



INNOVATION  
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## Keeping rail freight transport systems safe



### **Vipac's RailBAM system is making rail freight transport safer with the help of an Australian Government R&D Start grant.**

A freight train passing through Ontario during a freezing Canadian winter comes off the track and crashes. A propane tank explodes, producing a spectacular fireball, and residential areas are evacuated to an eight-kilometre radius. It's a terrifying experience for residents, and a devastating blow for the rail operator.

Fortunately, a new, highly-sophisticated monitoring device for trains has been designed for the early detection and diagnosis of bearing faults in train wheels, and it will go a long way toward preventing tragedies such as the Canadian incident.

The technology has been developed in Australia by an Adelaide company, Vipac Engineers and Scientists Ltd, with assistance from the Australian Government's *R&D Start* program.

Vipac systems engineer Greg Huxtable explains that freight trains often carry more than 80 wagons, and they can incorporate more than 600 wheel bearings.

Overheated train wheel bearings pose a significant safety risk. They can cause wheels to seize and wagons to derail, causing extensive damage to rolling stock and leading to the tearing-up of rail track.

The cost of such a derailment can be substantial, with replacement and repairs, delayed deliveries, and loss of productivity and income.

The RailBAM early-detection system enables preventative maintenance to be scheduled. It uses signal processing techniques and sensors to 'listen' to the wheels and bearings of a passing train.

RailBAM analyses the data, using it to identify the type and seriousness of abnormalities and then reports the details to the rail operator via the Internet.

A report is made approximately five minutes from the time a train passes the RailBAM sensor unit, and there is a built-in alarm to alert the operator in the case of severe faults.



# SUCCESS STORY

Vipac Engineers & Scientists Ltd

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Vipac's managing director, David Rennison, says RailBAM's major advantage over commonly used infra-red thermal monitoring systems is its coverage and accuracy.

'One RailBAM installation can serve several thousand kilometres of track, providing accurate advance warning of severe faults, whereas the infra-red systems need to be installed every 40 to 50 kilometres and have high false alarm rates.'

Development of the RailBAM system began in 1993. Seven years later, it was sold to the Australian Rail Track Corporation (ARTC).

"The ARTC had been averaging around six bearing-related derailments a year," says David Rennison.

"After the installation of RailBAM, this dropped to two, and only one has been reported on the sections of track monitored by the system in the past two years or so.

"At that time, product development was a new venture for us.



"A timely Australian Government R&D Start grant through AusIndustry made all the difference," he said.

David Rennison said that without the R&D Start grant they would not have been able to reach such a high standard of research and development, or meet the tough deadlines.

Vipac has turned its marketing attention to other operators, both in Australia and internationally. WestNet Rail in Western Australia is now installing five RailBAM units to cover its 5000 kilometres of track.

"Around the world there are approximately 200 bearing-related

derailments each year, resulting in hundreds of millions of dollars in damage.

"Anywhere in the world that there are trains carrying high axle loads such as grain, steel or coal, there's a market for RailBAM."

### Contact

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AusIndustry provides Australian Government assistance to support Australian business innovation, investment and international competitiveness. AusIndustry delivers nearly \$2 billion to 9000 Australian businesses every year through its 27 grants, loans, venture capital, tax and duty concession products.

The R&D Start program is a competitive, merit-based program which provides grants and loans to assist companies undertake research and development and its commercialisation.

Through R&D Start the Australian Government will provide approximately \$1.7 billion until June 2006 in direct support for business research, development and commercialisation through the *Backing Australia's Ability* initiative.

Non-tax exempt companies incorporated in Australia, who conduct research and development activities or early commercialisation in Australia, are eligible for support under the program.

## R&D Start

For further information on R&D Start or the range of AusIndustry innovation programs contact:

- AusIndustry Hotline 13 28 46
- any of AusIndustry's State and Territory Offices
- or visit the AusIndustry website at [www.ausindustry.gov.au](http://www.ausindustry.gov.au)