



Optimizing Pellet Quality and Capacity with new Technology

Doc Weston
California Pellet Mill



Definitions for Today

Pellet Quality

- PDI - Pellet Durability Index

Standard K-State tumble method or Holman

It is understood that pellet quality is a broader term than just PDI

Capacity

- Tons per hour – important, but

Net tons per shift/hour is more important



Typical Balancing Act



What is the normal relationship between
Tons per Hour and Pellet Quality?

As Tons per hour increase



.....Pellet Quality decreases



(More energy input per ton improves pellet
quality)



Current Methods to...

Increase Capacity are:

- Increase/improve conditioning
- Formula changes
- Die Spec (thickness, open area, etc.)
- Less down time

Improve Pellet Quality are:

- Increase/improve conditioning
- Formula Changes
- Thicker die
- Slow down pellet mill



Pellet Mill Jogs = \$

	<u>15 TPH</u>	<u>20 TPH</u>	<u>30 TPH</u>	<u>40 TPH</u>	<u>50 TPH</u>
1 Jog/Day	1.25 tons	1.67 tons	2.5 tons	3.33 tons	4.1 tons
5 Jogs/Day	6.25 tons	8.33 tons	12.5 tons	16.7 tons	20.5 tons
10 Jogs/Day	12.5 tons	16.7 tons	25 tons	33.3 tons	41 tons
20 Jogs/Day	25 tons	33 tons	50 tons	66.6 tons	82 tons

Based on 1 Jog costing 5 minutes of production

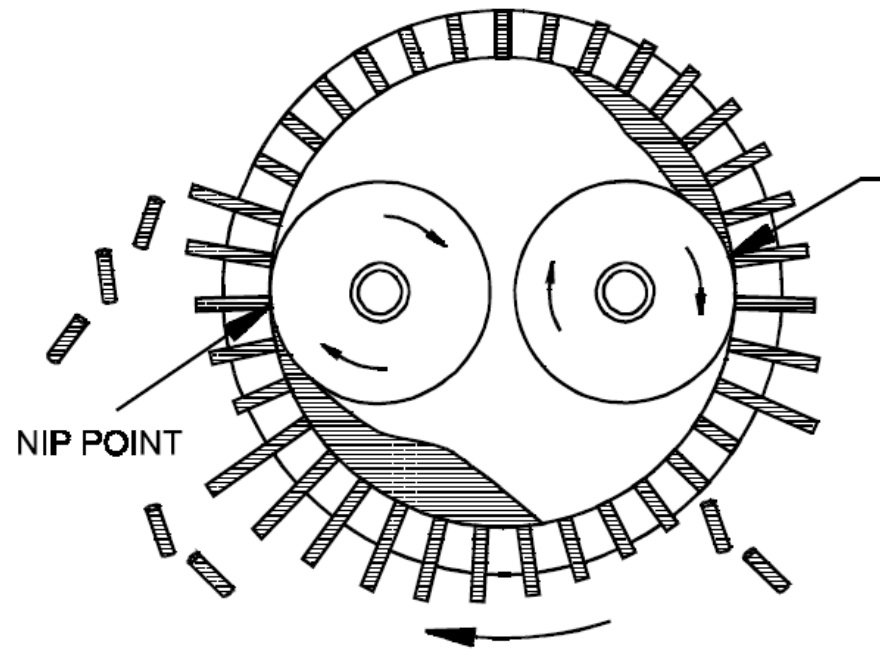


How can we optimize both Pellet Quality and Net tons/Shift?

Roll Speed
Measurement
(with lineator)



Roll Speed Measurement



Why should we measure Roll Speed?

- Make changes before choke occurs
- See if one roll needs adjustment
- Decrease jog or down time – Increase production time

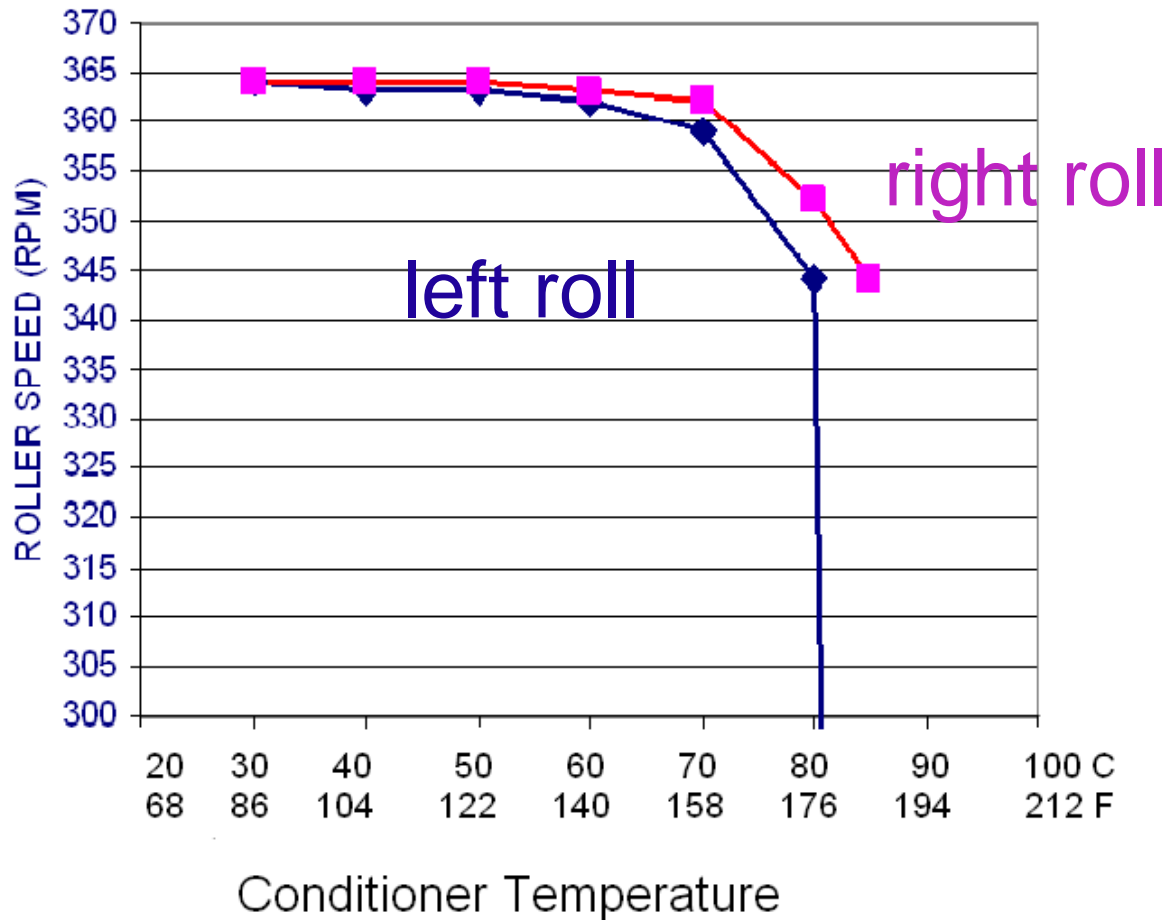


What can make a roll rotate too slowly or stop

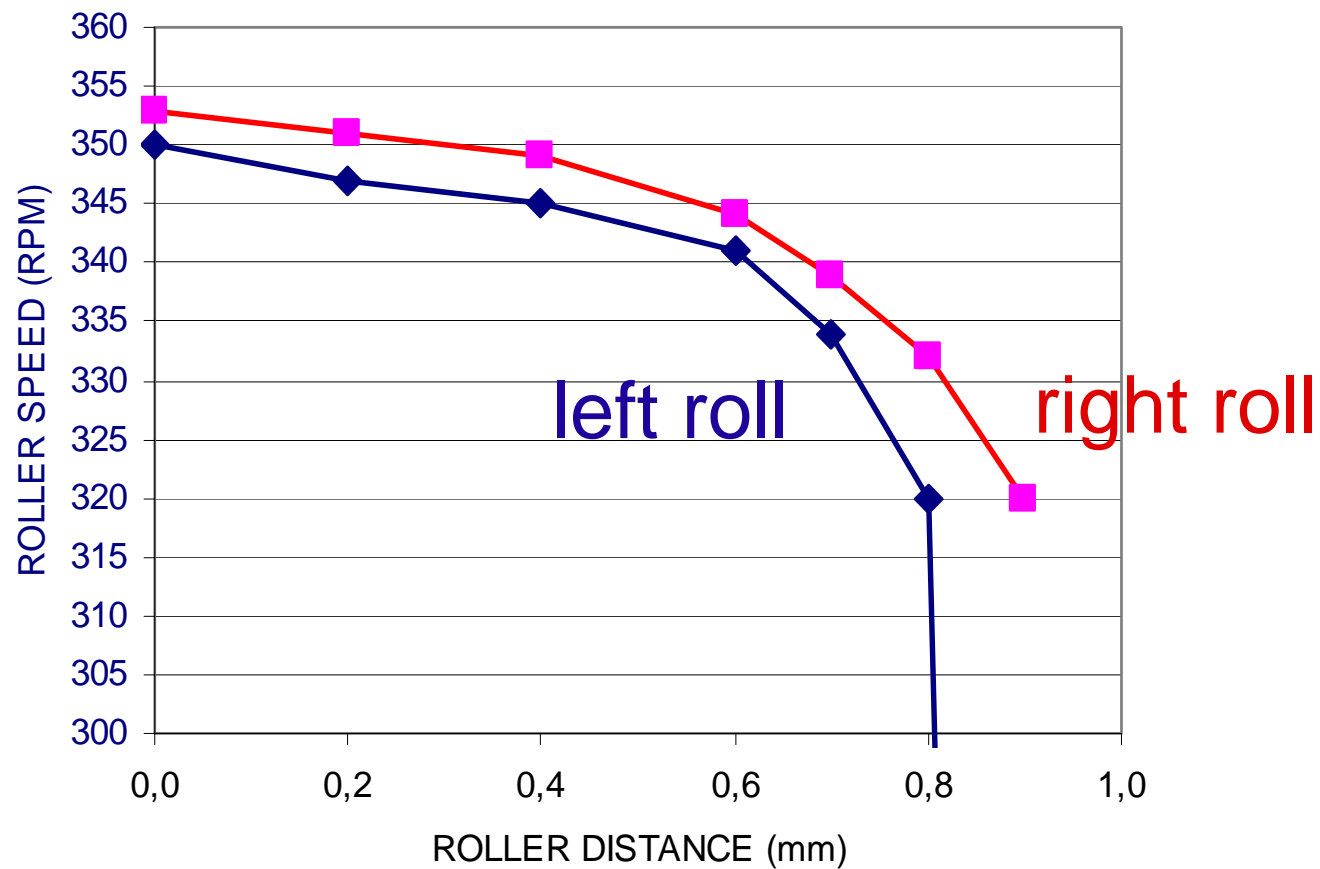


- Increasing conditioning temperatures (moisture)
- Increasing feed rate
- Increasing distance between roll and die

What is the relation between roll speed and conditioning temperature?

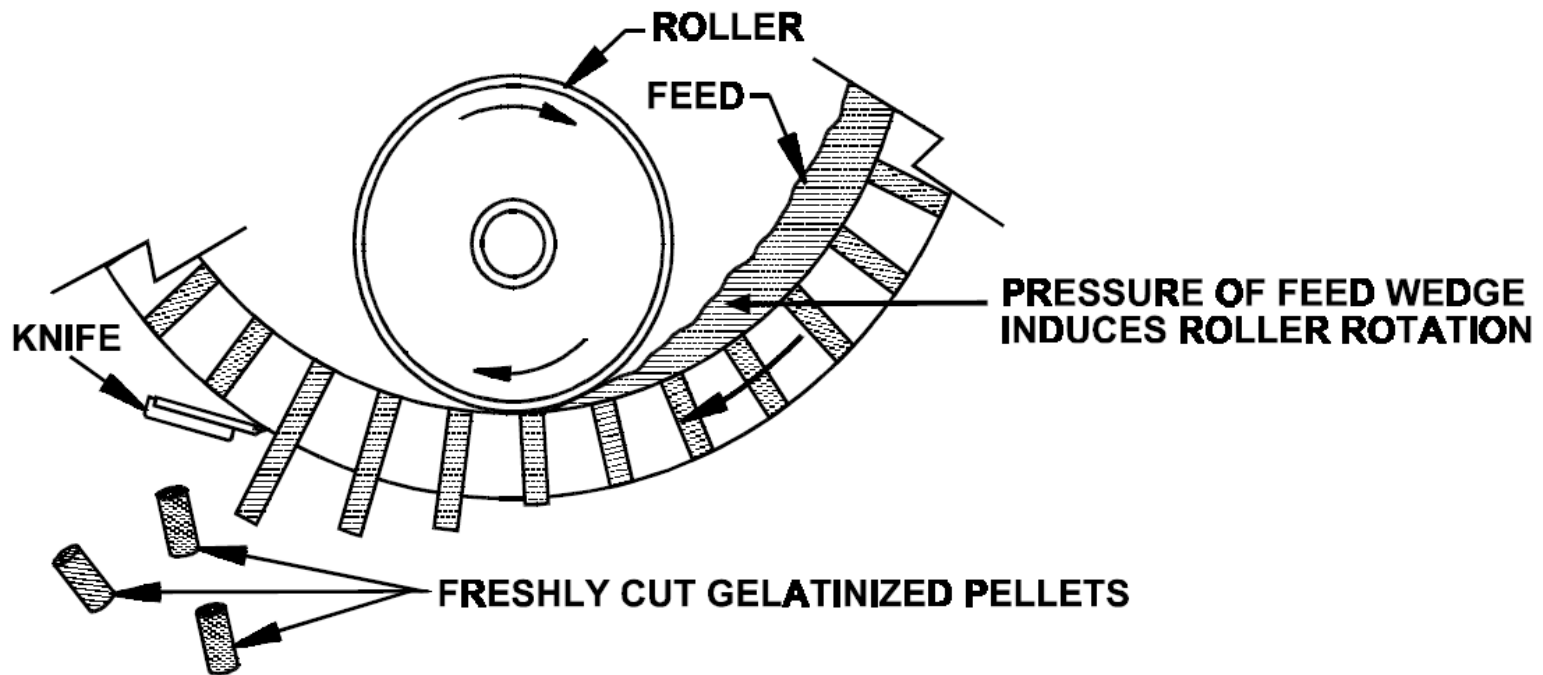


What is the relation between roll speed and roller distance?



What is a variable die specification?

Increasing die resistance by pre compression



0000000000

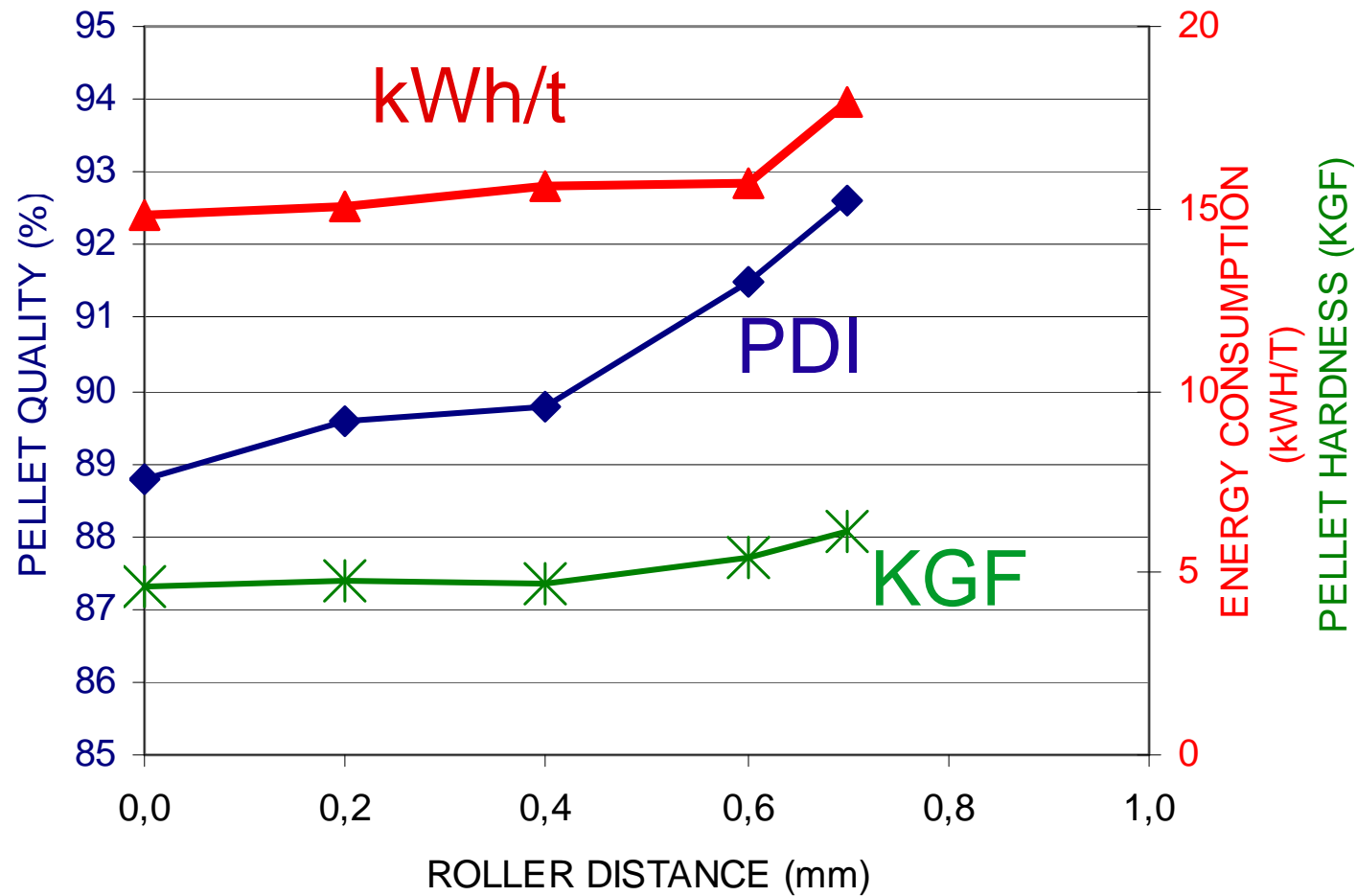


What is a variable die specification?

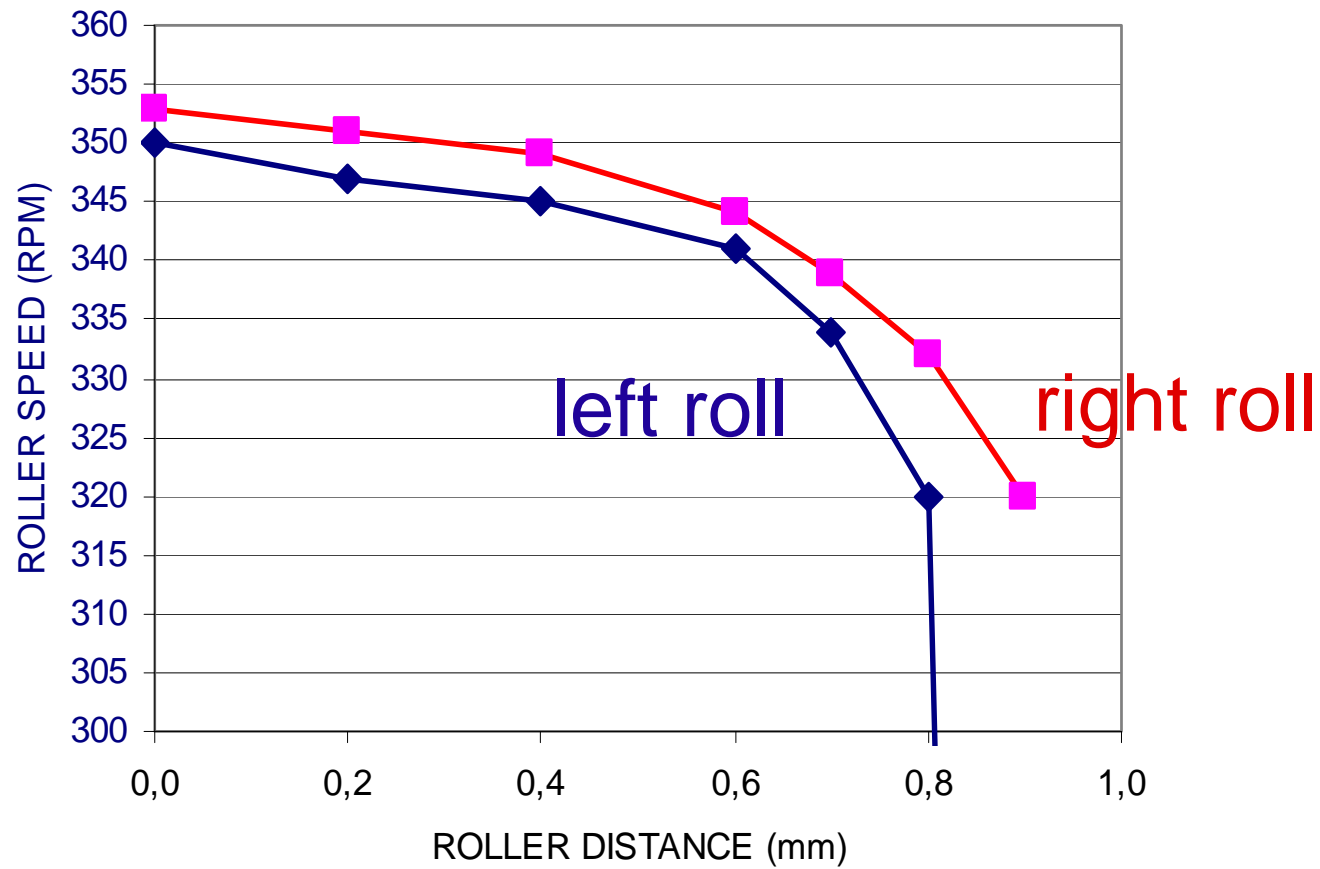
Increasing die resistance by pre compression using the CPM Lineator



What is a variable die specification?



What is the relation between roll speed and roller distance?



What are the advantages of roll speed measurement with lineator?

“Zero” position both rolls
Increase pellet mill capacity/output/shift hour
Optimize steam addition with each formula
Optimize pellet quality by pre compression.
Increase pellet mill stability and control
Increase service life of dies.

-- It is an ABS system for Pellet Mills --



How does roll speed measurement work?

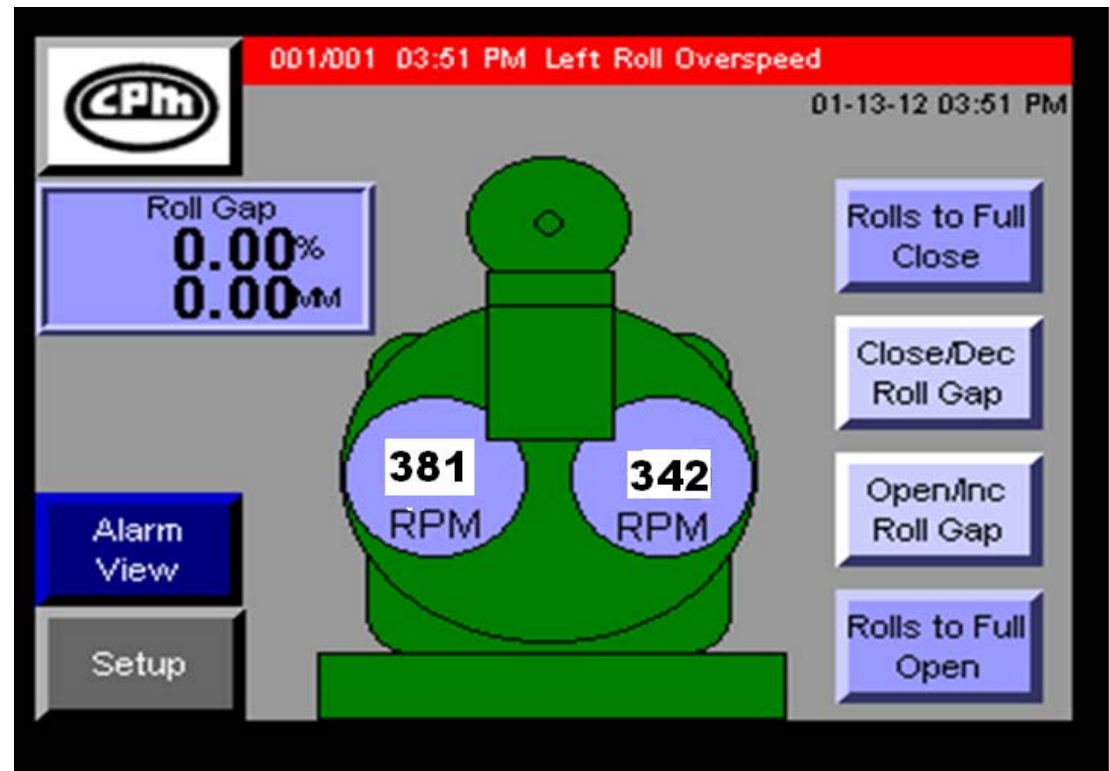
Rollers with magnet ring and Main shaft with sensors:(MS drilled for added wires)





How Does Roll Speed Measurement Work?

Remote panel readout with lineator control



Summary

- Goal is net tons/shift of good quality pellets
- Conditioning, formulas, die spec's, etc. are all major components on optimizing pellet quality and capacity
- Roll Speed Measurement along with the lineator is another tool to further optimize pellet mill performance and feed mill production



Productivity

Pelleting with roll speed
measurement for
optimizing production

Thank You

Phil Wellhausen
California Pellet Mill
Crawfordsville IN 47933
800-428-0846
wellhausenp@cpmroskamp.com

