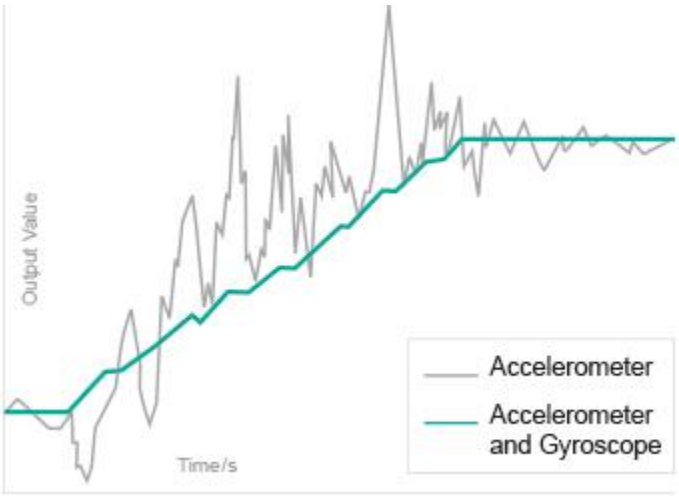
Dynamic Inclinometer

For applications where sudden movements, shocks and vibrations are likely to be encountered, it is important to have sensors with fast response and a clean signal output. POSITAL's dynamic inclinometers combine two measurement principles using two different MEMS sensors: a 3D acceleration sensor and a 3D gyroscope. The 3D acceleration sensor is not damped (unlike the units used in static inclinometers) and can follow rapid dynamic motions. At the same time, the 3D gyroscope measures rotational speeds, based on inertia principles. Signals from the accelerometers and gyroscopes are combined to produce an inclination measurement that fully compensates the effects of accelerations. As a result, dynamic TILTIX inclinometers can be used reliably on mobile equipment such as construction machinery, mining equipment, cranes or in robotic applications.

The diagram below compares the performance of a dynamic inclinometer with integrated gyroscope with the output from a conventional static inclinometer when both instruments are subjected to dynamic movements that involved heavy shocks and vibrations.

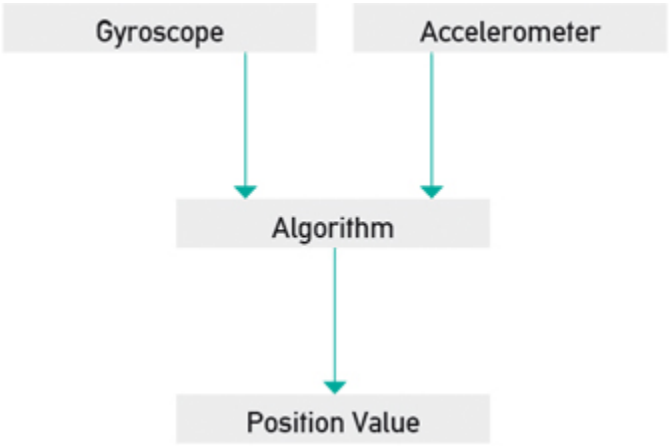
Tilt Measurement on a Moving Excavator



Adapted from: https://www.posital.com/en/products/inclinometers/mems/MEMS-Technology.php

Innovative Algorithm for Reliable Results

The accelerometer measures the tilt position, while the gyroscope determines the rate of rotation. Accelerations have a huge impact on the accelerometer, but a limited effect on the measured rotation rates of the gyroscope. An innovative algorithm combines both signals, to get the best value out of each sensor. This way the sensor is able to separate the actual position value from the errors introduced by external accelerations.



About Everight Position

Everight Position is an Advanced Sales Partner for POSITAL rotary encoders, linear sensors and inclinometers in the USA and Canada. By working with customers to better understand their application and sensor needs, Everight is able to offer novel and economical sensor solutions. We also serve as a liaison between our customers and vendors to help create custom sensor solutions. To learn more please refer to the links below or contact us directly.

Application Note: Inclinometers used in dredging clamshells (link)
Dynamic Inclinometer Information (link)

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