Leading the way with innovative design

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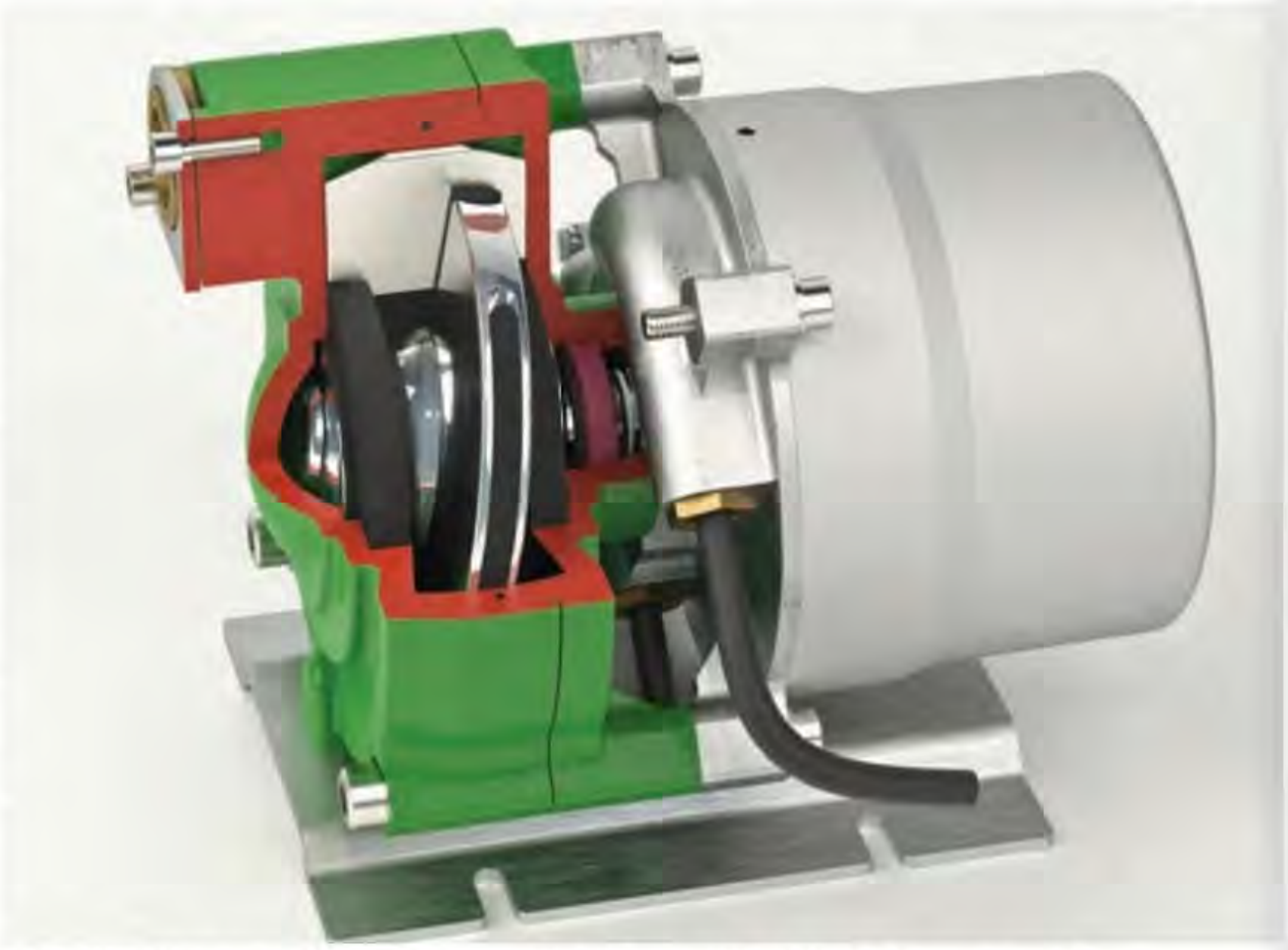

Design SMART offers sustainable and innovative mechanical design to New Zealand and overseas products

One of New Zealand's longest serving independent Auckland based mechanical engineering design consultancies, Design SMART, has been in business for 20 years, with a team of experienced and motivated engineers offering sustainable and innovative mechanical design to product development both in New Zealand and overseas.

Design SMART design director Lindsay Dalziel has been in mechanical engineering for more than 35 years, including 12 years at Fisher & Paykel Appliances as a senior product and machine designer.

One of Design SMART's proudest developments and an example of what can be achieved with the intelligent use of plastics to improve the appearance and appeal of a product is the Deck Checker.

Marketed worldwide to the casino industry, the Deck Checker reads packs of playing cards and produces a pack validation report.

It took two years of effort from 2002 to 2004 to take the Deck Checker from an initial proof of concept prototype to a profitable and reliable finished product.

Working closely with its client, and after 3D modelling the entire product on in-house 3D design tool SolidWorks Premium, Design SMART embarked on a product improvement programme.

"We gave the product a complete face-lift," Lindsay says.

"We designed new plastic covers which gave the product the professional appearance it needed."

Increased demand led to a total re-evaluation of the internal mechanical design, whereby Design SMART reduced the overall part count to one third of the original Mark 1 proof of concept design, and reduced the overall assembly time by a similar ratio.

More recently, Design SMART has developed an enclosure for the electronic components of the Senztrak unit, a product which sits in trays of kiwifruit and actively detects any spoiling fruit.

Senztrak monitors the humidity level inside the fruit tray and detects the gases produced by decaying fruit, before deteriorating fruit can affect an entire tray. The unit's electronics needed to be protected from moisture ingress, this was done by way of a plastic enclosure.

"We had to come up with a way of allowing the sniffer, antenna, and humidity sensors to sit outside of the sealed compartment protecting the main electronics while still protecting these items from physical damage," Lindsay says.

"Our client wanted to keep away from the use of small metal screws, so the plastic enclosure is designed in a clamshell style using a plastic clip to hold the assembly together."

It has an intricate gasket seal in the middle of the clamshell design allowing the sensors to protrude from the electronic board through the gasket and into vented cavities at both ends of the design. With gold kiwifruit driving industry growth and already worth $3 billion a year to the New Zealand economy, the potential for this product could see tens of thousands of Senztrak units being manufactured every year. "When you're making tens of thousands of units, the assembly time becomes critical. Hinging and clipping the electronic enclosure together with a central gasket has given Senztrak a fast and easy assembly process.

"We believe we will be able to assemble it in volume in approximately one minute each, so Senztrak can still assemble it in New Zealand cost-effectively."

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