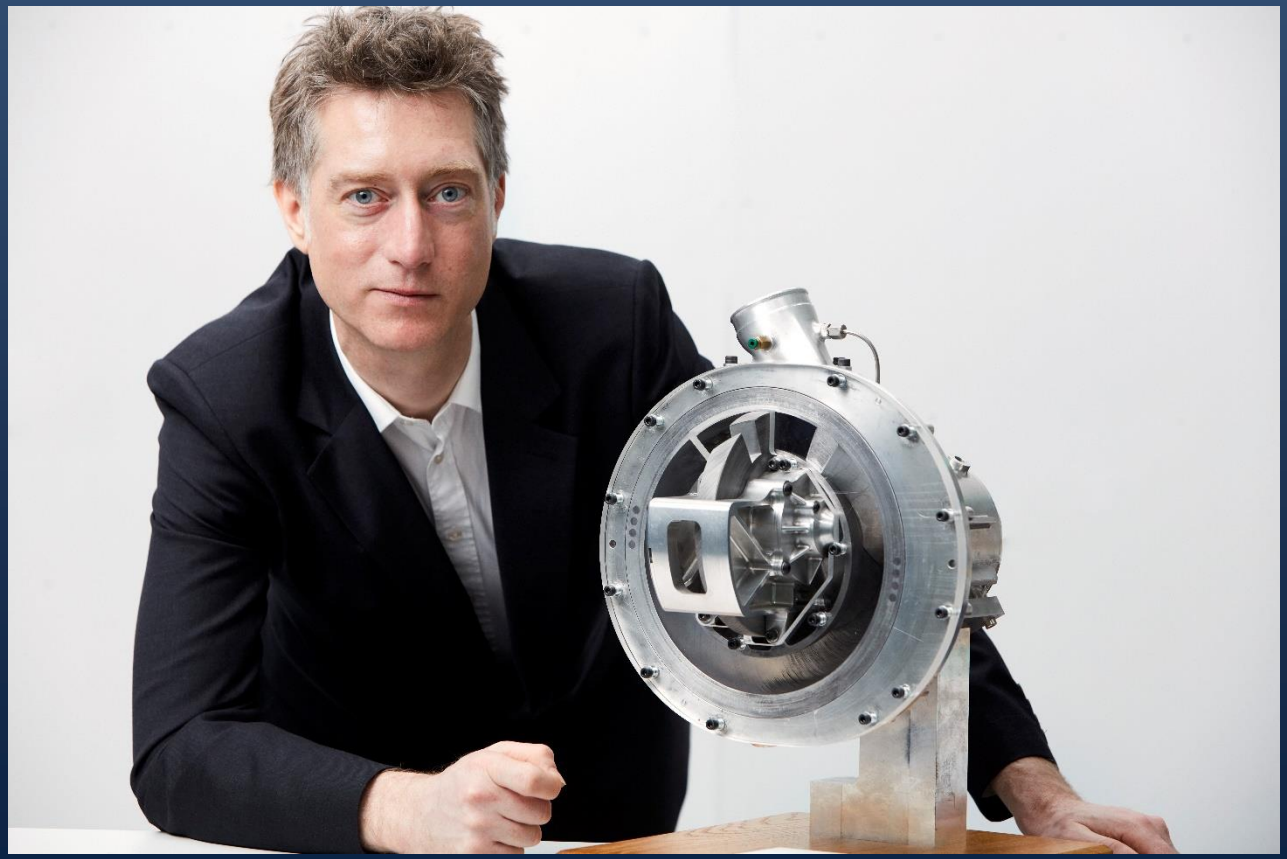
CUSTOMER REFERENCE

Lontra



Challenging the Market with Innovative New Technology

About Lontra

Steve Lindsey set out to challenge the industry with a completely new design of compressor. He was drawn to the technology when he learned that 10% of electricity used in Europe across all industries goes into compressors.

Air compressors are used for a wide variety of applications, from powering air tools in factories, to blowing granules and powders around cement and food processing giants, also for aeration and other functions in water and wastewater treatment facilities.

After looking into compressor patents Steve realised there hadn't been a widely applicable compressor innovation for almost a century. He began researching the basic function of compressor design and how his creation could make a difference.

"As a growing engineering design team without dedicated systems admin, having INNEO as a partner is invaluable to getting the most from the PTC suite of tools that we use to develop our innovative compressor products.

As well as always providing timely support to our designers using Creo CAD and analysis software, INNEO engineers maintain and upgrade our Windchill PDM system to accommodate our growing team. Recent upgrades have taken place in conjunction with a new physical server, and a number of customisations, which was carried out smoothly on-site as planned.

INNEO are also a key training partner to Lontra; working with new starters and to increase the skill base in our existing design team to keep them up to date with the latest tools available. Most recently we took advantage of INNEO's tailored on-site training option when we upgraded to a new release of Creo software."

Objectives

The Lontra compressor works in a similar way to a car engine. As a piston drops down, the volume above it gets bigger, drawing the air into a cylinder and then as it goes up again, the volume becomes smaller as it compresses and pushes out the air. The Lontra compressor may be envisioned as a doughnut shaped device that continually compresses air without the piston having to stop and change direction.

Once a patent for the Blade Compressor was in place, Lontra was set up in 2004 for commercialisation of the technology. A team of leading engineers, from design to development and build and test technicians began working on the technology and the industries it would target.

Benefits and Results

Lontra initially targeted the wastewater sector since it accounts for 1% of the UK's total energy usage. Supported by The Carbon Trust and Severn Trent Water, Lontra began to carry out market studies and development of a prototype for a site trial.

PTC Creo was used as the key tool to develop the ideas into 3D and allow our engineers to evaluate the design and optimise compressor geometry. A thermodynamic and gas dynamic simulation software suite, BladeSim, was written in-house by Lontra's engineering team to suit the new technology, enabling virtual testing and to offer insight into compressor operation and inform design decisions – running hundreds of tests every night gives a really great understanding of the machine. Combining Lontra's own tools with mechanical optimisation using PTC Creo's suite of simulate and behavioural modelling, allowed Lontra to design a best in class product.

Prototype hardware was then thoroughly tested using Lontra's three on-site test cells over a wide range of operating conditions, with data capture in LabVIEW and support from National Instruments and consultants Wiresmith Technology. Extensive correlation studies were used to verify the simulated data against predictions from the Lontra and PTC developed analysis tools.

With the prototype for Severn Trent Water built and thoroughly analysed, in 2012 it was ready for its trial installation at Worcester Wastewater Treatment Works. Here the compressor successfully ran for over 10,000 hours, the equivalent of more than three years of normal operation, and demonstrated more than 21 per cent reduction in electricity consumption. The potential saving in electricity costs for Severn Trent Water is around $2.4m, with a substantial reduction in carbon emissions a further benefit.

These results earned Lontra the award for the Most Innovative New Technology of the Year at the 2013 Water Industry Achievement Awards.

Since then the company has racked up a number of awards, the most recent achievement being Steve Lindsey's nomination for the European Inventor Award 2017. He was one of just 15 finalists chosen from 600,000 active patents filed across Europe.

Lontra is currently building a manufacturing facility near their Midlands site, with potential to extend on this with two more facilities within the UK over the next 3 years. Our product launch of the latest compressor model will be at the largest international compressed air show in April 2019.

Want to know more?

If you have any questions for Lontra, please ask us for contact details and we can put you in touch.

Or if you want to talk to us about tools that could help you with your new product design and delivery, send an email to us and we'll get back to you.

E-Mail: inneo-uk@inneo.com