Components for which systems are available

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# Elscint Ahead

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## Feeding In The Latest . . .

Monish Shete

Good Morning!

Wish you a very happy and prosperous new year 2010! Just a year back, everything seemed gloomy but in just about a year, things seem to be changed drastically as more and more economies come out of recession. India along with China seems to be leading the way! However, what is worrisome is the price rise, especially of food items. It will have repercussions in all walks of life, very soon. In case you are thinking of ordering new vibratory feeders, I would suggest that you take action immediate to avoid the expected future price increases and increased delivery schedules.

Coming to this edition of Elscint Ahead, the first news is about a recently supplied bowl feeder while the next one is technical information about leaf springs. It is very important to have the correct type of springs in order to get the best results from your vibratory feeder. Read more about it in the second news story.

## Elscint Vibratory Bowl Feeder for Sintered Parts

Elscint recently manufactured a special type of vibratory bowl feeder for feeding of sintered parts. There were a total of three parts which needed to be fed through a single bowl feeder. Two of the parts were having a collar with the weight towards the bottom, making them easy to orient but the third and the most critical component was a tube type component which needed “standing” orientation but the weight was towards the top side, thus making it very difficult to orient. However, Elscint fulfilled this requirement and even arranged commissioning of the equipment at the customer’s place, proving all the three parts on the customer’s press. Along with the bowl feeder, Elscint provided a cubical stand, gravity chute, noise enclosure, Elsinthane coating for the bowl and a level controller for indication once the quantity of components in the bowl goes down. A speed of 80 pieces per minute was achieved for all these three components with very nominal and easy changeover tooling.


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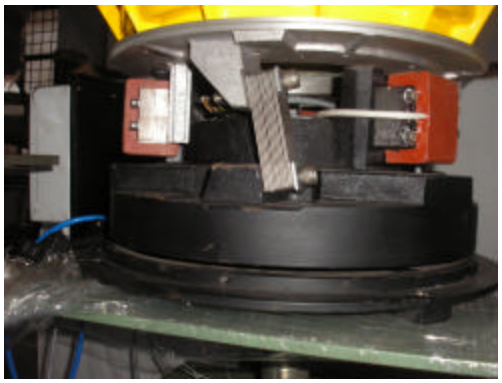

# Leaf Springs for Vibrators

Flat leaf springs used in vibratory feeders are subject to very high bending forces in a single plane. They must withstand high fatigue conditions as they are expected to deflect many millions of times during their lifetime. Springs of vibratory feeders deflect more than five million times a day in certain cases. Due to this, they need to be made of the correct material as should have high fatigue strength. The speed and performance of a vibratory feeder in many cases depends upon its springs. They need to have the correct length and width as well as thickness. In case the length is more, the chances of breakage increase. In case the width is more, the performance is affected, while in case of lesser width, the chances of breakage increase manifold. Similarly, in case of very less thickness, the springs break a lot while higher thickness will result in lesser vibrations and lesser speed for the vibratory feeders. Usually, leaf springs of vibrators are made of either spring steel or fibre or composite material. There are various advantages and disadvantages of using either of these.

The properties of Spring Steel and Composite Springs are given in the following table -

| Property | Spring Steel | Composite Spring Units | |
|---|---|---|---|
| Flexural Strength | 932 | 760 | MPa |
| Flexural Modulus | 28 | 22 | GPa |
| Tensile Strength | 800 | 480 | MPa |
| Tensile Modulus | 33 | 23 | GPa |
| Compressive Strength At 0 degrees | 724 | 690 | MPa |
| Compressive Strength At 90 degrees | 315 | 690 | MPa |
| Maximum Stress for Infinite Fatigue life | 138 | 100 | MPa |
| Thermal Conductivity | 0.34 | 0.34 | W/M K |

In this table, it is assumed that the correct type of processes have been undertaken on spring steel. As can be seen, spring steel springs are more effective in all respects vis a vis composite or fibre springs. Price of spring steel springs is almost 20% of that of composite springs. Additionally, one needs double the total thickness of composite springs as compared to spring steel springs, further increasing the cost.

If the spring steel springs are so effective, then why do some manufacturers still use composite springs? This is a good question. The answer is that in case of half wave bowl feeders, spring steel springs are of lesser thickness and that too only a few are required. This increases the stress on the springs and they break quite often (even once a day!). Hence, in such cases, composite springs are used in order to increase the thickness and reduce breakage. Moreover, in case of full wave bowl feeders, the springs are in a bunch and the stress on them is very less. This reduces their chances of breakage. Hence, to sum up, springs steel springs are the best for vibratory feeders.

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