BONNOT

Custom Single-Screw Extruder Manufacturer

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Technical Case Study: Rubber De-airing Trial

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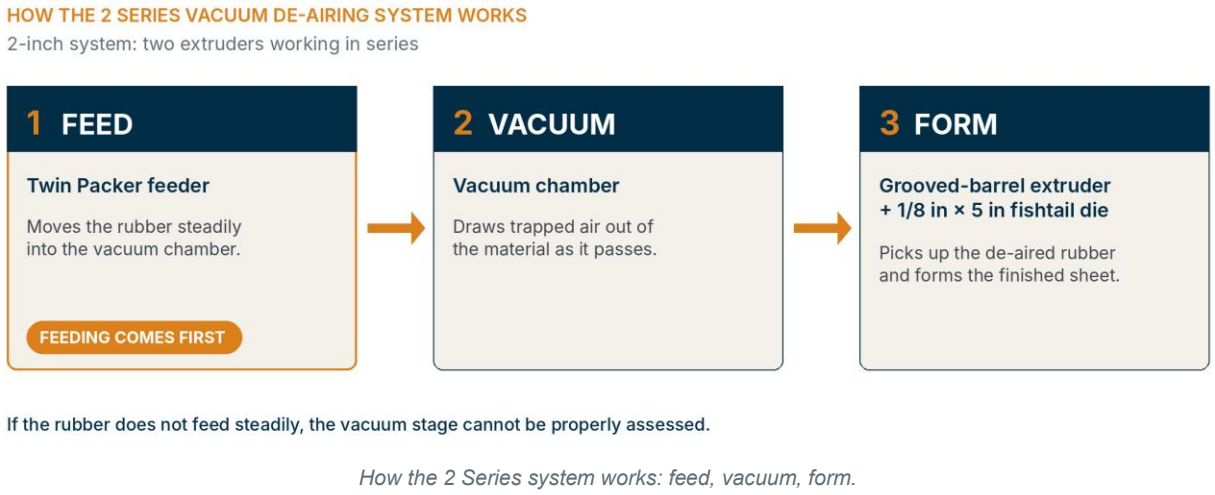
Objective	Remove visible air blisters from a rubber compound while still producing a good sheet.
Equipment	Bonnot 2 Series vacuum de-airing system with Twin Packer feeder and grooved-barrel extruder.
Die	1/8 in × 5 in fishtail die.
Result	A good sheet at about 166°F and 8–12 oz/min, with no visible blisters in the finished sheet.

Customer challenge

An industrial customer wanted to understand whether trapped air could be removed from its rubber compound before an equipment specification was finalized. The trial needed to show that the compound could feed through both stages, pass through the vacuum section and still form a good sheet at the die.

Test setup

Bonnot ran the material on its 2 Series vacuum de-airing system, a 2-inch machine made up of two extruders working in series. A Twin Packer feeder moved the rubber into the vacuum chamber. The second, grooved-barrel extruder then picked up the material and formed it through a 1/8 in × 5 in fishtail die.



How the 2 Series system works: feed, vacuum, form.

Initial issue: feeding

At the start of the run, the rubber would not feed into the second extruder with the feeder at 175°F and the extruder at 150°F. Bonnot raised the temperatures to 250°F on the feeder and 200°F on the extruder, then added a die and spacer to the feeder. Feeding improved significantly.

Stage	Feeder	Extruder	Result
Start of run	175°F	150°F	Rubber would not feed into the second extruder
After adjustment	250°F, plus die and spacer added	200°F	Feeding improved significantly

Feeding settings before and after adjustment.

Visible air blisters

Before vacuum: feeder output with visible air blisters.

Vacuum section: blistered strip moving through the transition zone.

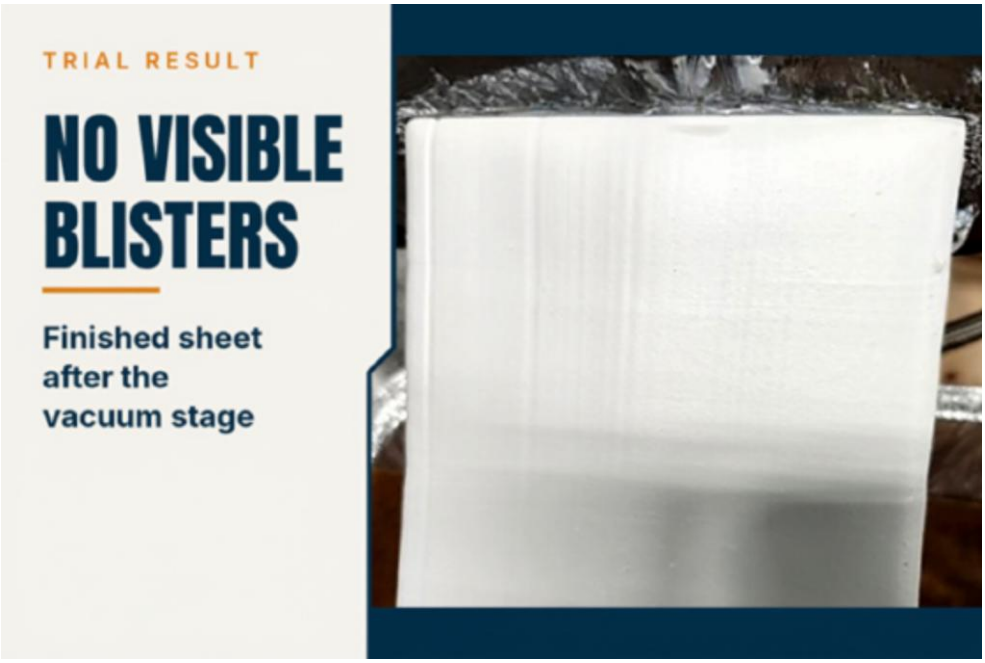
What changed

The trial showed that the vacuum stage could be properly evaluated once material was moving steadily through the chamber. Increasing the operating temperatures and adding the die and spacer improved the feed enough to continue the de-airing evaluation.

Trial result

With the material feeding steadily and the vacuum running, Bonnot produced a good sheet at about 166°F and 8–12 oz/min. By the end of the run, the finished sheet leaving the fishtail die had no visible blisters.

After de-airing: finished sheet



Finished sheet leaving the die after the vacuum stage. The surface showed no visible blisters.

Engineering takeaway

The trial showed that rubber de-airing should not be treated as a vacuum-only problem. Feeding comes first. The material has to move steadily through the chamber before the vacuum stage can be properly assessed. In this trial, improving the feeder conditions made it possible to evaluate the full sequence: feed, vacuum and forming.

Next step

A clean surface is a strong visual result, but it does not confirm what is inside the sheet. Bonnot plans to run the material again to gather scale-up data and complete a density check before a final equipment specification is set.

Test your material before specifying equipment

If you are not sure how your rubber compound will behave through extrusion and vacuum, send Bonnot a sample. The Akron test room can show how the material feeds, how it behaves through the vacuum stage and what the finished product looks like before anyone commits to a specification.