

## MEDIUM VOLTAGE CIRCUIT BREAKERS AND CONTACTORS ARE NOT THE SAME – NEITHER ARE THEIR PROTECTION METHODS

~ *John A Kay (Consultant)*

~ *Lorraine K Padden (Padden Engineering)*

~ *David C Mazur PhD (Rockwell Automation)*

Many standards and specifications, related to medium voltage (MV) motor and feeder circuits, continue to center around the generic use of the IEEE Device #52 as a circuit identifier for the switching device used within various points of power systems. IEEE Device #52 is defined as a device that is used to close and interrupt an ac power circuit under normal conditions or to interrupt this circuit under fault or emergency conditions. Many of the present standards include detailed protection and coordination recommendations that are centered only on the protective and control settings for circuit breakers. Some of these recommended protective settings can be detrimental to medium voltage vacuum contactors when used in place of more costly ac circuit breakers. The ability to interrupt a circuit under fault conditions, such as in motor and feeder applications, must be considered differently between MV circuit breakers versus MV contactors. This paper will outline some key differences between MV contactors and MV circuit breaker ratings. We will compare the appropriate protection variations and requirements between the two devices and highlight the dangers to personnel and equipment when assuming that an MV vacuum contactor can provide the same performance and use the same protective settings as those needed by a medium voltage circuit breaker.