



Sugar Research  
Australia

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# REQUEST FOR TENDER

## Stepwise development of improved online sensors

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**Proposals must be received by 12 December 2020**

### **SRA Reference SRA-RFU-2020-IC009**

This document has been prepared to provide information to assist prospective tenderers in the preparation and submission of proposals to develop or implement sensor technology in sugar mills.

### **Summary**

Sugar Research Australia (SRA) invests in and manages a portfolio of RD&A projects that drive productivity, profitability, and sustainability for the Australian sugarcane industry. As an industry-owned company, SRA is committed to setting the right targets, managing research investments to maximise the likelihood of success, and ensuring the delivery and adoption of project outcomes and impacts across the Australian sugarcane industry.

SRA has identified the increased use of sensors to increase sugar recovery and further drive automation in sugar mills as a priority for the Australian sugarcane industry. Industry consultation (2019) identified vacuum pan operations as a priority area.

In this context, SRA is seeking tenders from suitably qualified and experienced individuals or groups to undertake a program of R&D to develop or identify sensor technology that will be critical for improved monitoring, control and increased automation of vacuum pan operations. Proposals for sensor technology of benefit elsewhere in the sugar manufacturing process may also be considered or prioritised for subsequent investigation.

### **Issue**

While the industry has employed sensor technology throughout the sugar making process, many parameters of interest require laboratory analysis while others have no direct measurement techniques available to assess them. Instead, there is a reliance on averages, inferential methods, and operator judgement as the basis for control of aspects of the sugar manufacturing process. This creates the following issues:

- Inferred measurement may differ significantly from the actual conditions
- There is a high level of reliance on tacit operator skills and subjective judgement

- Parameters measured by laboratory analysis are limited in the number that can be performed and subject to a time delay. This limits opportunities to optimise operations through adjustment for the prevailing conditions.

Industry consultation (2019) identified new sensor technology for vacuum pan operations as a high priority area. Of particular interest were sensors to facilitate better control of supersaturation. There was also interest in sensors to provide online or at-line sucrose content of process materials, and the addition of dry substance assessment would be of value. There may also be opportunities to optimise and automate other aspects of the sugar manufacturing process using sensor technologies.

### **Expected project outputs**

The purpose of this investment is to develop or identify sensor technology that will be critical for improved monitoring, control, and/or increased automation of vacuum pans and elsewhere in sugar factories. It will achieve this by investigating the following (either concurrently or in series, and independently by more than one research provider):

- Vacuum pan control sensors and control methodologies
- Sensors for sucrose and dry substance measurement
- Sensors for other applications in the sugar manufacturing process investigated or prioritised for subsequent investigation

### **Expected project outcomes**

The expected benefits include an estimated net benefit of \$10 million per annum across the industry for pan stage improvements alone, plus increased ability for future automation which will significantly reduce future costs.

### **Proposal submission**

Tenders must be submitted through the online Portal SugarNet

<https://grants.sugarresearch.com.au> .

All applicants should consult the Submission Guidelines available on the SRA website

<https://sugarresearch.com.au/research-investment/2020-21-research-project-investments/> and also provided in SugarNet.

Tender proposals must include a detailed and fully costed budget and a formal payment schedule with milestones (up to two per year) and appropriate achievement criteria that match expected project progress.

Also, Activity and Milestone Timeline and Milestone Budget Calculator spreadsheets must be completed and uploaded as attachments through SugarNet using the templates supplied on the SRA website and in also in SugarNet.

An IP disclosure must also be completed and submitted through the online IP Record Portal; access to the portal and instructions including an instructional video can be found at

<https://sugarresearch.com.au/research-investment/intellectual-property/> . The completed IP Register, generated as a pdf file from the IP Portal, should be uploaded as an attachment to the SugarNet application.

More detail on each of these is provided in the Submission Guidelines.

Expected project duration is up to 18 months, and total project budget will be capped at \$300,000 (excl. GST) with \$100,000 (excl. GST) available in 2020/21.

## Selection criteria and process

Selection of the successful proposal(s) will be based on the following criteria:

- The applicant or project team having:
  - A logical research plan and path-to-market
  - Demonstrated ability to conduct the necessary research activities, including appropriate experimental design and statistical analysis
  - A plan for collaboration with appropriate technology suppliers to assist with supply of products and product development to take viable options to market
  - Experience with appropriate technologies would be an advantage.
- The proposed project budget and in-kind or other contributions from the research organisation and any other participants in the research.
- The tenderer being a legal entity with which SRA is able to contract. The tender submission must describe and provide evidence of the legal status of the tenderer, including an Australian Business Number (ABN) if appropriate.

Tenderers must declare to SRA any matter or issue which may be perceived to be, or may lead to, a conflict of interest regarding their proposal or participation in supply of the services described. Tenderers must outline a strategy so that any actual conflict of interest will be avoided.

## Project agreement and reporting requirements

The successful applicant(s) will be required to enter in to SRA's standard project agreement.

Milestone and final reports will be prepared in line with SRA report guidelines (see <https://sugarresearch.com.au/research-investment/forms/>).

The successful applicant(s) may also be required to prepare and/or contribute to short articles for dissemination in SRA and industry publications.

## Negotiation

After short-listing, SRA may engage in detailed discussions and negotiations with one or more tenderers to maximise the benefits of the tender proposals submitted.

## Useful background

The SRA Recommended Sugar Milling Research Program mentioned above can be found on the SRA website at <https://sugarresearch.com.au/research-investment/sugar-milling-research-program>.

## Further information

For further information regarding this tender, please contact Dr Stephen Mudge (Research Funding Unit Program Manager).

Phone 0436 924 252

Email [smudge@sugarresearch.com.au](mailto:smudge@sugarresearch.com.au)

## Submissions

Proposals must be lodged in SugarNet **by 12 December 2020**.