



Pinssar Case Study

Developing a world-first continuous Diesel Particulate Matter (DPM) Reader took longer than they expected, but there were more challenges for Brisbane-based company Pinssar once the commercialisation process began. NERA spoke to Pinssar founding director and Chief Executive Officer, Francois Velge, about the vision and resilience necessary for an innovative small business navigating the 'valley of death'.

When and why did you start Pinssar?

Pinssar was started four years ago by three guys who had worked in diesel emissions management and realised there was no continuous DPM monitor on the market. DPM is found in diesel engine exhaust emissions and was declared a Level 1 carcinogen by the World Health Organisation in 2012. We thought it was incredible that there was not a way to measure this deadly carcinogen on a continuous basis, particularly in enclosed environments where heavy diesel machines are in use and workers are exposed to diesel exhaust emissions on a daily basis.

We started Pinssar as a small research and development (R&D) company, and spent a lot of time with mining and construction people establishing what they thought would be a useful instrument to better manage diesel emissions. What we thought would take us six months ended up taking three years. It was quite complicated and there were a lot of issues that we hadn't envisaged, but we now have the world's first continuous DPM Reader and Dashboard system.

Pinssar is a 100% Australian owned and operated company. Our original team of three was based in our Brisbane head office, and during the R&D process and trials this expanded to ten people, mainly electrical engineering contractors. Now that we are commercialising, we are back to just three skilled professionals, with manufacturing and distribution out of Adelaide.

What's so innovative about your DPM monitoring technology?

Pinssar's DPM Reader is the first of its kind in the world. It provides real-time smart monitoring of DPM to 800 nanometres on a continuous basis, and is specifically designed for enclosed environments, such as underground mines, workshops, tunnels – any confined area where diesel engine exhaust emissions can potentially present a threat to human health and safety. The data from the reader is displayed on a dashboard and can be accessed and managed by computers, mobile phones and tablets anywhere on the planet, to inform effective and timely decision-making. Pinssar's product is very good at trending diesel particles, so once a work environment has a baseline established, a company can take real action very quickly if there is any upward movement from that baseline.

Pinssar's DPM Reader technology utilises laser light scattering photometry as a way of measuring particles in the air, based on the scattering of light by those particles. The direction and amount of scattered light depends on the wavelength of light and the properties of the particles. Ours is the first continuous reader and the first to combine the dashboard to allow for 24/7 monitoring.

We have also made the Pinssar Reader very robust or 'ruggedised' so it can be used in harsh environments. There are several very sophisticated instruments on the market that will measure DPM but they will not work in rugged environments and, unfortunately, that is often the type of environment where workers can be most exposed.

Our DPM Reader has applicability in a wide range of industries, including defence, oil and gas, construction, mining, shipping and transport. In fact, anywhere that diesel engines are used and there is poor ventilation, our instrument can be saving lives.

What has helped or hindered you in the commercialising of the DPM monitor?

Having spent a lot of money developing our product over three years in R&D and trialling, we are now finally in the commercialisation phase. This stage is known by most SMEs as 'the valley of death', and we have encountered a new set of problems here.

The biggest challenge we are facing as an innovative small business trying to get a new product to market is gaining trust from potential clients. We have no track record of who we are or what we do, so people automatically put us in the "high risk" category. Unless you can find a champion somewhere in a company who is prepared to overlook your lack of track record, it is very difficult because people just aren't prepared to take the risk of bringing a new product into their company.

We are therefore having to help potential clients decide whether the benefits of the innovation will outweigh the risk of bringing in something new and previously untried. Because our DPM Reader is a new product, we are spending a lot of money educating the market to firstly understand what it can do and, once they have all the data from the monitors at their dashboard, what to do with it?

One of the attributes that has helped us throughout our journey is resilience. You need to be able to stay in there for the long run. Our vision was always to make sure that we save lives, and it was that vision that carried the team through the journey. It's great to have a vision but we also need to find enough capital to support that vision, and that can be very difficult for an SME with a new product.

In Australia, we are very fortunate because we have the R&D tax offsets to help with our cashflow each year, but, as is the case with most SMEs, we have had to fund most of the innovation ourselves because it's extremely difficult to get money from commercial institutions. We tried several times to access government grants but that process is very difficult and time-consuming for small companies, and we almost always fell well short of the mark.

What does the future look like for Pinssar?

After four years of R&D and trialling, we have finally landed our first big contract with a major resource house here in Australia. We are also involved with another large miner in the United States, and have other interested parties there and in Canada. Our goal is to help make the world a safer place, so there is still a long way to go but we are very happy with progress so far, and confident that Pinssar will become the global standard in DPM Monitoring.