ALUMINUM HOT ROLLING
ALUSHIELD™ IHM-2000

CHALLENGES
A 4-hi intermediate hot reversing mill was producing over 3 million lbs of aluminum per day for can body and end stock, trailer roof, and building products. The alloys rolled were mostly 1XXX, 3XXX, and 5XXX aluminum alloys, and the 60K gallon coolant system used municipal tap water for makeup and maintaining system volume during operation. The rolling oil used required:

- Frequent additions to maintain rolling performance during the life of the emulsion
- Additions of biocide (50 gals/month) to control microbiological problems

Additionally, coolant emulsion was used as a lubricant for the table rolls of the hot line on both sides of the intermediate mill, and a constant re-inoculation of the emulsion with microbiological contamination occurred.

The aluminum producer wanted to convert to ALUSHIELD® IHM-2000 rolling oil to:

- Improve lubricity performance on harder alloys
- Reduce requirement for biocide additions
- Eliminate need for additive additions to maintain good emulsion

THE SOLUTION
ALUSHIELD™ IHM-2000 offers the following benefits:

- Outstanding boundary and hydrodynamic lubricity performance
- Superior emulsification performance for stability and consistency of emulsion

ALUSHIELD™ IHM-2000 has an excellent lubrication additive package which allow for a full, one grade improvement on anodized quality on both the key can body and can end stock alloys. An unanticipated benefit was an extension in work roll life from 1 week to 2 1/2 weeks before re-grinding was necessary, resulting in a cost savings of approximately $60,000 per year.

No biocide additions have been necessary, no odor has been observed around the mill, and mill cleaning frequency has gone from every 3 weeks to every 5 weeks. The operator commented that the ALUSHIELD™ IHM-2000 is much easier to maintain than the previous product used. Additionally, no tank-side additions have been necessary. Dynamic Equilibrium has facilitated consistent performance on a day-to-day basis.

THE PRODUCT
ALUSHIELD™ IHM-2000 represents the next generation of rolling oils for the aluminum industries’ hot reversing mills. This formulation couples outstanding emulsification boundary and hydrodynamic lubricity with a low propensity for soap formation and excellent bioresistance properties. This chemistry represents the first developed using our Nash Laboratory Rolling Mill. Coupled with dynamic equilibrium, balancing system inputs and outputs, this chemistry affords the lowest total cost system in our industry.

THE 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.

PROCESS AND EQUIPMENT

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<tr>
<th>Operation</th>
<th>4-hi intermediate hot reversing mill</th>
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<td>Capacity</td>
<td>1+ billion pounds per year</td>
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