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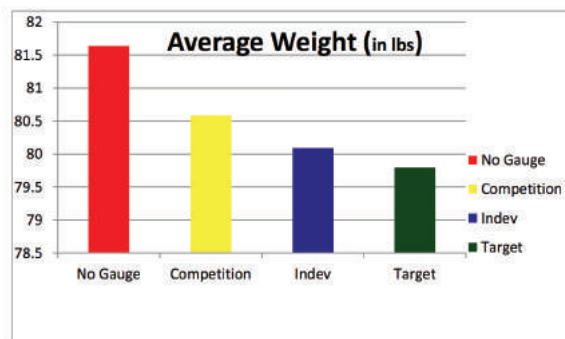
An Indev Building Product Case Study



In 2013 Indev launched the “Shingle Master” Basis Weight Measurement System specifically designed for the roofing industry. Over the past 20 years Indev’s measurement systems have been installed in different facilities given a unique perspective of data accumulation from plants with no gauge systems, plants with a well-known competitive system and facilities that have been using the Shingle Master on the line shortly after the hot asphalt coating operation.

Initial justification on the gauges nearly always came based upon standard deviation improvement of the final bundle weights relating back to asphalt and energy savings due to coating improvements. This case study looks at variation without a gauge, variation with a competitive gauge and variation from the Indev gauge. Following variation improvements, a generalization of cost savings is made based on yield improvements based on shingle asphalt percentage and the cost of asphalt. Energy savings are not included in the numbers below but would certainly add to the justification as well. The case study is not based on the improvement of one plant but based on data from several shingle companies and several individual plants so as not to divulge competitive information.

The first result looks at the average bundle weight in pounds vs. the target weight of 79.8#s. Bundle weights were higher without a gauge as operators compensate high to avoid underweights . These results can be seen in the graph below:



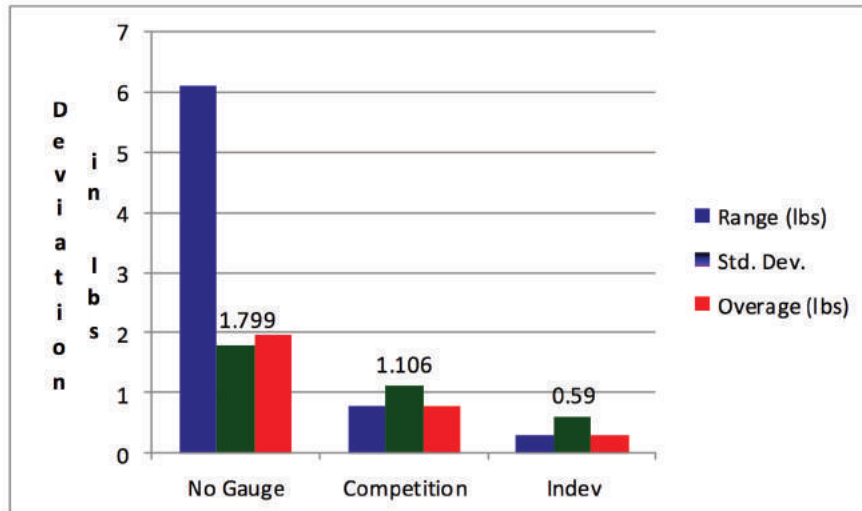
5235 - 26th Ave Rockford, IL 61109 PHONE: 815.282.4463 FAX: 815.282.4797

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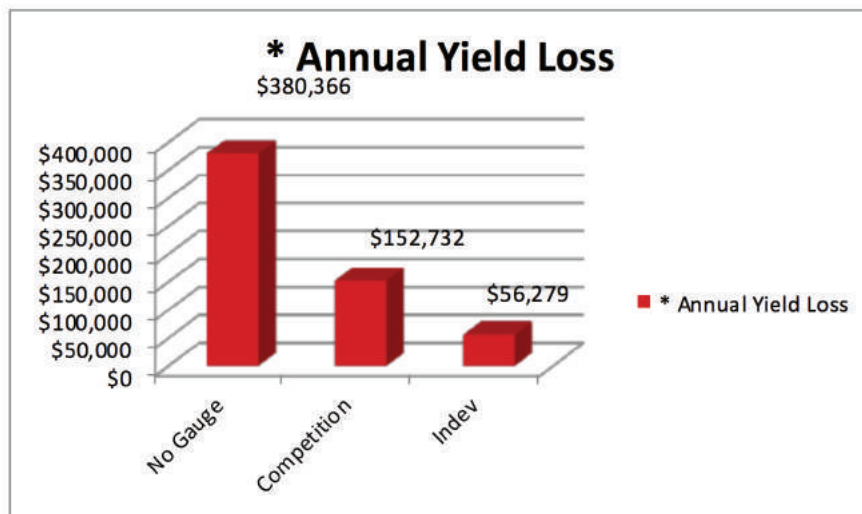
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The second graph shows the standard deviation of the bundle weights taken from 30 points with 3 separate production runs:



The final graph shows an estimated yield savings based on shingle volume, average percent of asphalt per shingle, cost of asphalt and overage due to higher bundle standard deviations. Labor, maintenance and energy costs to manufacture the overages are not included.



* Based on 275 production days, 22% asphalt to shingle ratio, bundle overage and current cost of asphalt

What was discovered was the Indev Shingle Master produced a 4 Month ROI. Aside from the yield savings, also significant was the ability to tighten the control limits allowing the target to be reduced resulting in better quality and even more overall yield and energy savings. Other improvements were with Indev's temperature compensated honeycomb detector built directly into the C-Frame improving flutter stability while reducing the overall size of the gauge.

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