



the achievers

envoy

AUGUST, 2006

Message from the Managing Directors

It is rather ironic that the increasing demands from customers for ever greater accountability in providing competitive performance guarantees, has resulted in more creative “guarantee engineering” from many equipment suppliers. This means that apparently attractive performance figures are in fact worse than what was offered a decade ago or else the attached conditions for the conduct of the tests are not achievable and the guarantees are worthless. In this issue of Envoy the interpretation of alternative flatness guarantees is presented as a warning to those contemplating the purchase of a flatness control system.

Also in this edition is a description of the new Achieva setup “lite” model. This technology is a subset of the full Achieva setup model. It is suited to those who may not need all the refinements of the renowned Achieva setup technology but desire a robust and proven setup model with an extremely rapid ROI.

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ACHIEVA LITE RETURN ON INVESTMENT:

In response to pressure from the marketplace, operators of single stand rolling mills are seeking effective means to improve their competitiveness.

To assist our customers, IAS is pleased to announce the arrival of **achieva LITE SETUP**, a robust, effective and low cost setup model for single stand rolling mills. This setup model has an impressive pedigree – many readers of this article will have first-hand experience with the **achieva SETUP SYSTEM** – arguably the most sophisticated and effective model available.

At the centre of **achieva LITE SETUP** technology is the adaptive setup calculation which determines the pass thickness reductions, tensions, roll bending and the mill speed at which to roll each coil. Allied to this calculation is the prediction of suitable actuator, thickness and tension reference

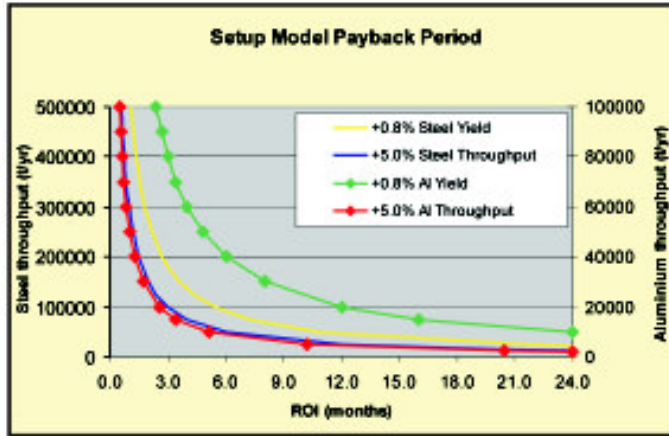
adjustments to introduce during headend threading and the transition from threading to rolling with the correct mill exit thickness and flatness. The objective of this calculation is to maintain acceptable flatness for each pass and to minimise strip breaks and coil end yield losses.

The product dependent or schedule dependent gains for the thickness and tension controls are also calculated by the setup model to ensure consistent performance of the thickness control system, irrespective of product property variations.

The technology has been created to work with either **achieva** Level 1 control systems or retrofitted to interface with third party dynamic controls.

achieva LITE SETUP delivers two key benefits: reduced yield loss and improved throughput.

**ACHIEVA
LITE
RETURN
ON
INVESTMENT
(cont):**



Reduced yield loss is realised in the form of reduced off-specification head and tail end lengths. This is achieved through a combination of more accurate positioning of the mill actuators, avoidance of poor strip shape (and hence fewer strip breaks) and increased opportunity to use closed gap threading.

Any reduction in yield loss generates more saleable product and less scrap for recycling.

Typical yield improvement is 0.8% of throughput, however the actual saving on a particular mill is best determined by an IAS site inspection.

The payback for installing **achieve LITE SETUP** therefore depends on total mill throughput and the difference between the price at which product meeting the specification is sold and the price one can get for recycled off-specification scrap.

The payback is typically 6 months for a mill producing 100,000 tonnes of steel or 40,000 tonnes of aluminium per year as shown on the graph above.

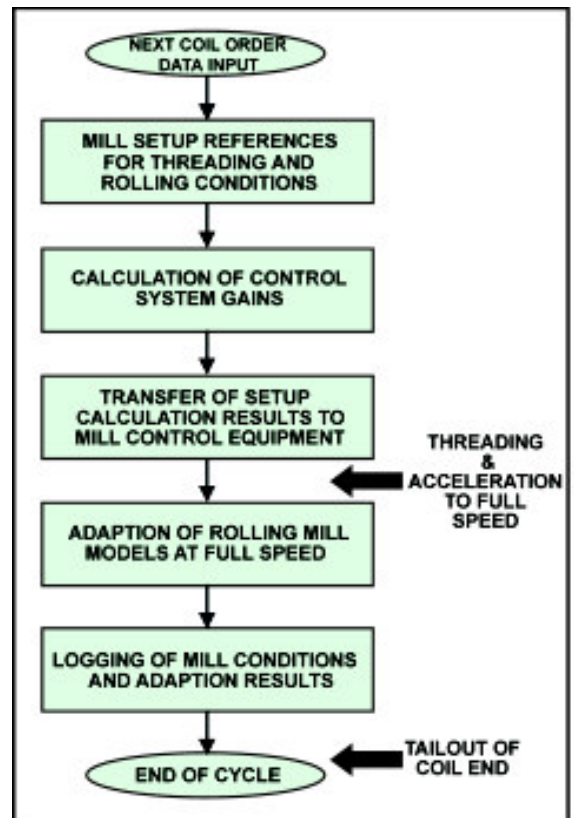
At facilities where the mill is the bottleneck for the plant and the resulting increase in production can be sold, increased throughput can of course only be used to justify investment.

Improved throughput results from threading with fewer delays, higher average rolling speeds and fewer strip breaks.

Typical throughput improvements are in the range of 5 to 10% and depend on the condition of the mill. The actual improvement that will be achieved in practice for a particular mill can be confirmed by an IAS site inspection.

The payback for installing an **achieve LITE SETUP** on a bottleneck mill depends upon mill throughput and product margin (the price difference between the incoming material and the outgoing coil). A 5% throughput improvement gives a typical payback period of under 2 months on mills producing 200,000 tonnes of steel or 30,000 tonnes of aluminium per year, as shown in the graph.

If you currently operate a single stand mill, it may be worth your while talking to us.



**WHEN IS
6I > +10I
FLATNESS
GUARANTEES?:**

When purchasing a flatness control system, you will notice a wide range of performance measures used by different vendors. Typically these may be based upon peak-to-peak, maximum deviation, or an area method.

To properly compare the relative performance guarantees being offered by vendors of shape control, it is important to understand the differences between these measures and to be able to convert the various measures used back to one common type which is closely related to the defects which will remain in the strip.

When using a peak-to-peak method or maximum deviation, the guarantee is collecting statistics on the worst point(s) across the width of the strip at any classification sample. In general the magnitude of the flatness defects in the strip after rolling will be related to the difference between the tightest point on the strip and the loosest. This is the peak-to-peak I unit measure.

Guarantees of this form are saying, for example, that 95% of all length rolled shall have strip shape with a peak-to-peak shape of 15 I units. The equivalent maximum deviation guarantee would be 95% of all length less than ± 10 I units.

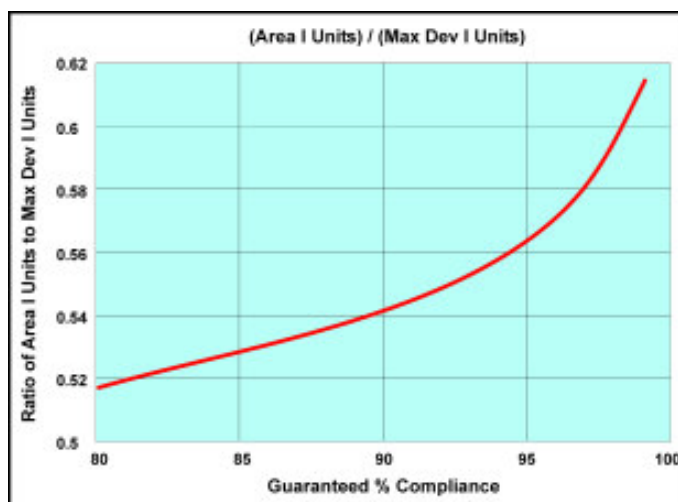
The area method is significantly different in principle to the worst point method. The area method is saying that 95% of the classifiable area of the strip shall have a shape error no worse than 6 I units, for example.

If your shape measurement has more than 20 fully covered rotors across the strip width, then one rotor represents less than 5% of the strip classifiable area.

As the area method is only guaranteeing the performance for 95% of the area, then the excluded fully covered rotor in this case could have any value and it would not affect the guaranteed performance. It would however significantly affect the final strip flatness, because that other rotor would be either the tightest or loosest point in the strip and thus be a determining factor in the magnitude of the actual final flatness.

Naturally it is possible to compare area based methods with worst point methods by classifying the same shape data from a rolling mill by both methods and comparing the results. We did this using data from a cold mill facility and examined the shape distributions on approximately 1500 coils.

This data was used to calculate the ratio of the Area based I units to the maximum deviation I units. We found that for a 95 percent guarantee number, i.e. 95 percent ± 10 I units max deviation, the ratio of the area guarantee I units to the max deviation I units is 0.565. This means that a maximum deviation guarantee of 95 percent ± 10 I units is equivalent to an area guarantee of 95 percent @ 5.65 I units !!





IRTC San Francisco is booked for the first week in October 2006. The course venue, the Miyako Hotel, is located in Japan Town and is close to all the action.

If you are a graduate, don't forget you can use this opportunity to update your knowledge for HALF PRICE!

Graduates from IRTC now number 1200, thanks to our busy first half of this year, when we conducted courses in South Africa, The Netherlands and Greece.

Two of our lecturers, John Edwards and Tino Domanti, presented technical papers at the recent Paris Rolling Conference and the new material has been included in this course.



Read about IRTC on our website or email the co-ordinator if you have questions.

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DEVELOPMENTS IN CHINA:

The recent past has seen an increase in activities in China for IAS. This is due in no small part to the assistance offered by our newly appointed representative, Cathy Chen.

Cathy is a graduate in International Management from Exeter University in the UK and she brings boundless energy and enthusiasm to our dealings in China - not to mention obvious linguistic skills not present amongst the rest of us.

Also of considerable note is the continuing development of a close working relationship with China Nonferrous Metals Processing Technology Co. Ltd (CNPT) with whom we are successfully collaborating on a number of fronts.

For example, the startup at Sapa Heat Transfer (Shanghai) was hugely successful and was achieved in record time, reflecting well on all involved.

Success breeds success and the next project is thickness and flatness control for a 6-hi mill for Chinalco Henan Aluminium Fabrication Co. Ltd. This is a new mill in a new plant scheduled for installation and commissioning in early 2007.

We relish the prospect of more work to come.



Cathy Chen



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