HENRY FORD COLLEGE
Technology Investment Fund (TIF)
Application for Funding

This form and any attachments must be submitted electronically to the chairperson of the Technology Investment Committee by the published deadline date. (This application may be submitted as a document separate from the attachments.)

Please read the Outline of Approval Process and Expectations of Applicants/Project Directors on the last page, and check the box stating that you agree to the terms of the expectations.

Date of Application: 3/26/19	**Strategic Planning Initiative ID #:** 1860
Project Name: Classroom Technology Upgrade in E-230	**Total TIF Funds Requested:** $58,773
Project Director(s): Mark Siedlik & James Blair & Jim Anderson	**Department/Division/School:** ELEC. TECH/TAEL/IND. TECH./BEPD

Summary of Project
(Please limit to one paragraph.)

Purchase 11 Altec three-phase transformer bank simulators. This equipment will be used by Electrical Technology, Trade Electrical, and Mat2.

Detailed Description of Project

Describe your project as specifically as possible. What do you propose to do, and why do you propose to do this?

The Altec Transformer Simulator combines a physical wiring environment with powerful computer simulation of three-phase transformer banks. The simulator also has an HDMI connection allowing a projector to display demonstrations to a whole classroom.

Student Impact

How many unique students will be served each academic year (Fall through Summer) by your project? The term "unique students" refers to unduplicated headcount. Provide detail (course numbers; titles; and enrollments, for example).

With the recent transfer of the 58 students in Engineering Technology–Electrical program to the School of BEPD, the combined enrollment in the Electrical program is 258 students: 200 Electrical Technology plus 58 Engineering Technology-Electrical.
Trade-Electrical: approximately 250 students.
MAT2 student population in the fall: approximately 50 students.

Project Relevance to Technology Investment Committee Guidelines
(Address only those that apply.)

Explain how the project provides technology to multiple courses or programs.

See above. This equipment will be used in ELEC 145, TAEL 145, TAEL 290 High Voltage, TAEL 145 DTE Pre-apprentice, and ENT classes dealing with DTE substation operation.

Explain how the project introduces student access to technology where it has not been available.

The equipment allows students to experiment and learn from mistakes. The current equipment does not allow the introduction and troubleshooting of transformer faults.

Explain how the project promotes innovation.

James Blair and Mark Siedlik are writing new lab experiments for the courses they teach using the Altec trainers.

Explain how the project promotes curricular revision.

See above.

Explain how the project supports areas that have established themselves as leaders using technology.

HFC is the leader in Automation Controls and Instrumentation; that is where our students land high-paying jobs.

Are you pursuing additional funding sources? If so, what are they?

Most of our lab-fee budget is already used up by expendable supplies.

Project Budget

What will be purchased? (Include model numbers, if appropriate.) What is the cost? Include amounts that are committed from funds other than the Technology Investment Fund, and indicate the source of those other funds.

11 Altec three-phase transformer simulators. See brochure.

From where will funds for future maintenance needs, consumables, and such come?

None needed

Forward any support for your budget (quotes, for example) to the chairperson of the Technology Investment Committee, and indicate here what has been forwarded.

Quotation dated March 25, 2019
Brochure information about simulators

Rank your needs so that the Technology Investment Committee will have guidance should only partial funding be available to recommend.

The TIF Committee could purchase 1 or 2 trainers for instructor demo purposes. However, we eventually need a classroom set.

Project Location and Equipment Security

Describe specifically where items to be purchased will be located or installed. Forward to the chairperson of the Technology Investment Committee room-layout diagrams if appropriate.

Room E-230

Indicate the status of any necessary approvals for using the space in which items will be located or installed.

None

Who, specifically, will do the installation?

Plug in the trainer.

How will equipment purchases be secured?

Have a quote from Fred Steiner

Have you discussed with the Executive Director of Facilities Services to determine what, if any, infrastructure modifications are required to support this project such as electrical upgrades, locks, etc.? What has been determined?

Have you discussed with the Director of Network and IT Infrastructure to determine what, if any, software and/or network infrastructure modifications are required to support this project? What has been determined?

Evaluation

How, specifically, will you determine the success or shortcomings of your project?

I will survey our students and Technical Advisory Committee. After this equipment and curriculum are implemented and once it is marketed, we should see an increase in enrollment.

TIF Funding: Outline of Approval Process and Expectations of Applicants/Project Directors

1. Your project must be consistent with the description of the purpose of the Technology Investment Fund (See II.D.210 in the Faculty Organization Handbook.) and must have been submitted as part of your division's operational plan. Assuming that your project has not been funded otherwise (from general College funds or through Perkins funding, for example), you may complete and submit the application for TIF funding by the announced deadline.

2. A meeting will be scheduled for you to present your project to the Technology Investment Committee. You will be asked to give a short presentation and to take questions from Committee members about your project. The Committee will then meet to determine whether to recommend funding for your project. Please remember that even projects with great apparent merit may not be recommended for funding due to limited funds or other factors.

3. The recommendations of the Technology Investment Committee are forwarded to the President for consideration. Should your project be recommended by the Committee for funding and should the President concur with that recommendation, the funding request is placed before the Board of Trustees for consideration.

4. If your funding request is to be brought before the Board, the Technology Investment Committee Chair will notify you of the date of the Board meeting at which your request will be discussed. You or someone familiar with your project should plan to attend that meeting to answer any questions Board members may have.

5. The Board of Trustees will not actually vote whether to allocate funds for your project until the meeting following the meeting at which your project is discussed. The Board generally does not ask further questions about projects during the meeting in which it takes the vote. The Technology Investment Committee Chair will notify you of the outcome of the Board's vote.

6. Assuming that the Board votes to allocate funds to your project, you will work with the Office of Financial Services and Auxiliary Services and with Purchasing to use your funding to complete your project. (A copy of your proposal will be forwarded to the Purchasing Director.) You are responsible for coordinating the work to be done to complete your project including any tasks required during the Spring and Summer semesters.

7. During the third full semester (Fall or Winter semester) following the semester during which your funding is awarded, you will be asked to provide a written report evaluating your project and to present this report to the Technology Investment Committee.

☒ I (We) have read the TIF Outline of Approval Process and Expectations of Applicants/Project Directors and do agree with the terms of the expectations.

Name(s): Mark Siedlik

Date: 3/26/19

UTILITY SOLUTIONS
Lineman driven. Field proven.

Utility Solutions Inc.
101 33rd Street Drive SE
Hickory NC 28602
(828) 323-8914 ph (828) 323-8410 fax
sales@utilitysolutionsinc.com
www.utilitysolutionsinc.com

Quotation

Expires: 03 May 2019

Quote #:	113002	Quote Date:	25 Mar 2019
Customer #:	HFCC	Expire Date:	03 May 2019
Cust PO #:	XFMR-001	Terms:	CC - Credit Card
Ship Via:	MF-MOTORFREIGHT	F.C.A.:	Hickory, NC

Bill To: HENRY FORD COMMUNITY COLLEGE
Attn: MARK SIEDLICK
5101 EVERGREEN ROAD
DEARBORN, MI 48128

Ship To:
Attn:

Line #	Item / Description	Sales Rep	Qty	Price	Ext. Price
1	XFMR-001-H LOAD TRAINER II WITH HARDCASE	POWERLINK ELECTRICAL SALES	11.000 EA	5,343.00	58,773.00
2	XFMR-001-S LOAD TRAINER II WITH SOFTCASE	POWERLINK ELECTRICAL SALES	11.000 EA	4,926.00	54,186.00

USI Terms & Conditions Apply

Sub-Total (US$): 112,959.00

Order Comments: Current lead time for x11 XFMR-001 units is approximately 4 weeks to ship complete. All lead times confirmed ARO. Henry Ford Community College will need to provide a Tax Exempt Certificate and W-9 in order to go direct, as Utility Solutions does not collect sales tax. Credit application will be furnished upon request and payment terms will be determined and confirmed by our accountant.

Shipping Comments: Freight is prepay and add or collect.

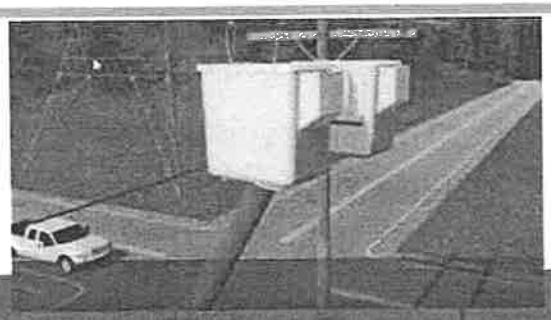
Software and Simulator Equipment Overview

DTE Energy

Mobile Learning Equipment Trailer

PURPOSE: Simulate life critical electrical activity in a safe environment

DESCRIPTION:
- Modern, safe and effective training techniques to cultivate interest and pre-apprentice education
- Hands on, portable, state-of-the-art physical models



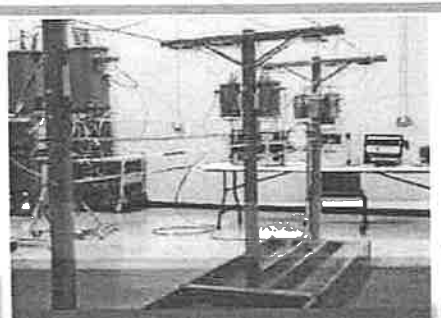
3D Internet Simulators

PURPOSE: (Tabletop Simulator) Electric Utilities allow users to create custom overhead Transmission and Distribution. scenes.

DESCRIPTION:
- Accident reconstruction and investigation scenes
- Worksite scenarios based on the utility's needs, specifications, procedures, and regulations.
- Minimum Approach Distances (MAD)/Limits of Approach (LOA) and reach distances
- Includes utility's specific requirements.

PURPOSE: (Substation Identification Simulator) Simulator allows users to explore a substation and identify key structures in the 3D scene and their corresponding One-Line Diagram.

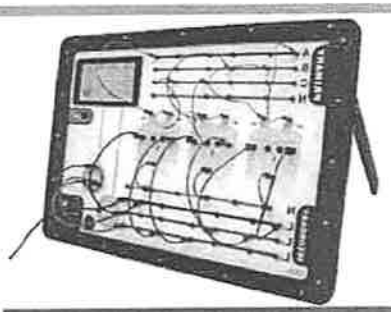
DESCRIPTION:
- Complete the Line on Transfer Bus Overcast 12kV scenario.
- Complete switching that has not been programmed; the Operator is alone in the vehicle.
- Communicate with the switching center via phone.



Three Phase Innovation

PURPOSE: Simulation and analysis tool that provides valuable information to users who design and operate distribution systems.

DESCRIPTION:
- Three pole travel version; converts to two pole version.
- Protects equipment and personnel with a fault current reactor.
- Equipment for a single phase application 2 KVA transformer, power converter, and 3Phase transformer.
- Runs on 120V outlet or generator.



Altec Transformer Simulator – Load Trainer II

PURPOSE: The unique tactile interface offers an immersive learning environment for all levels of users.

DESCRIPTION:
- Color coded patch cords
- 7" interactive touch screen
- Physical wiring environment
- Computer controlled simulation
- Between source lines, transformers, and a secondary system
- Phase-to-phase voltages, angles, load and other real time practice

1. FFG Energy Program Equipment and Simulators 2019

Energy Trailer/Equipment and Simulators Capital and O&M Investment

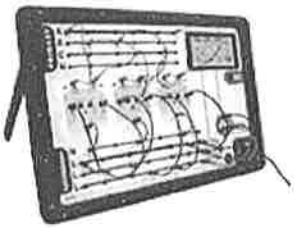
DTE Energy

Software & Simulator Equipment

3D INTERNET SIMULATORS	THREE PHASE INNOVATIONS	ALTEC TRANSFORMER SIMULATOR
$100,000 2 @ 550,000	$82,400*	$5,219
O&M	**O&M**	**O&M**
+Annual License & Support Fee (after 1st year) $500 2019 Annual License Renewal $4,000 (courses owned by DTE)	More Information Needed to Estimate Annual Maintenance Cost	No Projected Annual Maintenance Cost
Partners	**Partners**	**Partners**
Oakland Schools Henry Ford College Heartland Schools St. Clair RESA	Oakland Schools Henry Ford College Heartland Schools St. Clair RESA	Oakland Schools Henry Ford College Heartland Schools St. Clair RESA
Capital Investment N/A	**Capital Investment YES**	**Capital Investment YES**

*Open actions to be discussed with Three Phase Innovations representative

Desktop Transformer Simulator



Utility Solutions Inc. has a new three-phase distribution simulator specifically designed to teach transformer banking to lineworkers. The updated Load-Trainer II Transformer Simulator combines a physical wiring environment with powerful computer simulation. The new one-piece design is very portable and weighs just 16 pounds. Several new features came directly from training professionals who use the Load-Trainer in their classrooms.

While most houses receive electricity from a single transformer, larger facilities use three-phase power, which requires banking multiple transformers. Lineworkers must have specialized training in order to build and maintain transformer banks on today's modern power grid.

The new Load-Trainer II allows an instructor to control each of the three transformer simulators via a 7-inch touchscreen or by using the wireless mouse, which comes standard.

Another feature of the Load-Trainer II is the HDMI connection, allowing a projector or big screen to display demonstrations to a whole classroom.

Utility Solutions Inc. is targeting lineworker schools, utilities and contractors that service overhead distribution systems. Demo units currently are traveling throughout the U.S. and Canada.

Utility Solutions Inc. www.utilitysolutionsinc.com

Written on 03 August 2018.

Train the Trainer for Electrical Safety

Classes

The award-winning Train the Trainer (TTT) Program from e-Hazard is specially designed to prepare qualified trainers to deliver instruction to others based on safety requirements from NFPA 70E, OSHA and/or NESC. Our TTT format and all teaching materials are based on best practices from a professional adult education specialist. Through group discussion, demonstration of teaching techniques and hands-on application, attendees receive a comprehensive understanding of the materials and extensive teacher and peer evaluations of their own instruction.

e-Hazard www.e-hazard.com/arc-flash-training/train-the-trainer.php

Written on 03 August 2018

Tabletop Simulator for Electric Utilities

3DInternet is a leading developer of interactive computer based and virtual reality training simulations. The company's Tabletop Simulator for Electric Utilities allows users to create custom overhead transmission and distribution scenes.

Completed scenes can be used for pre-job briefings and tailboards, safety meetings, group instruction, and accident reconstruction and investigation.

Users create scenes by dragging and dropping items, such as trucks or other vehicles; power poles and towers; live-line equipment, grounding cables, ladders and tools; people or workers in different poses and positions; and personal protective equipment. Items in the scenes are positioned and rotated into specific areas. Unique worksite scenarios can be created based on the utility's needs, specifications, procedures and regulations.

Other key features of the Tabletop Simulator include the ability to add and customize attachments, such as cover-up, switches and jumpers; add minimum approach distances, limits of approach and reach distances; save and print images; share scenes with other users; and display accurate distance measurements between objects. The Tabletop Simulator also can include your utility's specific requirements.

3DInternet www.3dinternet.com/tabletop/tabletop.mp4

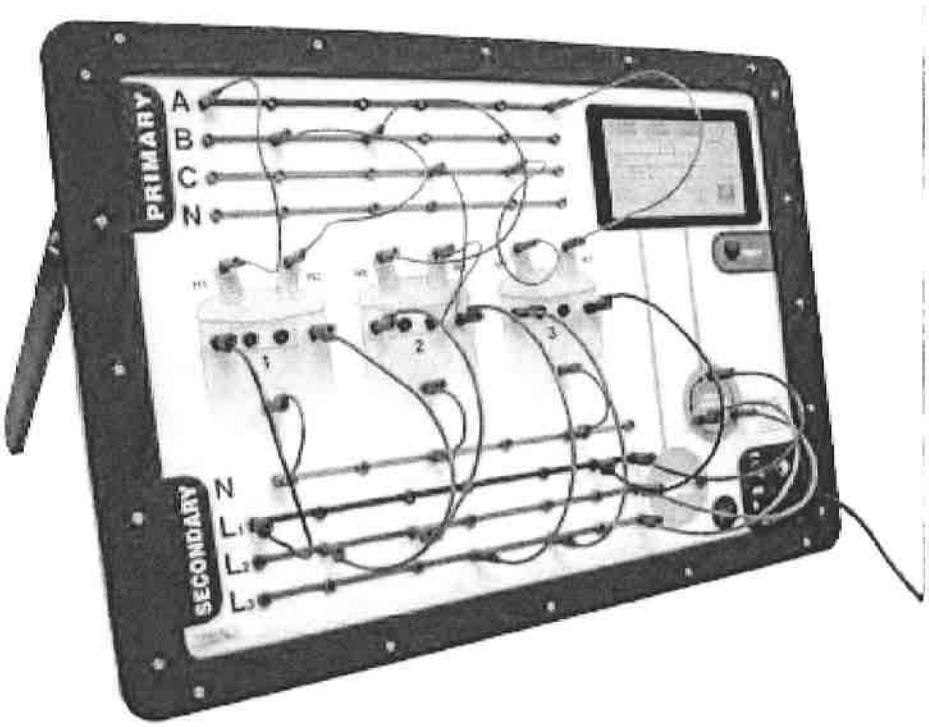
Written on 05 July 2018.

Lineworker Training Materials

Alexander Publications has the industry's most complete collection of books, manuals and videos to train lineworkers, meter technicians, substation builders and operators, and T&D engineers.

Visit www.alexanderpublications.com for details on more than 500 manuals, videos – DVDs and streaming online – and downloadable safety topic sheets. Also on the website: Hotline Club members can watch more than 200 full-length training videos and learn from the industry's largest Q&A database – Ask Mr. Hotwire – all for only $19 per month.

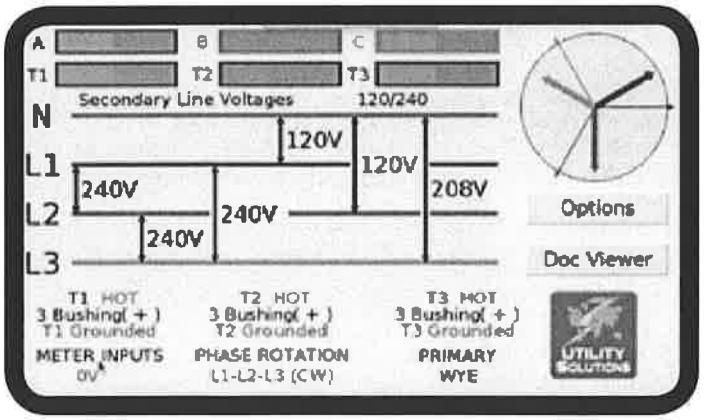
Load-Trainer II Transformer Simulator



The Load-Trainer II Transformer Simulator is a portable 3-phase trainer. The unique tactile interface offers an **immersive learning environment** for all levels of line-workers and utility personnel.

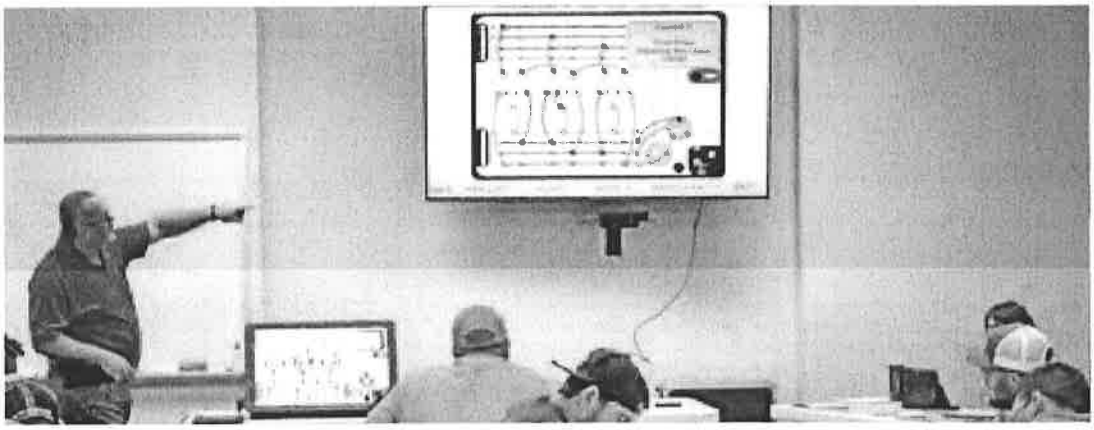
The unit includes color coded patch cords and a 7" interactive touch screen to combine a physical wiring environment with a computer controlled simulation. Users apply jumpers between source lines, transformers and a secondary system. When the 'TEST' button is pressed the simulator displays **phase-to-phase voltages, phase-to-neutral voltages, phase angles, load** and other key information based on the users wiring in real-time.

Key principles and concepts of electrical distribution systems can be demonstrated: **Wye, Delta, Polarity, Phase Rotation** and **Phase Angles**. Trainers can even introduce faults on both the primary and



secondary, modify **phase orientation**, explore multiple secondary voltages and different transformer settings. It simulates **back-feeding** and reduced capacity services so users learn and practice **real-world troubleshooting**.

The Load-Trainer II Transformer Simulator is 27.5" wide x 19" tall x 3.5" deep and weighs just 16 pounds. It is constructed on a rugged polymer frame and includes built in legs that fold for easy transport. It is powered by standard 120V AC and includes a **cordless mouse**



and **HDMI output** for connecting a **monitor or projector**. The soft case includes padded corners and a pouch for accessories. The hard case includes heavy duty foam, storage area, and a spring loaded handle.

Take training beyond the text book with the Load-Trainer II Transformer Simulator from Utility Solutions, Inc.

HOW TO ORDER

ITEM NUMBER	DESCRIPTION
XFMR-001	LOAD-TRAINER II TRANSFORMER SIMULATOR
XFMR-001-LEADSET	EXTRA SET OF COLOR CODED PATCH CORDS
-S	SOFTCASE
-H	HARDCASE