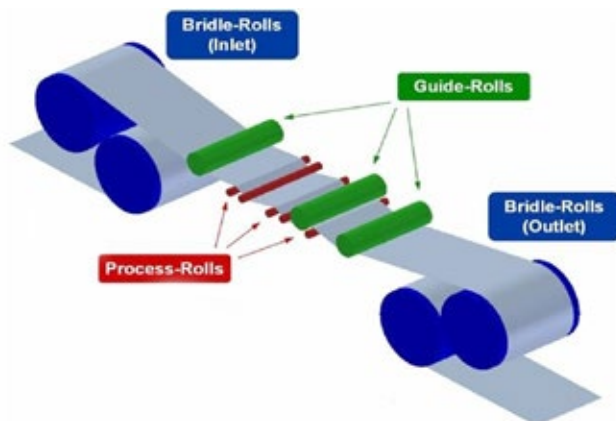




Integrated Mill Systems

Tension Studies

For nearly 40 years IMS has produced tension studies to benefit clients. IMS can troubleshoot existing line problems or tension control issues and provide tension analysis prior to mechanical upgrades. IMS will provide an analysis of existing line arrangements and establish operating ranges for gauge, yield strength, and width. Deliverables include a written report detailing all recommendations, tension tables, equations, and a tension control spreadsheet for future use.



**Integrated
Mill Systems**



IMS is a "Supplier Neutral" company that will install best in class hardware utilizing commercially available products for both new and retrofit projects.

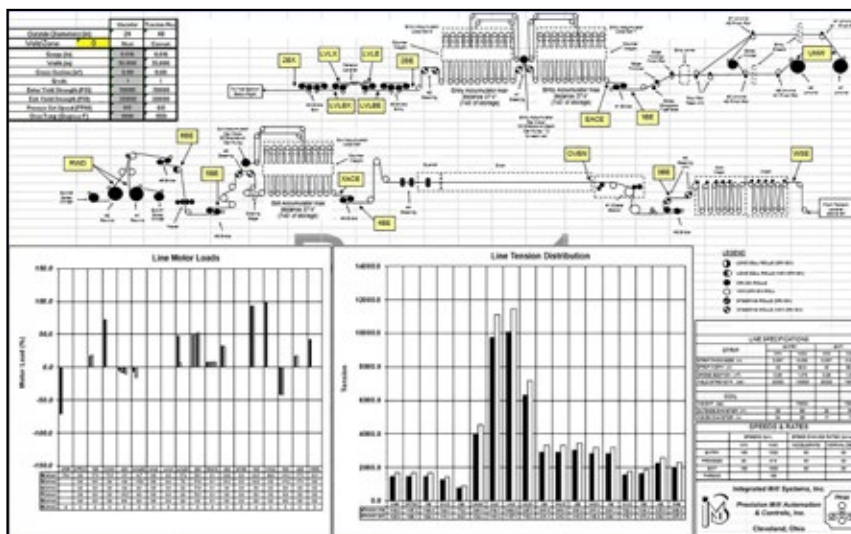
1702 Joseph Lloyd Parkway
Willoughby, Ohio 44094
440.918.9900
IntegratedMillSystems.com

IMS Tension Control Studies



- Troubleshoot existing line problems or tension control issues and/or analysis prior to mechanical upgrades on existing lines
- Document and analyze the existing line arrangement gathering all:
 - roll and motor data
 - ratings and locations
 - steering roll locations
 - hydraulic operational data for the entry and exit bridle snubbers in the entry and delivery end of the line
 - roll sizes and locations
- Establish operating ranges for gauge, yield strength, and width
- Establish the present tension practices and control schemes for controlling tension on the line
- Provide a written report including:
 - identification of any current line problems
 - recommendations for addressing problems
 - recommended tensions in the line
 - determination of adequate horsepower for entire product range and establish any bridle slip issues with proposed solutions
 - proprietary excel tension control spreadsheet for future use by customer

Tension Study example:



- Provide tension tables and equations for existing and new conditions
- Provide a tension analysis spreadsheet specific to customer's line for future analysis
- 40+ years experience in tension studies

IMS — Your Engineering Study Provider!

ANALYZE

TROUBLESHOOT

IMPROVE

SUPPORT