

**Application:** Building tilt, measurement noise

**Kemo Filter used:**

DR 1200/1Hz/41 Low Pass

Example of how external environment can cause noise in signals or cause spurious sensor responses.



**Application:**

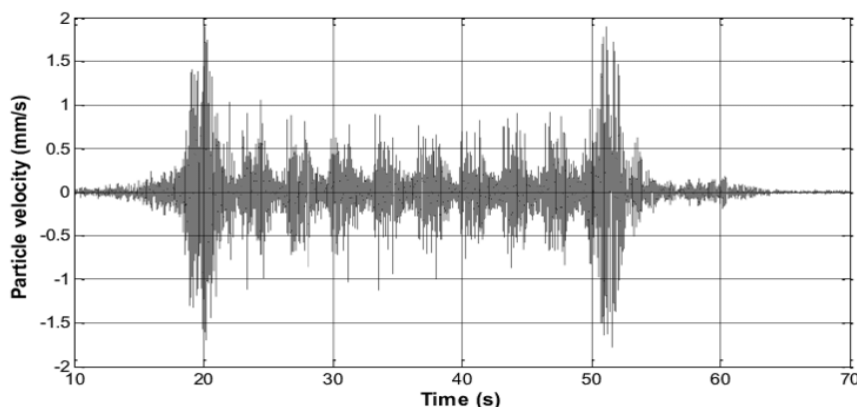
Kemo was contacted by a company monitoring building tilt on a high rise office building in a European city (for interest this was not actually the leaning tower of Pisa, we just liked the picture).

**Method applied:**

The building was fitted with tilt sensors to monitor movement caused by environmental conditions, this was for safety and structural reasons. The sensors were connected to a DC monitoring system and a low sample rate was used to sample the sensor outputs. The monitoring company noticed a high number of tilt readings that did not apparently coincide with any wind or other environmental effect.

**Investigation:**

After some investigation it was discovered that the building sensors were responding to the vibrations caused by trains travelling on the nearby line. The vibrations were sufficient to cause the building to 'wobble' which in turn caused the tilt sensors to trigger.



Time history recording taken in vicinity of train

**Conclusion:**

The answer was to use a DR 1200/1Hz/41 Low Pass filter.