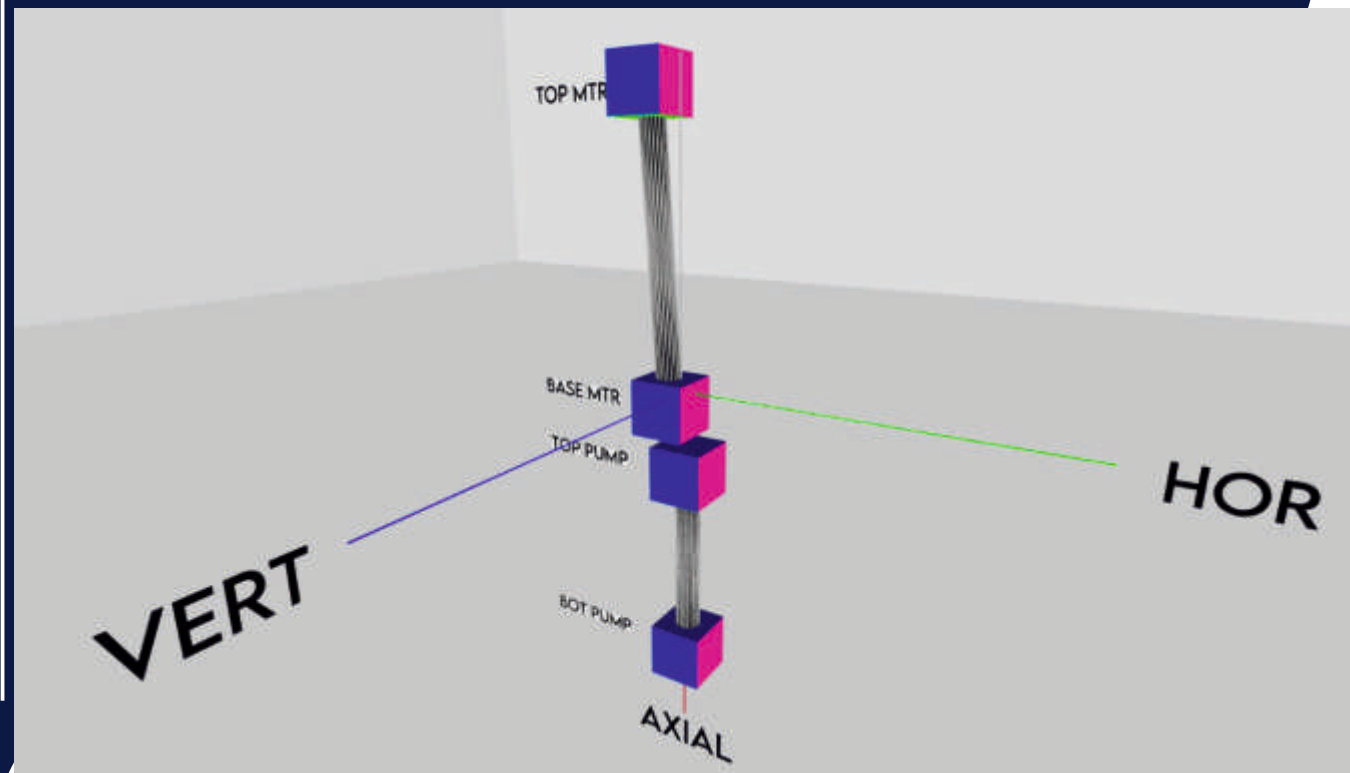
**A Benchmark of Excellence**

The company has already gained a solid reputation for its onsite and remote monitoring services. One can remotely monitor the machine diagnostics and rotor balancing for nearly every industry.

VSC's most prominent new technologies are the V-Stream vibration data streaming, the TruTwin digital twin, and PRiSM, which is the most advanced data signal manipulation and processing algorithm. The biggest strength of VSC is its access to an ocean of vibration data and breaking it down to its simplest forms for Artificial Intelligence. For example, V-Stream allows an individual to get their hands on 1000 times more data in comparison to conventional methods and all in the same amount of collection time. The technology does not take a discrete snapshot of data but instead records a long, raw gap-free data stream that may range anywhere from 30 seconds to a minute or more. Once the raw data is captured, VSC can continually reprocess it, extracting any faults through the means of limitless signal processing methods. The resultant data can be studied and looked at from different perspectives which will enable Artificial Intelligence to unearth even subtle mechanical issues in their infancy.

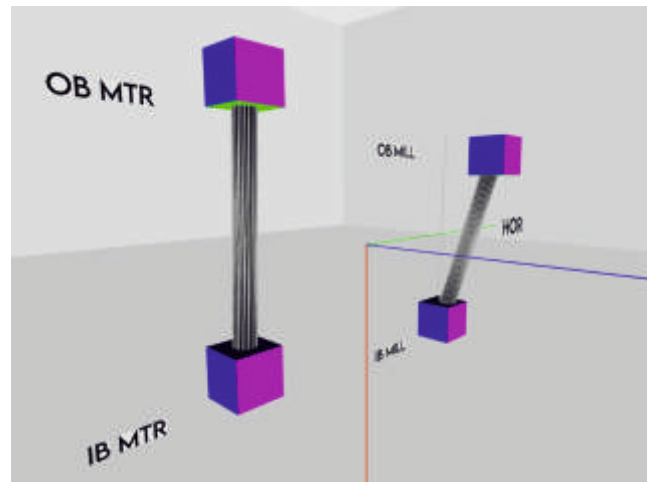






This new technology goes a step ahead by allowing manipulation of the data to figure out the machinery problems post-collection. VSC has an edge over its competitors here as the latter commit their signal processing during the time of collection and cannot make any notable changes at a later point. V-Stream is revolutionizing the industry, allowing everyone to collect superior data like an expert, while also being the Monday morning quarterback by sifting the data, after the fact, for the slightest anomalies translating into the earliest identification of faults in their machinery. Vibration Specialty Corporation has been the primary facilitator of predictive maintenance and has allowed organizations to find problems as they arise. The earlier an issue is detected, the faster it can be solved. This benefits the longevity and performance of the machine as, with optimal care, it will not be damaged due to wear and tear that is a result of poor maintenance.

TruTwin is a digital twin technology. It transforms typical route collection vibration data into a virtual presentation of the machine's actual bearing movement, based on the vibration vectors. Given that most people have a limited understanding of vibration and may not necessarily be familiar with how and when to spot and solve issues in their machines, VSC has simplified the complex data into a clear visual animation of the machine that every client can understand. The greater the movement, the greater the problem so, if the machine's digital twin is calm, then it is operating well.

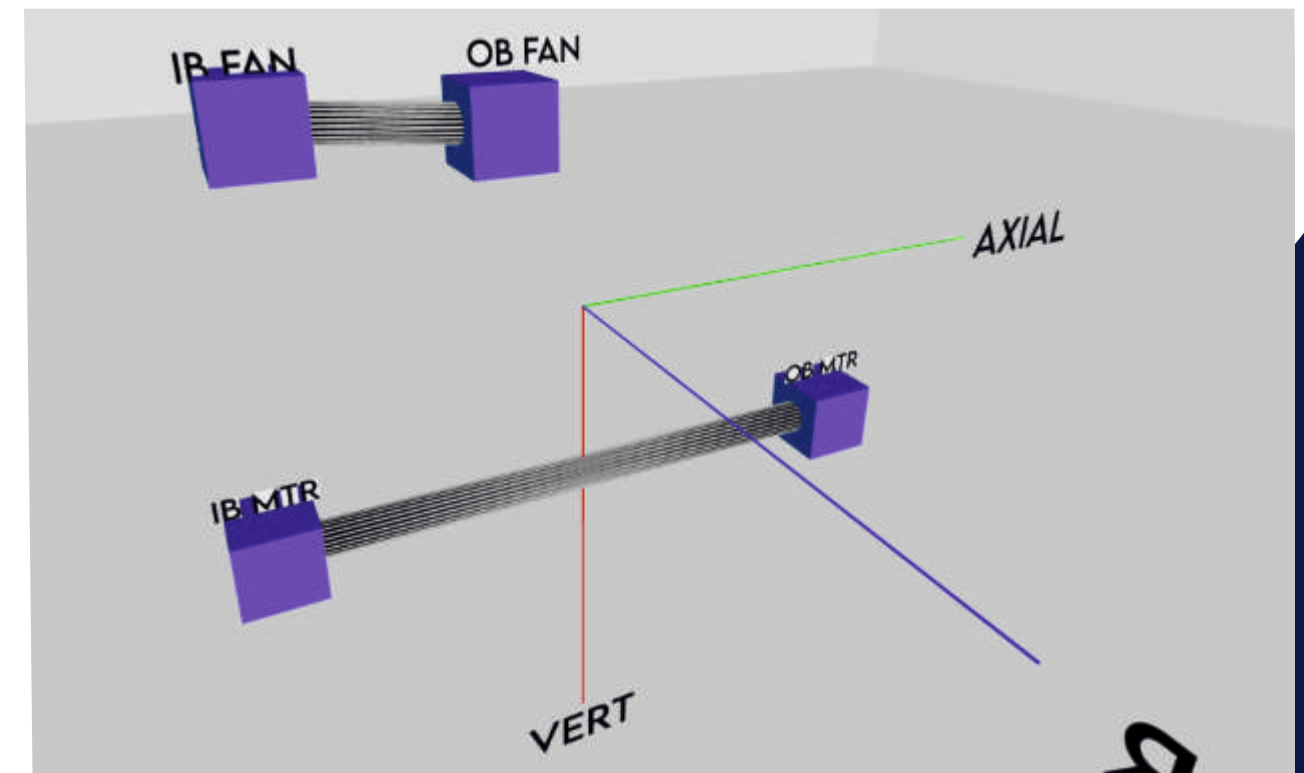
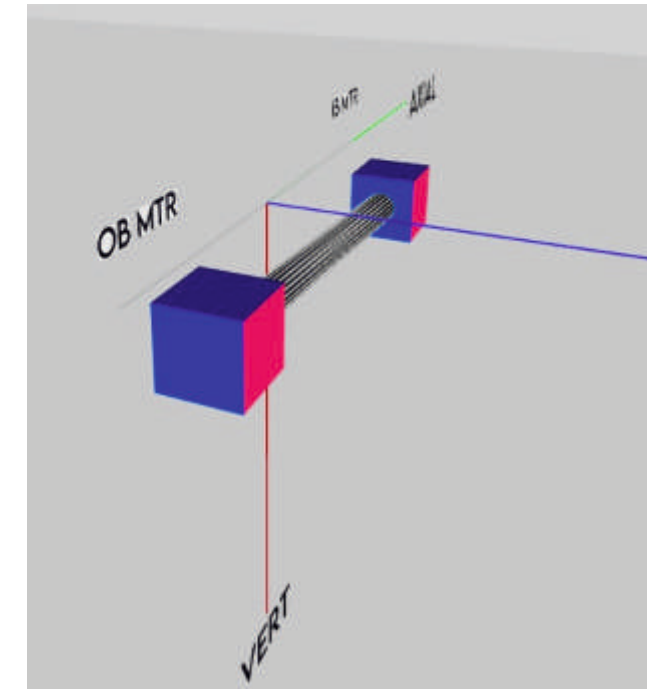


**Towards New Horizons**

The project that VSC has been investing its time and resources into is designing an Industrial Service Ecosystem that will transform how organizations maintain their critical infrastructure by codifying maintenance and mechanical knowledge that is disappearing as a result of trends, such as offshoring, and aging of the industrial workforce, by embedding the knowledge into a plethora of AI-based solutions.

The primary objective at VSC in creating an industrial ecosystem has been to use cutting-edge technologies, such as Artificial Intelligence, to address the current

problem of the loss of industry expertise and experience. This is a real problem that has been taking a turn for the worse by the day. As a responsible company, the leadership at VSC has made it a priority to advance their ideas and innovations by a little each day until they reach their conclusive solution.



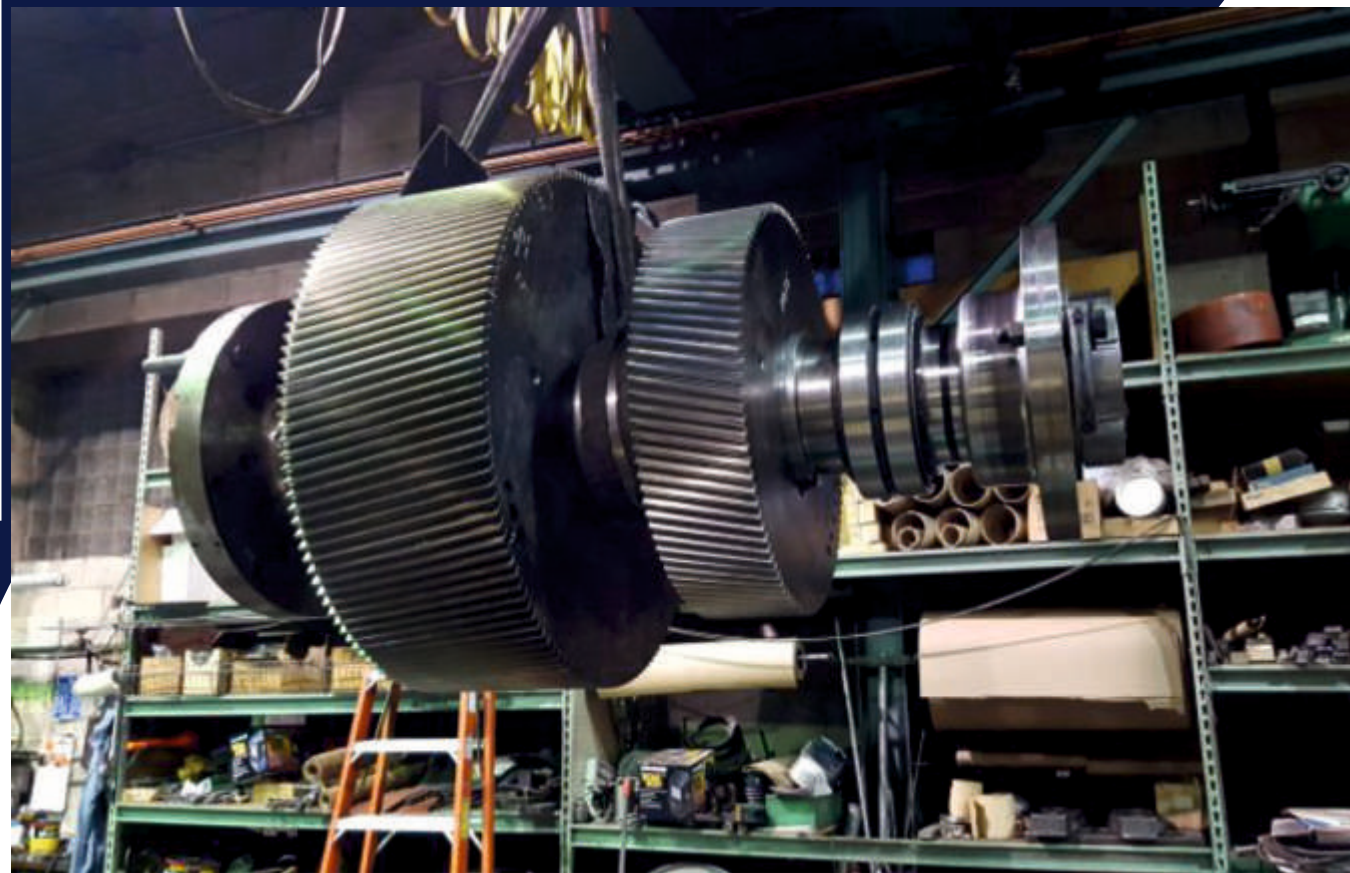
**Surging Ahead with Teamwork**

The work environment and culture at any organization matter the most when employees enjoy coming to work and love their respective jobs as well as the environment they work in, so the business is bound to become successful. At VSC, the approach adopted is somewhat similar.

The company attempts to look for diamonds in the rough as they select only individuals with good character and those who have the desire to give their best daily. The executives at the organization lead by example. CEO and President Jeff McGuckin's decision-making skills and able leadership have benefitted VSC and kept the company on the path of growth.

To ensure employee morale remains at an all-time high, the employees are usually given roles that match their strengths. Due to this approach, the success rate has been good and the employees feel fulfilled as well. In addition to this, VSC does not believe in restricting their employees and taking away any autonomy from the job. The company allows employees to get the job done in the manner that they feel is best. When such a degree of freedom is allotted to individuals, they tend to take more responsibility and accountability toward the projects that they are working on. The team at VSC continues to learn more about themselves





and their industry in order to make consistent improvement. With a legacy spanning over 100 years, VSC aims to continue to disrupt their industry. They endeavor to patent and develop more ideas surrounding the industrial ecosystem. Currently, the portfolio has over 200 patents as they aim to secure up to 500 patents around their technologies. This is a testament to VSC's commitment to constant innovation. The company is now looking to bring more investors, partners, and clients on board to assist them in the development and usage of the technology for further advancements. Their partnership with Strong Force has made them a force to be reckoned with as they now possess the power to preserve and protect their intellectual property rights.

VSC is aiming to remove the stigma associated with their industry. It is an avenue that has been the same for decades and the accepted norms and procedures that were followed

in the early 1900s still continue to be followed in some places. Take the remote monitoring industry, for instance, they continue to use very limited snapshot technology and the only update now is that the monitoring equipment is wireless. Although VSC is bucking the trend with new innovation, they know the true secret to success is to believe in yourself and your vision, and never allow others to bring your spirits down. Never become too set in your ways that you begin to pay no heed to good ideas that have the potential to improve your vision. However, at the same time, another valuable takeaway is to remain rigid to any thoughts or actions that could derail your vision. VSC is one of the few companies that has been able to adapt to changes in the market. Jeff McGuckin and his team's dedication and decision-making skills have led the company to make the necessary pivots just in time to ensure its growth rate does not stagnate and its progress is never hindered.

