

Technical Bulletin 108

Using BEPc Encoders with Measuring Wheels

One of the most common applications utilizing an Encoder involves mounting either one or two measuring wheels on the shaft to obtain linear distance. A major drawback to this is that the material being measured must be wider than the distance between the two wheels.

A few of pointers to consider when using measuring wheels are as follows:

1. Do not try to attempt to obtain greater than .010" resolution with a measuring wheel. It may be possible to do this on paper, but in the real world, tolerances are involved. Please keep in mind that the wheel material will expand and contract with temperature variations. Also keep in mind that the wheels do wear down with usage. Accurate alignment must be used to attempt this fine resolution, as any miss-alignment will cause the wheel to skid. This may not be apparent to the eye, but if your measurements are not coming out as expected, this is one of the most often causes.

2. Be sure that you have selected the proper type of wheel. British Encoder Products has a minimum requirement for any application such as this. Allowance must be made for materials of varying thickness passing over or under the wheel. If the Encoder is mounted firmly and material that is too thick should pass through, something has to give. If the material is soft enough, it will be squashed and spoiled product usually is the result. If the product does not squash, something else has to give. This will usually be the shaft either bending or breaking off. This will also destroy the bearings in a short time. Most often, just the weight of the Encoder along with the wheel(s), connecting cable, mount, etc. is sufficient to provide optimum tracking friction. If it doesn't, weights or springs can be CAREFULLY added until proper tracking is achieved. However, always use the very minimum force necessary to accomplish the job.

4. Do not attempt to run the wheel too fast. The wheels are good for around 3600 to 4000 RPM, which translates into 3600 to 4000 linear feet of travel per minute. At these elevated speeds, counting accuracy is often compromised. This is because if the wheel is moving that fast and the slightest thing upset's it, the ensuing bounce period will account for many lost counts. Also, again remember that the bearing life of the Encoder is adversely affected by higher rotational speeds combined with excessive amounts of radial and axial shaft loading. If the wheel(s) are not in perfect tracking alignment with the material being measured, an axial force is impressed on the shaft and bearings. This axial force, combined with high rotational speeds will cause premature wear of the

