Putting the Human into the Design
Agenda

- Introduction
- Removing barriers to improve safety
- Implementing Change
- Looking down the road
Introduction

- Phönix Elektrizitätsgesellschaft (Phoenix Electricity Company) founded 1923
- 1928: The first modular terminal block developed for RWE (Rhine-Westphalia Electricity Works)
- Today, Phoenix Contact is the world leader in Industrial Connection Technologies
- Manufacturing on 3 continents with 50 subsidiaries and 14,500 employees worldwide.
Removing Barriers to Improve Safety and Reliability

- 36% of non-fatal injuries are the result of contact with wiring, transformers, or other electrical components

- Human performance and workforce capability directly impact overall reliability
  - Unintentional contact (hardware or tools)
  - Improper torque values
  - Poor/Incorrect labeling
  - Wiring Errors
Removing Barriers to Improve Safety and Reliability

- Barrier-style ring lug terminals have been the defacto standard in the US electric utility industry since the 1950s
- 66/110 punch down style blocks utilized in specialized communication applications
- Some screw clamp terminals
Implementing Change

- First and foremost are industry standards.
  - ANSI/UL 60947-7-1/IEC60947
  - These standards do not guarantee operator safety or system reliability!
- What can we do?
Implementing Change

- What are the customer needs/requirements?
  - Isolation to prevent unintentional contact during testing or service
  - Clear labeling?
  - Test/Meter Point?
  - Clear method of safely shorting a CT?
Implementing Change

Simple installation

Space savings

Clear marking

Time savings

Reduction of inventory
Implementing Change

- Clear Labeling
- Dual jumper channel for accessories
- Protective Cover
- Captive Hardware
- Designed for Ring Lug Applications.

Putting the Human into the Design
Implementing Change

Designing to accept Locking Ring.
Looking Down the Road

- What other areas can benefit from this process?
  - CT and VT testing and maintenance is extremely critical to the grid and involves a great deal of knowledge, experience and training.
- Can we design in aspects to a product that greatly reduce these latent factors?
Looking Down the Road

- Must fit within the established work area
- Utilize standard tool sizes
- Custom marking for clarity and improved operator communication
- Mirrored labeling to ensure proper wiring.
- Improved lockout features to prevent accidental operation during testing.
- Touch safe
Thank you!