

Formstack Submission For: [CRIN Matchmaking support](#)

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Name:	Stefan Meili
Email:	smeili@noram-eng.com
Are you a member of CRIN?:	Yes
1. What type of organization are you looking to be matched with?:	Small or Medium Enterprise (e.g. technology developer, venture, service company etc.)
2. Please provide a brief description of your organization:	A technology provider in the chemical / process industry.
3. Please provide a brief description of your proposed project:	Machine learning guided process optimization. Increase production capacity, reduce emissions, or reduce operating costs at an existing site without installing new equipment or shutting down the site. We propose to build a deep learning model of an industrial plant and use an optimization algorithm to suggest improved operating conditions. Our technology is flexible. When improving operations, trials normally proceed by making changes to controller set points and then observing the impact on the process. We propose to turn that around: set goals for process performance and receive recommended controller set points that best achieve those goals. This dramatically reduces the length and uncertainty of optimization trials. Our aim is to help clients adapt to changing product or emissions specifications, increase capacity within existing limitations,

reduce production costs, or reduce energy consumption.

5. Which focus area(s) are you looking to address or collaborate on?:

Environmental monitoring
Operational excellence and efficiency

6. Briefly describe what type of support you need from a producer partner (e.g. field test site, technical expertise, resources etc.):

Our producer partner would be a field test site. We would require a significant quantity of historical operations data (several years of DCS, sample analysis, weather, etc). We would use that to build our model and then recommend improved operating conditions. After careful review, we hope the producer partner would then test those improved operating conditions on site and demonstrate improved operational efficiency, or reduced emissions.

7. Briefly describe the skills and services you are able to offer as a partner/collaborator :

Our team comes from NORAM Engineering and Constructors, a process technology provider. As such, NORAM Analytics is able to provide expertise in industrial process design in addition to expertise in machine learning and data analysis. We believe our industrial experience will help bridge the gap between providing machine learning based recommendations and successful implementation on site.

8. What test or research is required to most cost effectively reduce technical or economic uncertainty and/or prove important features/benefits of your technology?:

Validation trials followed by optimization trials. We carefully validate our model predictions with the data provided. Once a model is finished we would propose a series of validation trials similar to normal operations with the goal of impartially measuring the accuracy of model predictions against real world performance. Once the model predictions have been thoroughly validated, we would propose optimize

operating points selected by the model with the aim of slowly guiding operations towards improved daily operations. Our priority is careful, steady improvement. We will not "move fast" or "break things".

9. Have you already connected with, pitched to, or been introduced to any oil land gas producer partners regarding this project?:

No

10. Is there any additional information you would like to share to assist us in matchmaking?:

We are a division of NORAM Engineering and Constructors, located in Vancouver, BC.

We have successfully piloted our technology at a site producing mononitrobenzene (MNB) located in Europe, and hope to demonstrate further success in the oil and gas sector. At our existing reference, we were able to reduce byproduct formation by approximately 20% while operating at 105% of historical maximum capacity.

A case study and more information is available at www.noram-analytics.com

Information of NORAM Engineering and Constructors can be found at www.noram-eng.com

By registering my interest, I accept that the information submitted in this form will be used by the Clean Resource Innovation Network, and MaRS for the purpose of the CRIN Digital Oil and Gas Technology Competition, including the posting a project summary on the CRIN website for producers to view.:

Yes, I am interested in matchmaking support