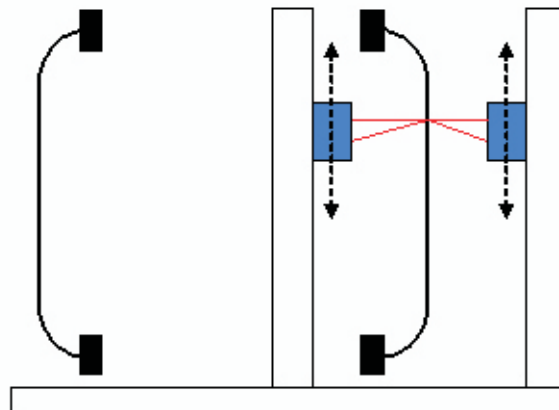


SLS Sensor System for bladder profiling

An SLS Sensor System is proposed, based on laser triangulation sensors, for offline measurement of the wall thickness of rubber bladders.

The measurement system comprises two SLS laser spot sensors, one positioned to measure the inner bladder wall and the other positioned to measure the outer bladder wall. Both sensors index vertically with encoder feedback in order to measure the bladder wall thickness along its entire length. The application software package records all the thickness measurements, eliminates sources of measurement error and constructs a “bead to bead” profile of the bladder to ensure wall thickness and conicity (symmetry about the mid plane) is within tolerance.

The measurement system from Sigmapvision / Orbital will be integrated into the transport mechanism that is responsible for indexing the sensors vertically on linear slides with encoder feedback. A rotating table will allow the bladder wall thickness to be profiled in several positions around its circumference.



The Measurement Controller will output OK / Not OK messages after each measurement cycle using a TFT display. Data reporting software is provided to summarise results graphically including:

- Actual bead to bead profile compared to programmed template
- Deviations from programmed tolerance limits

System performance

- | | |
|--------------------------------------|------------------------------------|
| ▪ Bladder size range | 200mm x 250mm to 49" x 72" (W x H) |
| ▪ Bladder wall thickness | 3-20mm |
| ▪ Measurement accuracy | <0.01mm |
| ▪ Measurement repeatability | <0.01mm |
| ▪ Measurement cycle time per bladder | <1 minute |