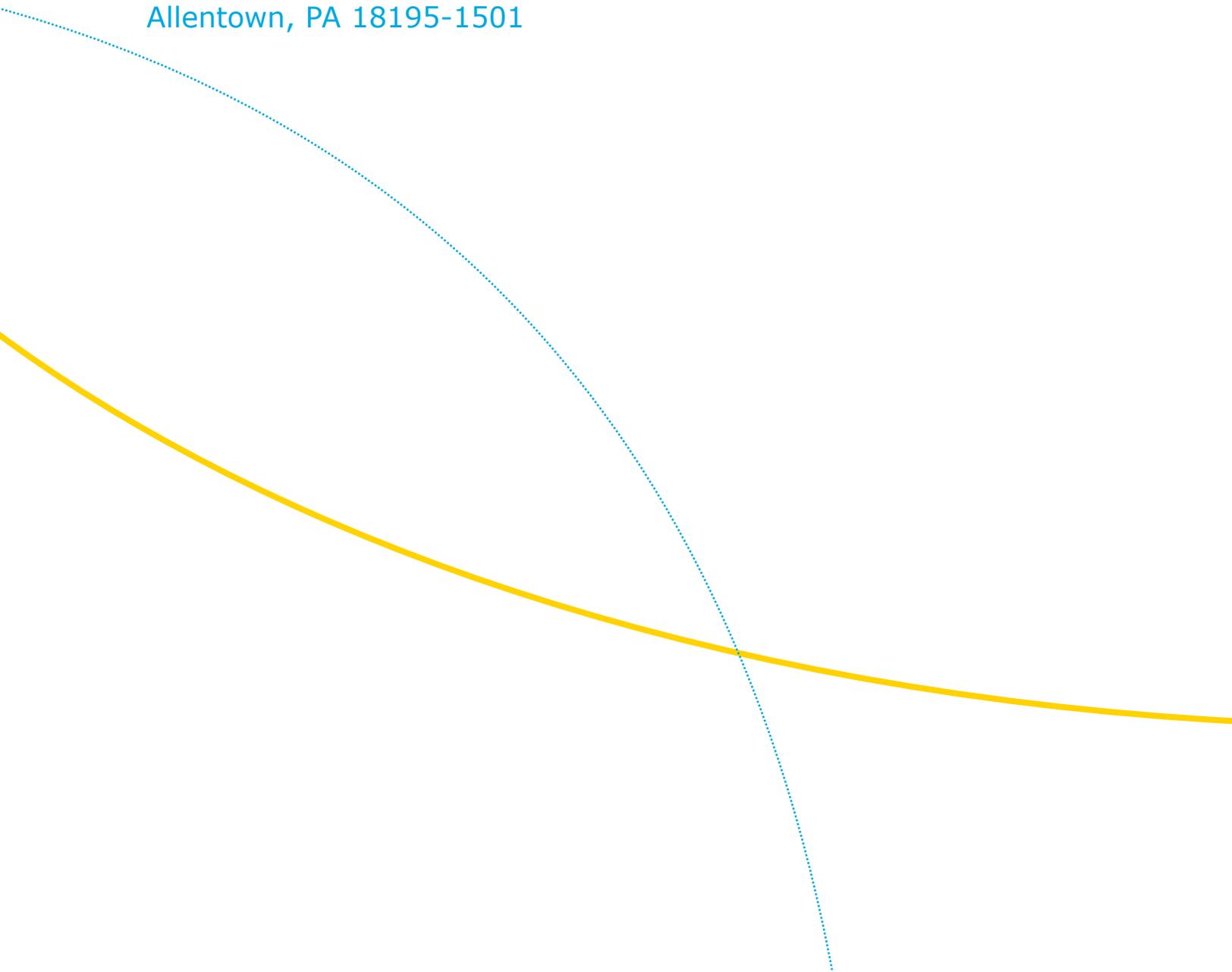


# Factors affecting nitrogen efficiency in aluminum extrusion processes

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For many years, nitrogen has been widely used by aluminum extruders to improve production rates, surface finish and die life. When utilized for die shrouding, nitrogen is used to inert the extrusion surface and take heat away from the tooling, resulting in reduced scrap rates and greater billet extrusion before a die change is required. When it is implemented correctly, the value of die shrouding significantly exceeds the cost of the nitrogen on the order of \$50-\$100 per hour per press, or more than \$300,000 per year! With such results – why are many extrusion professionals not convinced of the benefits of nitrogen?

The answer often is in the details of how the nitrogen technology is deployed. Many extruders are using nitrogen but are not realizing the full benefits of the technology because of a series of potential complications and pitfalls. Often a test was run many years ago to prove the benefits of nitrogen. Over time, many things may have changed at the site and the nitrogen is no longer being used consistently or to its optimal performance. To realize the full potential of a nitrogen shrouding or die cooling system, many factors should be considered, including:

- what the most cost effective nitrogen gas supply is for the site – gaseous nitrogen, liquid nitrogen, or even nitrogen from a generator
- where to introduce the nitrogen: die backer, bolster, platen/canister
- how to establish the optimal nitrogen flow rates
- tooling grooving patterns and consistent connections to the tooling
- equipment issues such as undersized hoses and fittings or minimal flow controls and flow measurement
- nitrogen leakage
- poor nitrogen distribution on multi-hole dies
- the number of different shapes and alloys extruded
- solid, hollow or multi-hole dies
- single or double die slides
- tooling purchased from other extruders which has different grooving, connections, etc.
- insufficient nitrogen flows to provide proper cooling and inerting

Air Products Applications Specialists can review your system and identify areas that can help you achieve optimal nitrogen performance. In our experience, nearly all extrusion plants currently using nitrogen can benefit from such an analysis to help utilize nitrogen in a more efficient and cost-effective manner. For plants which have melting operations, Air Products can also improve the productivity of reverb furnaces and assist with degassing processes.

For more information on how we can help optimize the nitrogen usage in your operation, or if you would like to learn more about the benefits of nitrogen extrusion technology, contact us.

## tell me more

For more information,  
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