

## Torque Measurement with Vibration Feedback Control

**Application:** Force Measurement

**Industry Sector(s):** Chemical

### The Customer

The customer is a major international company that manufactures centrifuges for separating, dewatering and processing chemicals.

### Customer Inquiry

The customer needed a solution for measuring and controlling the machine vibrations “chatter”. The “chatter” measurement is used as feedback parameter to control the rate of material fed into the centrifuge. Excessive chatter reduces the useful life of the machine and can lead to serious damage.

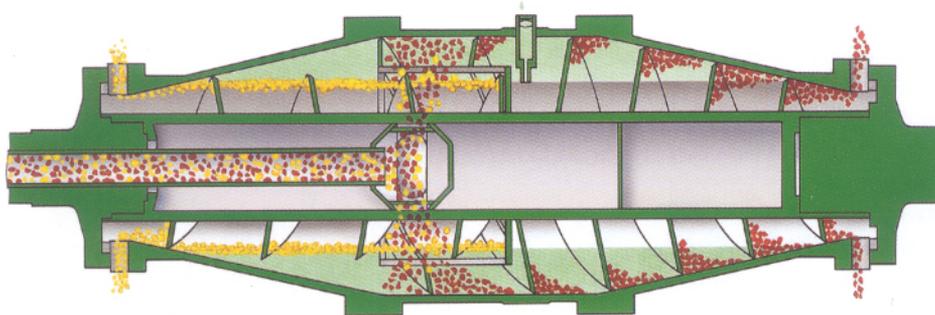


Figure 1: Sorting Centrifuge (image: © ANDRITZ)

### Solutions and Equipment

The existing torque sensor was strain gage based, so it was 100% compatible with model G4 instrument. The G4 modular construction allows it to be easily customized for each application, in this case a dual channel High Speed (800 updates / second) input card was selected. Custom software was produced to simultaneously provide two control output signals (4-20 mA). The first output (torque) is filtered and provides the set-point for the drive motor. The second output (chatter) is derived from continuous measurement of the torque sensor fluctuations (peaks and valleys) and is used to control the flow of material into the centrifuge. The special G4 software measures the difference between peaks and valleys and calculates a “floating” mean value that represents the chatter magnitude. A scaled output (0% to 100%) represents the chatter value, with the 100% value corresponding to a fixed percentage of the torque sensor maximum output. The output is available in both formats; analog (4-20 mA/0-10V) and digital (Modbus RTU).

### **Customer Comments**

Accurate and synchronized measurement of the torque and chatter are critical to controlling the process and preventing catastrophic damage to the machine.

***“The power and flexibility of the G4 enables the separate control functions (torque and chatter) to be performed by one instrument.”***

### **Contact Information**

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