

Challenges

This study summarizes the success of the B-216-SERIES fluid over a 25 year span at a facility that operates an aluminum hot line utilizing a single stand breakdown reversing mill feeding a four-stand tandem hot mill. This operation produces well over 1 billion pounds of aluminum sheet annually, consisting of a wide variety of hard and soft alloys. During a recent year, it was calculated that this mill produced over 1,200 different combinations with various alloys, gauges, widths and tempers, all while utilizing the same coolant chemistry.

The tandem mill coolant system has a 150,000-gallon capacity. Dynamic Equilibrium is consistently employed to maintain maximum consistency of the coolant chemistry. This facility has not experienced a complete coolant dump in over twenty years. Only minimal partial dumps (average is less than 5% of system volume per month).

Throughout this twenty-five year partnership, both companies have communicated openly concerning formulation enhancements, aluminum production trends, and planned coolant system improvements. Some examples of these communications are outlined below.

- **Continually monitor formula chemistry and employ needed enhancements to increase mill speeds and improve AQ grades.**
- **Provide lubricant that is easy to maintain**
- **Continually provide a forum to discuss manufacturing statistics**

Providing Solutions

The 25 years of success were not accomplished by product alone. The B-216-SERIES was supported by a dedicated staff to achieve the following results:

- **Through strategic formulation enhancements, this facility has consistently increased mill speeds on all alloys while maintaining consistent AQ grades of critical CBS of 1.0 to 1.5.**
- **Employment of Dynamic Equilibrium has helped maintain consistent coolant chemistry, eliminated the reliance of tank-side additions and increased coolant life. The customer has not performed a full dump in over 20 years; requiring minimal partial dumps to control ash.**

- **Semi-annual Technical Review Meetings are held to discuss statistical product manufacturing and quality assurance data. Aluminum manufacturing trends and coolant system changes are also discussed and collectively, potential chemistry changes are initiated.**

Product Description

The B-216-SERIES aluminum hot rolling oil is a mineral oil-based lubricant formulated to provide the required lubricity and emulsification performance for multi-stand hot tandem mills. The additives incorporated into this product facilitate achieving excellent surface quality and eliminates bite and refusal problems. This chemistry encourages long coolant life due to the stability of the emulsification package and requires no additives to maintain performance over time.

Process & Equipment

Operation:	4-stand tandem hot mill produces over 1,200 different combinations with various alloys, gauges, widths and tempers
Capacity:	1+ billion pounds per year

Product and Process Expertise

Rolling lubricants represent a very minor part of the costs of aluminum rolling operations, typically considerably less than 1%. This case illustrates the importance of using the leverage of advanced lubricant technology to achieve substantial productivity increases while at the same time reducing total applied cost. That is why Quaker focuses on developing products with the highest performance without compromise, products that sharpen your competitive edge.