Strip profile and flatness seminar course

1. Basic features of strip crown in conventional 4-high mill
   a. Strip crown transient through one rolling campaign in general product-mix
   b. Strip crown transient through one rolling campaign in narrow width product such as tin plate black coil
   c. Concept of body crown and edge drop (feather edge)
   d. General strip crown behavior by strip width
   e. General strip crown behavior by thickness
   f. General strip crown behavior by deformation resistance
   g. Influence of each stands to delivery strip crown
   h. Roll thermal crown
   i. Roll wear
   j. Influence of BUR wear
   k. Rougher WR crown, transient of entry sheet bar crown and its influence to finisher stands
   l. WR crown line-up in conventional 4-high mill
   m. Edge build up and high spot
   n. Influence of hot strip crown to cold strip crown

2. Basic features of strip flatness
   a. Intuitive knowledge on flatness change
   b. Flatness sensitivity by thickness and width
   c. Influence of crown change to strip flatness
   d. Influence of each stands to delivery strip flatness
   e. Influence of ROT and coiling to strip flatness
   f. Capability of skin pass mill to flatness
   g. Influence of entry strip flatness to the delivery flatness at cold rolling mill

3. Practical ways to control strip crown, or how to use roll crowning, in conventional 4-high mill
   a. Reduction of strip crown by taper work roll
   b. Reduction of strip crown with big BUR crown
   c. Special roll crown for tin plate black coil
   e. Other introduced ideas by engineers before the installation of crown control devices

4. Introduction of crown control device to HSM finisher stands
   a. Strong WR bender
   b. Work roll shifting with CVC-type roll crown
   c. Work roll shifting with one-sided taper roll crown
   e. Work roll shifting to prevent edge build-up and high spot
   f. Work roll shifting to produce optimal profile for tin plate black coil with minimum tolerance
   d. Pair-cross Mill

5. Strip crown calculation
   a. Explanation of basic concept
   b. Roll deformation model by "the strip crown under uniform pressure"
   c. Strip deformation model by "Crown-ratio heredity coefficient" and "Imprinting ratio"

6. Strip flatness calculation
   a. Old theory of strip flatness
   b. New theory of strip flatness
c. Flatness calculation by "Flatness disturbance coefficient"

7. Combined calculation of strip crown and flatness for 7 stands finisher
   a. Combined calculation formula to calculate strip crown and flatness
   b. Examples of calculation

8. Principle of crown-flatness set-up
   a. General way of crown-flatness set-up
   b. Crown-flatness set-up considering light gauge rolling
   c. Crown-flatness set-up considering width change at finisher

9. Profile defects: Causes and countermeasures
   a. Big crown
   b. Wedge
   c. Edge build up
   d. High spot