Liner wear sensor design

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In the mineral processing industry, tumbling mills are used in the size reduction or comminution of ore to a target size distribution. The tumbling mill environment is characterised by frequent and violent interactions all of which are associated with wear either of the steel media or the mill liners. Liner profiles are monitored periodically using manual measurements. In this paper, the design and development of a liner wear sensor is investigated. The thin-film sensor operates within a mill, measuring liner wear while protecting the shell. Also, it is designed to avoid failure modes due to the operating environment. A prototype sensor was built and tested in dry and wet laboratory conditions. The results of the grind test show the feasibility of using the sensor in an industrial machine.