



Magnetica Limited
 ABN 93 010 679 633
 Corporate House, Garden City Office Park
 2404 Logan Road,
 Eight Mile Plains 4113
 BRISBANE, QUEENSLAND, AUSTRALIA
 ph +61 7 3340 5183 fax +61 7 3340 5119

Request for QCIF Technology Diffusion Project Support for Magnetica Limited

Background

Over the past year, Dr Riyu Wei has been engaged on a QCIF supported Technology Diffusion Project with Magnetica Limited, a small start-up Company commercializing technologies focused on design of superconducting magnets, primarily for use in human diagnostic imaging.

From Magnetica's perspective, the Project was extremely successful; resulting in the development of software and algorithms capable of producing high quality detailed analyses of stress for a range of preliminary and detailed designs the Company has developed as part of its product portfolio.

Over the past year, Magnetica has made significant commercial and technical progress, including formation of a strategic business partnership with a Japanese manufacturer of superconducting magnets (and subsequently with its parent Company), successful tender in Consortium with its partners for design of a new type of MRI magnet, and development of a portfolio of strategically prioritized products for design and development.

However, Magnetica is yet to raise significant funds and is currently seeking short term investment to enable the Company to set long term funding arrangements in place.

Therefore, the Company is seeking support from QCIF for this Project (the "Project") to enable us to continue to use advanced computational modeling skills to take our products to the marketplace and generate economic returns to Queensland through commercialisation of public research.

Proposal

This proposal seeks support from QCIF for a Technology Diffusion Project for \$40K for the period 24th July 2006 to 23rd July 2007, in order to support 40% of Dr Wei's salary, allowing him to:

- continue on the new product range, for preliminary and detailed designs by Magnetica and its partners;
- enable new work with our partners developing a range of computational analyses to support prototyping and manufacturing work for our first and second products, to enable us to achieve timeframes for supply to the client; and
- develop new analyses for shimming and gradient design for Magnetica's first two products.

The analyses conducted by Dr Wei, using ANSYS Parametric Design Language and the C language, form a vital part of translating Magnetica's designs (which push the boundaries for conventional superconducting magnets) into reality – that is, into products capable of manufacture for large production runs without quench or other problems. The analysis outputs include deformations, stresses and strains as well as strain energies in coils and formers. These analyses have provided important input into determining – in fact, demonstrating - the manufacturability of our designs with our business partners.

Continuation of this support will assist a Queensland spin-off company's products reach a global market.

Project Key Milestones

	Milestone
Product 1	➤ Completion of iterative analyses simulating the processes of cooling the detailed magnet design down from room temperature (300K) to the working temperature (4K) and charging up

	<p>to the full current, at differing levels of detail, from preliminary/macro to detailed/micro scales. This requires consideration of frictional contacts between coils and coil formers and orthotropic material properties in the coils.</p> <ul style="list-style-type: none"> ➤ Development and modification of current software for modeling cryostat design ➤ Completion of thermal and mechanical stress analyses of the detailed design for cryostat ➤ Completion of analyses of final detailed design prior to completion of a full-size prototype magnet ➤ Development and modification of software for modeling test results for the prototype magnet ➤ Completion of detailed thermal and mechanical stress analyses to support mechanical and physical test data generated from testing of the prototype magnet ➤ Completion of quench analysis (to identify cause of quench) for prototype
Product 2	<ul style="list-style-type: none"> ➤ Modification of software to allow modeling of new specialty magnet design (Product 2) ➤ Completion of iterative analyses of thermal and mechanical stress for preliminary designs for Product 2
Product 3	<ul style="list-style-type: none"> ➤ Modification of software to allow modeling of whole body magnet preliminary detailed design (Product 3), using Product 1 as a test bed to verify basic model for Magnetica designs ➤ Completion of iterative analyses of thermal and mechanical stress for preliminary detailed designs for Product 3 ➤ Completion of iterative analyses of thermal and mechanical stress for final detailed designs for Product 3 prior to commencement of full-size prototype development ➤ Preliminary modeling of cryostat for whole body magnet (Product 3)

Dr Wei will provide six monthly reports to QCIF on progress against these milestones.

Magnetica and APMC Support for the Project

Both the Advanced Computational Modelling Centre at UQ and Magnetica strongly support this proposal, and both are providing in-kind contributions to the Project.

Magnetica intends to provide in-kind contributions to this QCIF Technology Diffusion Project in excess of A\$130K (including 60% salary, on-costs, equipment, travel and infrastructure). The Company estimates that in 2005/06, it contributed in the order of \$120K in-kind to the project.

APMC also agrees to provide continuation of in-kind infrastructure support (office, access to computers, etc).

Magnetica therefore requests that QCIF agree to continue support for Riyu's Technology Diffusion project. Such support will enable completion of the DEST grant as well as continued input into Magnetica's product development, helping a Queensland spin-off company's products reach a global market. Continued support from QCIF will also provide links between the supercomputing group at UQ/QCIF with Magnetica. We would welcome the opportunity to further enhance such links, as we believe there are synergies that might well lead to exciting longer term outcomes.

Please let me know if you require any additional information, including updated information on the Company for publicity purposes. I would like to take this opportunity to thank you, and QCIF, for their important support, and add our Company's support to the concept of the QCIF Tech Diffusion Projects.

Nicky Milsom
Deputy CEO
Magnetica Limited
About Magnetica

Professor Kevin Burrage
Professor and Federation Fellow
Director, APMC, University of Queensland

Magnetica Limited is a Brisbane based company specialised in the design, development and commercialisation of superconducting high performance MRI magnets and associated gradient and RF coils, primarily for human diagnostic imaging. Magnetica's technical competencies and its proprietary intellectual property are based on outcomes from over 15 years of research and development at the University of Queensland.

Magnetica has an exciting alliance with the Japanese firm Jastec, a 100% subsidiary of Kobe steel. In January 2006, Kobe Steel joined as a signatory to this Alliance, renamed the Magnetica-Jastec-Kobe Consortium (the "MJK Consortium"), which aims to become a major player in designing, prototyping and manufacturing superconducting magnets and associated non-superconducting subsystems for use in magnetic resonance imaging (MRI), a US\$4 billion, rapidly growing global industry.

Magnetica intends to develop a prototyping facility for MRI Gradients and RF Coils in Brisbane, and in the longer term if economically feasible, a manufacturing facility for Gradients and RF Coils also in Queensland.

Magnetica's designs are intended to push current boundaries to generate new MRI magnet systems that satisfy market, clinician and user demands, while simultaneously being cost competitive. Optimisation and modeling stress in our magnet designs have played a key part in this process.