

TechConnect Ventures

Sprint Challenge Brief:

Process Innovations For Curing Of Molded Polymers

BACKGROUND

TechConnect's client, a global consumer goods company with billions in annual revenue, manufactures products made of organic compounds which are shaped in small molds, roughly 5-15 cm³in volume. The products are then cured in large drying chambers. The client is seeking process innovations which can deliver substantive reductions in drying time while maintaining consistent appearance and performance metrics.

Currently, a slightly viscous liquid slurry with adhesive properties, comprised of various monomers and polymers suspended in water, is deposited onto a tray with dozens of shaped indentations. The tray itself is filled with a naturally-derived powder to facilitate removal of the product from the mold. The filled tray is then stored in a large drying chamber for approximately 30 hours. This residence time allows the moisture removal to occur, and with the necessary structure to form and desired chemical reactions to occur.

The client is interested in process innovations which can reduce the residence time in the drying chamber without negative impacts on customer perceptions. The client's manufacturing process is constrained by several inter-related factors:

- Modifications to drying temperature alters chemical reaction rates & impacts quality
- Modifications to the viscosity of the slurry can alter appearance:
 - Slurry may not properly deposit into the mold/may remain partially stuck to the nozzle – also known as "tailing"
- Adjusting polymer chemistry impacts consumer acceptance

Consequently, the client is interested in exploring modifications and innovations to the production equipment. Potential pathways of interest include, but are not limited to:

- Nozzle designs which minimize tailing
- Molding trays with improved thermal conductivity
- Drying chamber innovations
- Innovations in molding of organic compounds

While a 50% reduction in residence time is ideal, the target reduction for this project is 25-30% (7 – 9 hour reduction). Innovations which allow for smaller reductions in time are also potentially of interest. Likewise, partial solutions are potentially of interest. Technologies adapted from other industries will also be considered.

The client is primarily interested in approaches which have already achieved pilot scale. Technologies which could be implemented globally within 12-24 months are highly desirable.

The goal of this sprint is to facilitate contact and interactions between the Sprint sponsor and commercial entities (including Start-ups) or technology developers or research organization/university in this space. Submissions from all viable subject matter experts are of interest including those from academia and commercial entities.

REQUIREMENTS

Solvers submitting an Entry are encouraged to highlight capabilities in their Submission that meet criteria including:

- Description of process innovation
 - Anticipated reduction in drying time
 - Anticipated timeline for full-scale implementation
 - Technical maturity
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BUSINESS OPPORTUNITY FOR SOLVERS

All complete and eligible Entries will be included in an exclusive Innovation Opportunity Report that will be presented to our client. Solvers with well-matched capabilities may be contacted directly by either TechConnect Ventures or the client to discuss potential partnership opportunities, including – but not limited to – demonstrations, consulting, contract research, licensing, and more. Top-rated Entries may also be invited to register or participate in an upcoming TechConnect Ventures event or pitch program.

PARTICIPATION RULES & GUIDELINES

Solvers are encouraged to review the [Rules](#) and [Guidelines](#) provided on the Sprint page for details about participation, including submission criteria, eligibility information, and more.

QUESTIONS? Contact challenge@techconnectventures.com