



**flavourtech**

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**SUBMISSION  
to the  
HOUSE OF REPRESENTATIVES STANDING COMMITTEE ON SCIENCE  
AND INNOVATION  
November 2002**

**INQUIRY INTO BUSINESS COMMITMENT TO RESEARCH AND  
DEVELOPMENT IN AUSTRALIA**

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## **INCREASING PRIVATE SECTOR INVESTMENT IN RESEARCH AND DEVELOPMENT**

### **Introduction**

In this submission, the experience of a small regionally-based high-technology company is briefly described. It will consist of a short history of the company and a description of the company's R&D activities, which will then be used to illustrate responses to some of the questions posed by this Inquiry.

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Today there are more than 1,000 Centritherm installations in over 90 countries. Incorporating the Spinning Cone Column and Centritherm, together with additional equipment, Flavourtech has developed the Integrated Extraction System (IES). The IES is a unique system for the production of premium liquid extracts and concentrates. Although specifically tailored processing coffee and tea, the IES may be used for a variety of botanicals. Spinning Cone Columns, Centritherms and Integrated Extraction Systems are manufactured at Flavourtech headquarters in Griffith, NSW. A process laboratory for customer trials and Flavourtech R&D is also located in Griffith.

Head office for Sales and Marketing is in Sydney while regional sales offices are located in Reading (UK), and Sebastapol (CA, USA). Other technical facilities for customer trials are available worldwide.

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R&D has been a key element of Flavourtech's activity throughout the company's 16 year history.

The nature of Flavourtech's business - the design, manufacture and supply of high-technology food and chemical processing systems - has necessitated the development of a dynamic R&D culture in the company. Also, Flavourtech's strong links with CSIRO and its origins in the wine industry, which in Australia has always been very strong technically and scientifically, have also helped to forge a keen corporate commitment to R&D.

Flavourtech's overall R&D effort can be broken down into following categories:

- **Customer trials**

The vast majority of sales arise from successful trials on the customer's own products. These trials are conducted by Flavourtech staff using pilot-scale equipment either at the customer's own site or at one of Flavourtech's laboratories. As well as informing the customer of the opportunities offered by Flavourtech's technology, these trials expand Flavourtech's experience and capability and serve as the principal source of customer-specific technical information.

- **In-house trials**

In-house trials are typically associated with addressing engineering questions. They tend to be short-term (weeks rather than months) but fulfil a vital function in accelerating the improvement and refinement of equipment and system design. Access to engineering resources (workshops, materials, design) is important for this work.

- **Contract R&D**

Chemical analyses and specialised materials testing are characteristic of the R&D tasks which are carried out for Flavourtech by external contractors.

Flavourtech is also a supplier of contract R&D, a recent project in the wine industry being one example.

- **Collaborative projects**

In the early stages of commercialising the Spinning Cone Column, much R&D was carried out in collaboration with the (then) CSIRO Division of Food Research at their pilot plant in North Ryde. At the same time a collaborative project was undertaken, involving Flavourtech and CSU (Wagga) and concerned with addressing some key engineering (fluid flow) problems arising from scale-up of the original prototype.

Currently, Flavourtech is the industrial partner in an ARC Linkage Grant project being undertaken by the University of Sydney, Dept of Chemical Engineering. This project is concerned with developing computer simulations of the fluid flow processes in the Spinning Cone Column.

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With the support of a \$1 million Commonwealth Government R&D Start Grant, Flavourtech has undertaken a 3-year project (starting in January 2001) to develop new technologies for three critical steps in the soluble (instant) coffee production process: extraction, aroma recovery, and drying and flavour re-incorporation.

Flavourtech has achieved considerable success in the soluble coffee industry with its Spinning Cone Column flavour management systems, which it is using in this project. The R&D Start grant has allowed the company to build

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After 18 months, 60 per cent of the project has been completed. The high temperature extraction system prototype has been completed and is ready for commercial testing. The low temperature extraction system has already been developed, sales have been made, and the system has been used in a commercial situation to form part of normal soluble coffee. Commercial applications for tea, green and black, are also developing rapidly.

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Research ranges from high risk with a long time to deliver benefits, to low risk with a short delivery time. Investment in research is provided by the interplay of public and private interests along this continuum, both in parallel and in sequence. Government investment is essential at the upper high-risk end of the continuum. Private sector investment will increase as risk and delivery time fall. It is essential that government policy and subsequent programs are directed at ensuring a smooth transition along this continuum...*Gaps along this continuum contribute to an innovation system in Australia that performs below its potential.*

In other words, the relative lack of commitment to R&D by the private sector in Australia constitutes a systemic weakness in the Australian economy. Greater private sector investment in R&D would see much greater attention paid to low-cost short-term R&D tasks, those which under the current unbalanced system are being neglected. The private sector has the most to gain by increased effort in this area; it is also best placed to carry out the required work.

**2. What are the impediments to business investment in R&D?**

The major impediments are:

(a) Lack of an R&D culture

The most important factor in fostering a strong R&D culture in a company is the attitude of senior management; if the leaders of a company are strongly committed to it, an R&D culture develops quickly. In Flavourtech there is a fundamental recognition that the company's primary resource is know-how, and that R&D is

the business of systematically acquiring know-how. When R&D falters, the company falters.

(b) Lack of R&D infrastructure (people and physical resources)

R&D infrastructure represents a substantial investment, with a higher degree of attendant risk than many small-to-medium businesses can easily accommodate. In Flavourtech's case, Commonwealth R&D Start funding has been crucial in accelerating the establishment of a basic R&D infrastructure; the benefits have flowed more strongly and quickly than anticipated. Government assistance of this type is particularly effective in enabling small-to-medium businesses to take the key first step in establishing their own R&D capability.

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A vigorous marketing campaign, selling the benefits of increased private sector R&D and directed particularly at the management of small-to-medium businesses, may help to promote the growth of an R&D culture in the private sector. Analysis of case histories, both positive and negative, would inform the target audience. The government funding bodies are probably the best equipped to collate and present such case histories, and more generally, to take responsibility for any such marketing and promotional initiatives.

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### **Company background**

Flavourtech Pty Ltd is an Australian company specialising in the design of advanced food and beverage processing systems based on core flavour management and evaporation technologies. Flavourtech was formed in 1986 by Messrs Andrew Craig, Lionel Irving and Ron Potter for the express purpose of commercialising Spinning Cone Column technology, which had been developed by the (then) CSIRO Division of Food Research. All three principals of Flavourtech had backgrounds in the wine industry (winery engineering in particular), hence the company's location in Griffith.

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Today there are more than 1,000 Centritherm installations in over 90 countries. Incorporating the Spinning Cone Column and Centritherm, together with additional equipment, Flavourtech has developed the Integrated Extraction System (IES). The IES is a unique system for the production of premium liquid extracts and concentrates. Although specifically tailored processing coffee and tea, the IES may be used for a variety of botanicals. Spinning Cone Columns, Centritherms and Integrated Extraction Systems are manufactured at Flavourtech headquarters in Griffith, NSW. A process laboratory for customer trials and Flavourtech R&D is also located in Griffith.

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R&D has been a key element of Flavourtech's activity throughout the company's 16 year history.

The nature of Flavourtech's business - the design, manufacture and supply of high-technology food and chemical processing systems - has necessitated the development of a dynamic R&D culture in the company. Also, Flavourtech's strong links with CSIRO and its origins in the wine industry, which in Australia has always been very strong technically and scientifically, have also helped to forge a keen corporate commitment to R&D.

Flavourtech's overall R&D effort can be broken down into following categories:

- **Customer trials**

The vast majority of sales arise from successful trials on the customer's own products. These trials are conducted by Flavourtech staff using pilot-scale equipment either at the customer's own site or at one of Flavourtech's laboratories. As well as informing the customer of the opportunities offered by Flavourtech's technology, these trials expand Flavourtech's experience and capability and serve as the principal source of customer-specific technical information.

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Currently, Flavourtech is the industrial partner in an ARC Linkage Grant project being undertaken by the University of Sydney, Dept of Chemical Engineering. This project is concerned with developing computer simulations of the fluid flow processes in the Spinning Cone Column.

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With the support of a \$1 million Commonwealth Government R&D Start Grant, Flavourtech has undertaken a 3-year project (starting in January 2001) to develop new technologies for three critical steps in the soluble (instant) coffee production process: extraction, aroma recovery, and drying and flavour re-incorporation.

Flavourtech has achieved considerable success in the soluble coffee industry with its Spinning Cone Column flavour management systems, which it is using in this project. The R&D Start grant has allowed the company to build



on this success by fast-tracking a scheduled research and development program. Initially, the grant was used to facilitate detailed in-house experimentation with, and analysis of, Flavourtech's novel coffee extraction technology.

After 18 months, 60 per cent of the project has been completed. The high temperature extraction system prototype has been completed and is ready for commercial testing. The low temperature extraction system has already been developed, sales have been made, and the system has been used in a commercial situation to form part of normal soluble coffee. Commercial applications for tea, green and black, are also developing rapidly.

With regard to the specific questions posed by the Inquiry:

**1. What would be the economic benefit for Australia from a greater private sector investment in R&D?;**

It is stated in the Australian Research Council's published submission to this Inquiry:

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In other words, the relative lack of commitment to R&D by the private sector in Australia constitutes a systemic weakness in the Australian economy. Greater private sector investment in R&D would see much greater attention paid to low-cost short-term R&D tasks, those which under the current unbalanced system are being neglected. The private sector has the most to gain by increased effort in this area; it is also best placed to carry out the required work.

**2. What are the impediments to business investment in R&D?**

The major impediments are:

(a) Lack of an R&D culture

The most important factor in fostering a strong R&D culture in a company is the attitude of senior management; if the leaders of a company are strongly committed to it, an R&D culture develops quickly. In Flavourtech there is a fundamental recognition that the company's primary resource is know-how, and that R&D is

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(b) Lack of R&D infrastructure (people and physical resources)

R&D infrastructure represents a substantial investment, with a higher degree of attendant risk than many small-to-medium businesses can easily accommodate. In Flavourtech's case, Commonwealth R&D Start funding has been crucial in accelerating the establishment of a basic R&D infrastructure; the benefits have flowed more strongly and quickly than anticipated. Government assistance of this type is particularly effective in enabling small-to-medium businesses to take the key first step in establishing their own R&D capability.

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