

Challenges

A major manufacturer of anodized quality critical hot rolled aluminum was looking for a way to increase tandem mill reductions using their existing equipment but without experiencing quality defects associated with lubrication failure at higher roll forces.

The company was looking for improvements in:

- Surface quality
- Increased reductions
- Higher mill speeds
- Consistent performance
- Reduced coolant maintenance
- Elimination of the use of hazardous biocides
- Elimination of transverse surface tearing of the strip

Quaker embarked on a joint development effort with the customer to increase productivity through lubricant performance improvements without any capital investment in new or modified equipment.

Impact

The development of the QUAKERAL THM Series of aluminum hot rolling lubricants resulted in:

TOTAL BENEFITS EQUAL TO 5 TIMES ROLLING OIL COST

OVER \$10 MILLION PER YEAR IN PRODUCTIVITY IMPROVEMENTS WITHOUT ANY CAPITAL INVESTMENT IN NEW EQUIPMENT.

- Roll force reduction:** 8-14% depending on alloy
- Entry gauge increase:** Average of 20%
- Mill speed increase:** Average of 30 feet/minute
- Reduction in gauge variation:** 45% reduction in “unacceptable” variation
- Surface transverse cracking defect:** Completely eliminated
- Use of biocides:** Completely eliminated

Applications

Surface critical, aluminum hot rolling

Other Benefits

Other benefits that came with the introduction of QUAKERAL Series aluminum hot rolling lubricant technology include:

- Cleaner mill
- Fewer additives
- No reliance on aluminum soaps
- No coolant “break-in” period required
- Elimination of worker exposure to hazardous biocides
- Manpower redeployment to other areas
- Consistent quench
- Reduced emulsion testing

Process & Equipment Info.

Operation: Four Stand Tandem mill producing can stock and other anodized quantity critical alloys
 Capacity: One billion pounds per year

Equipment References

Bliss	United	Loewy	Nash
Blaw Knox	Casey	MECO	

Aluminum Industry References

Alcan	Alcoa
Southwest Aluminum	Pechiney
Wise Alloys	Jupiter Aluminum
Commonwealth Aluminum	Valenciana de Aluminio

Cost Benefit Analysis

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.