

# TROUBLESHOOTING VARIABLE FREQUENCY DRIVES

## SIMULATION

**Troubleshooting Variable Frequency Drives (VFDs)** will give your professionals the knowledge and skills to troubleshoot VFDs safely, accurately and efficiently. The simulation comprises a basic sawmill operation in which VFDs control the saw and carriage motors.

Users will have the opportunity to diagnose and solve electro-mechanical faults and verify VFD operation.

### THE SIMULATION FEATURES

**Detailed 3D industrial environment illustrating a working sawmill**

**Two separate VFDs** running a 10 HP (7.5kW) saw motor and a 3HP (2.2 kW) carriage motor

Three modes of operation: **Auto-Return (AR)**, **Manual Return (MR)** and **Manual mode**

**Adaptive learning** that assesses users' skill level and customizes the program to the individual's performance

Detailed **3D environment**

**Printable resources**, including circuit diagrams, schematics, worksheets, system operation manual, and saw user's manual

**North American** and **International** versions





## Circuits

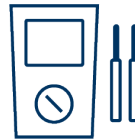
Your professionals will be exposed to troubleshooting faults in the Power circuit, AC Control circuit and the 24V VFD control circuit, using the schematic and wiring diagrams in the reference folder as well as the user and sawmill manuals available in the Help Menu.



## VFD Parameters

Your professionals will work with the operation keypad to view and/or change:

- Motor Parameters
- Ramp Parameters
- Volts/Hertz Parameters and
- Digital Parameters



## Troubleshooting Tools

Using the multimeter, trainees will take voltage, current and resistance measurements to test a wide range of faults involving shorts, opens, and component failures with all the devices and connecting wires.

In addition, the VFD fault codes displayed on the VFDs will assist in diagnosing faults.



## Solving Faults

Your professionals will face electrical, mechanical, and VFD failures. Users' performance solving faults is assessed and used to customize a path through the program, maximizing the quality of each user's learning experience. Each fault contains one or more of the following malfunctions:

- Incorrect motor parameters settings on the VFD
- VFD fault codes including oPi, oPo, oH and oL
- Motor problems including open windings, shorted windings and seized bearings
- Mechanical problems involving the saw and carriage assemblies
- Relay issues involving failed closed or failed open contacts as well as open and shorted coils
- Transformer issues such as open primary or secondary or high resistance on either winding
- Limits switches failed open, failed closed or shorted to ground
- Wiring issues such as loose connections, open wires and wires shorted to ground