

MagCorr II

- ❑ *The MagCorrII provides a rapid determination of magnetic material content of a sample without resorting to expensive and time-consuming X-ray diffraction, wet chemistry, or weight/volume determinations.*
- ❑ *The MagCorrII can accommodate multiple calibration curves; it can be factory calibrated, then user calibrated to provide maximum accuracy*
- ❑ *The MagCorrII can operate in a stand-alone mode, or be connected to a user's computer or network for data transfer of multiple readings.*
- ❑ *The MagCorrII is designed to take advantage of current digital processing technology. It provides maximum readout stability at all times with most feasibly attainable accuracy and resolution for the sample being processed. Accuracy is +/- 1%, and repeatability is <+/- 0.25% according to procedures used in sample preparation.*
- ❑ *The MagCorrII works on the principle of magnetic coupling. The sample is placed in a specially designed sample coil. A calculated voltage is applied to the coil, and the subsequent value of the voltage induced through the sample is representative of the amount of magnetic material in the sample.*



Harrison R. Cooper Systems

FOR AVAILABILITY, & ADDITIONAL INFORMATION – CONTACT:

Harrison R. Cooper (801) 295-2345
sales@hrcoSystems.com
Salt Lake City, UT, USA

MagCorr II

MAGNETIC MATERIAL ANALYZER



- *Rapid Magnetic Material determination (< 10 seconds)*
- *Range 0-100% Magnetic Material content by volume*
- *Laboratory Grade accuracy (+/- 1.0% {2 sd} Accuracy; +/- 0.25% Repeatability)*
- *User defined calibration (Up to 16 calibrations accommodated)*
- *Crushed (<= 150 microns) or solid dry samples*
- *Rugged light weight construction (<7lbs) (Can be moved from location to location)*
- *Digital Computer Interface (USB – RS485)*
- *Operates on 90 to 230 VAC; 50 – 60 Hz*
- *Operating temp. 0-40°C, <98% rel humidity*

Purpose: The **MagCorrII** is designed to rapidly measure the magnetic properties of any material being tested. It can store multiple calibrations enabling its use on many different material types. It will give maximum resolution for each of the calibrations selected. It has the ability to use vendor supplied calibration equations, as well as customer supplied calibrations. As a full range of plant samples are collected in the field, the user can construct a calibration equation that matches these samples exactly.

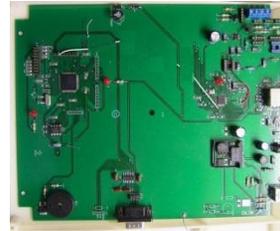
Sample Presentation: Either a solid or powdered sample is placed in the sample holder, and an immediate analysis is available. Once setup, there are no adjustments or settings to be changed, the analysis is instantaneous.



Analyzer Use: The **MagCorrII** has a user-friendly operating menu with selections for compaction, analysis, calibration, trends, and data collection / storage. The analyses data and the calibrations used to calculate those data are available for user computer access.

Method of Analysis: The **MagCorrII** utilizes the principle of magnetic coupling. The sample is placed in a specially designed Sample Holder. A calculated voltage is applied to the Sample Holder coil, and the subsequent voltage induced through the sample represents the quantitative amount of magnetic material in the sample. The measured voltage is converted to digital form and stored in the instrument as the "raw count" value. This value is then converted to % Magnetic Material based on the calibration equation selected.

Processing Electronics: The **MagCorrII** utilizes state of the art electronics and touch screen technology. It is a digital device designed to take advantage of current digital processing techniques to provide maximum readout stability at all times and also the greatest possible accuracy and resolution for every sample processed. Each **MagCorrII** is calibrated for its own unique characteristics, as well as the characteristics of the customer's Magnetic Material samples.



Calibration: Third order polynomial calibration equations of the form $A + BX + CX^2 + DX^3$ are the basic calibration equations utilized in the **MagCorrII**. Limited other calibration equations can be entered by the user. Initial calibration provided by HRCS is based on manufactured samples; this is used for primary setup of a **MagCorrII**. After initial setup, the **MagCorrII** is usually calibrated to correspond to the customer's unique material type based on samples supplied by the customer. Multiple calibrations can be supplied based on customer-supplied samples. This approach provides the versatility to enable a single **MagCorrII** to be used for multiple material types. Sample analysis is a rapid procedure once calibration of the unit has been initially completed. However consistent sample collection and preparation are essential for accuracy and repeatability.



Factors Affecting Accuracy: Each of the following factors will affect the accuracy and repeatability of analyses:

- 1 Consistency of sample size for solid samples.
- 2 Particle size of the material in crushed samples affects packing density and non-linearly affects the measurement.
- 3 Sample compaction also affects packing density, and will indirectly affect the measurement.
- 4 Mineralogy affects the measurement; this is particularly true of the varying presence of multiple magnetic compounds other than Iron-based compounds.
- 5 When working with smelter slag samples, the cooling practice used in preparing the sample can directly affect the reading.
- 6 In all situations, if consistent sample preparation practices are followed, then consistent results can be expected.

Sample preparation: Sample preparation is the most time consuming and critical part of an analysis. For the **MagCorrII**, recommended sample preparation of crushed samples consists of crushing, grinding, screening, and then compacting the sample. Although each sample preparation step is critical and requires consistency, sample compaction is one of the most critical steps in the process. In order to provide consistency of analyses, the compaction must be done the same way on each and every sample. For this reason the **MagCorrII** is supplied with a Drop-Tube Compactor. However, by special order, it can be supplied with an integral vibrating compactor. The integral vibrating compactor takes longer for overall sample analysis, and is only designed for intermittent use. The Drop-Tube Compactor is a simple device that can provide consistent compaction from operator to operator. Consistent compaction from sample to sample is necessary to achieve quoted accuracy and repeatability values. Once selected, the same compaction method should be used consistently for each type of sample being measured.