Callaghan Innovation

BuzzTech

HIVE: 3

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Our world-class scientists and engineers can help deliver product development, and research and development, with specialists across a range of capabilities in advanced manufacturing, biotechnologies, data analytics and more. In 2016 our Sensing and Automation team started working with BuzzTech to develop algorithms, audio recordings and data from multiple temperature sensors to produce unique insights into the health of hives. This enhanced hive management provides prediction of important events such as swarming and colony condition alerts.

The resulting bespoke software and sensing technology have brought the ancient art of beekeeping into the digital age. BuzzTech creates management software for beekeeping companies that can also tell beekeepers which hives need attention, based on the size and condition of the resident bees.

The company uses two pieces of bespoke technology developed in part by Callaghan Innovation to provide beekeepers with the information they need. "Every single person who keeps beehives can do a better job with this system."

BuzzTech CEO Julian McCurdy

This is incredibly useful to the industry, says BuzzTech CEO Julian McCurdy, because it can drastically improve the efficiency and effectiveness of hive management. "The medium size companies have 3,000 to 5,000 hives from Northland to Wairarapa, and the people managing those hives are living on the road and working extreme hours. Generally they keep track of everything using a system of spreadsheets, whiteboards, diaries and stickers, which leads to a range of problems. It's not unusual for hives in remote locations to be stolen, missed, or even forgotten by beekeepers."

BuzzTech gathers temperature and audio data from monitored hives, collecting five temperature readings and two seconds of audio at least once an hour from the centre of the colony. "We can see how strong a cluster of bees is because the temperature profile over time gives us the size, and audio gives us the condition. We run a classifier over that, which matches the sensor data with the inspection data from

the beekeeper." The company uses two pieces of bespoke technology developed by Callaghan Innovation to provide beekeepers with the information they need.

"It's actually a little bit scary to think how big BuzzTech could be. It could be used for colonisation of new hives right down to hobby beekeeping. Every single person who keeps bees can do a better job with this system. Even in countries like the Philippines, where their infrastructure is really basic – they burn trees to get honey – by using this system, even the most remote beekeepers can manage hives successfully."

BuzzTech is now working towards automatic detection of hive events, such as swarming and the presence of the queen in the hive. The next development phase will involve machine learning techniques to help classify the hive sound for particular events.