

**Application Note:**

# On-Line Monitoring of Water in Ethylene Glycols with a ClearView® db Photometer

**Purpose:** To determine water content in ethylene glycol (EG) without sample temperature control.

**Experimental:** Our NIR Lab412 spectrometer was used to measure the NIR spectra of 0 to 100% water in EG in the 18-43°C temperature range using a 10 mm pathlength SST probe. The resulting data were then used to define the wavelengths for our on-line process photometer.

**Results:** The resulting spectra are shown in Figure 1 for 5 concentrations ranging from 0-100% water in EG, each at 20, 25, 30, 35, 40 and 45°C. A multiple linear regression was performed, see Figure 2. Excellent linearity ( $R^2 > .9999$ ) is achieved using 4 wavelengths in the range tested showing data at all temperatures.

**Conclusions:** Our low cost ClearView db photometer with 4 filters can be used to determine water from 0-100% in ethylene glycol using a 10 mm optical path insertion probe, or a flow cell (for a slip stream) on-line. The ClearView db can be configured with 4-20 mA analog outputs (6 answers max on a single channel system, and 4 per channel on a dual channel system) and corresponding contact closure outputs to alert error states. Modbus communication over Ethernet is also standard.

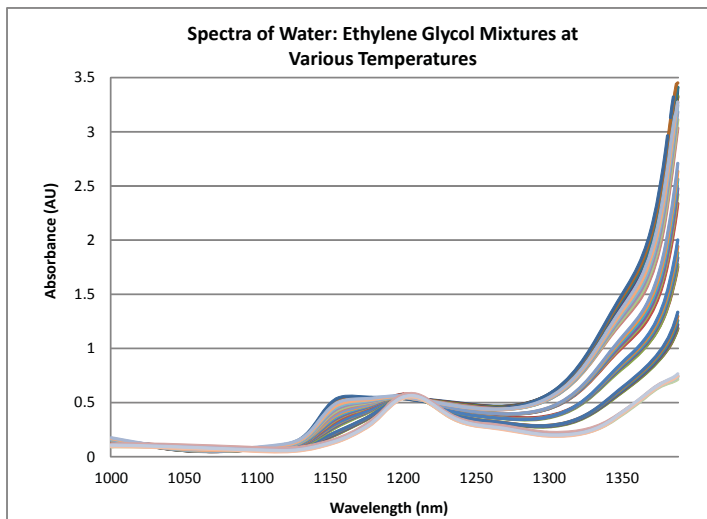


Figure 1

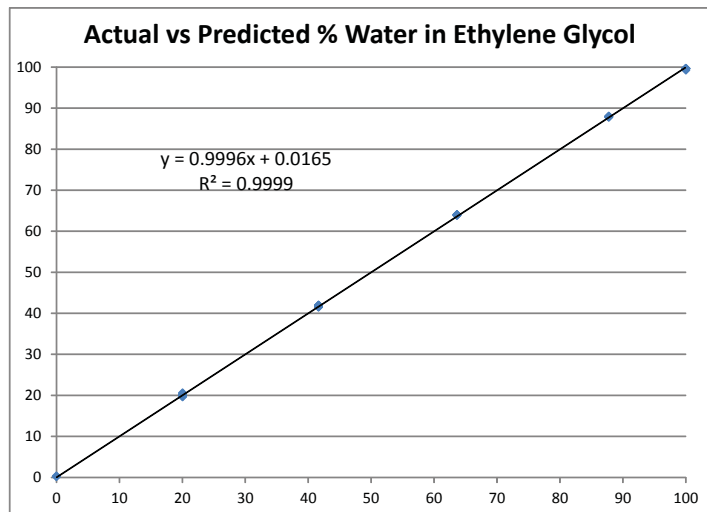


Figure 2

**ClearView® db Enclosure Options**



Z-purge Unit  
Class I, Division 2

ExProof Unit  
Class I, Division 1

General Purpose Unit