Henry Ford Community College
Technology Investment Fund
Project Funding Request

This application form with original signatures must be received by the Vice President/Controller's office by 4:00 p.m. on either **the first Friday after Labor Day** (Fall semester) **or the third Friday in January** (Winter semester) in order to be eligible for funding. Applications will only be accepted on this form. Applications must include an Executive Summary which will be shared with the Campus Community. ***(Attach additional sheets for any section needed.)***

Date of Application: September 4, 2012	**Project Type: [X] New [ ] Upgrade/Expansion**	
Project Director: Mark Siedlik **Department/Division: ELEC. TECH/TECHNOLOGY**	**How many students will *directly* benefit from the project?160-175**	**Total TIF Funds Requested: $61440**

Problem Statement	
Define the problem/idea. *(What do you want to do? Why?)*	Adopt the newest generation of Programmable Logic Controllers. Why? 1. To maintain HFCC leadership in this area. 2. Because more and more job descriptions are asking for Technicians with programming skills with the newer processor. 3. Because as equipment is obsolete the new equipment that is adopted has the latest controls on it. 4. Because the current trend in Industry is to adopt the latest processor. 5. Adopting the Siemens S7 PLC with HMI line would mean that HFCC is the only College/University in Michigan to do so. It would give HFCC a monopoly on advanced PLC training.. 6. This would give us 10 Siemens trainers that come equipped with a PLC and Human Machine Interface (HMI). There is a massive need for technicians and engineers with training on the latest plc and software.

Evidence for Project Validity *(What is the current situation?)*	
What resources do you have/use now?	Currently we use the Allen-Bradley PLC 5 and Compactlogix.
Why can't you use your existing resources to do this project?	A yearly supply budget that is based on our lab fees allows us to maintain our equipment. It does not have the funds for major program improvement projects.
What evidence do you have that this project will be successful? *(Cite specific information.)* • **Current research** • **Examples from other schools or teachers** • **Letters of support from experts in the field** • **Your own past experience.**	Siemens has been adopted by Ford, GM, Chrysler, and Detroit Diesel for all engine and drive train plants. The hourly rate for Control Technician is between $25-45 an hour depending on experience and how many brands you can program. The two main companies are Allen-Bradley and Siemens. This purchase would give HFCC a virtual monopoly on advanced PLC and touchscreen programming (HMI). Ford is in the process of making HFCC a "Center of Excellence". This would mean HFCC students would be given an inside track to Ford Motor employment.

Relevance to Technology Investment Committee Guidelines *(Address only those that apply.)*	
INNOVATION: **Is the proposal innovative to the field of Instructional Technology?**	The implementation of Siemens S7 PLC and HMI would make HFCC the only higher education institution to be teaching with the latest technology and software. The plc and hmi is used to automate systems in the automotive, steel, water treatment, chemical, pharmaceutical, plastic, wood processing and packaging industries.
Is the proposal innovative to HFCC?	See above
Is the proposal innovative to the specific discipline?	The Siemens S7 plc, along with the software, provide an integrated architecture. One software package is used to integrate the Siemens S7 plc, with touch screen panels (HMI) and with motion controls (servo motors, variable frequency drives). The technologies are not isolated but integrated with one software package.
NEED: **Is the proposal essential for the instructional design?**	Since the classes are 60% lab the classes cannot be taught without the equipment.
Does it create new programs or courses with the potential for increased student enrollment?	Absolutely, we will offer a Siemens S7 programming a HMI course.
Is it necessary to remain competitive with post-secondary institutions?	If we do not do this someone else will.
Does it provide skills that are transferable to the workplace?	Absolutely, The high skills this type of training provides are in high demand and highly paid. We have students that graduated last year that are making over 100K. They are also working 70 hrs a week.
Does it prepare students for transfer to upper-level curriculum?	We have a 3+1 articulation agreement signed with EMU. We also have transfer agreements with Lawrence Tech. and Wayne State if student want to acquire a four year Bachelor of Electrical Technology. We could have more guest student coming here for this advanced training.

Relevance to Technology Investment Committee Guidelines (continued) *(Address only those that apply.)*	
Does it keep the course or program current in the related technology?	Absolutely. It keeps HFCC not only as a recognized training center for automation controls but also maintains HFCC cutting edge.
NATURE OF PROPOSAL: **Is the proposal a component of curricular revision?**	Yes. I am currently writing new lab experiments using the new software. This will be a new course after we pilot it as a Special Topics class.
Is it the next logical step in the evolution of the course/curriculum?	Yes. The plc processors evolve every 20 years. Many employers will still use the older processor. However, companies that want to maintain a cutting edge or undergoing major change over will adopt the newest processor. The newer plc integrates manufacturing and management.
Will it help attract students to HFCC?	When you are the only College placing student in high skill, high demand, high paying jobs that in it is a marketing tool. Many of the current population of Engineers, Technicians, and maintenance personnel will have to come to HFCC to be retrained. We currently have a small group of four years Bachelor of Electrical Engineering Technicians in industry that are making 75-100k a year. I would like to see this former Alumni group grow.
Will it support HFCC community outreach/public relations activities?	
Will it support student retention activities at HFCC?	Absolutely. Placement in high paying jobs is a great retention tool.
Will it become an integral part of the course, program or curriculum?	Yes, it will be a new course in our degree.

Resources		
Where will the project hardware be installed?	T 236 Automation/Robotics lab Patterson Tech. Building	
Who will do the job? • **List the personnel** • **List their duties**	This trainer will be built by Siemens. Mark Siedlik and adjunct Kory Gollan have already attended the Siemens training classes.	
Who will use the hardware?	**Electrical Technology, Trade and Engineering students.**	
Who will conduct any necessary project-hardware training?	This trainer will be built by Siemens. Mark Siedlik and adjunct Kory Gollan have already attended the Siemens training classes.	
Who will handle any spring and summer semester duties related to hardware installation?	Not applicable	
Do you have commitment from your administration for personnel support? *(Be specific, include documentation.)*	Dr. Livermore supports the program.	
Is release time required to complete this project? **If yes, has it been approved at this time by your Associate Dean?**	**[ ] Yes [x] No** **[ ] Yes [ ] No**	*TIF does not fund release time. If you are requesting release time, it must be approved by the appropriate administrators prior to proposal submission.*

Evaluation *(How will you know if it worked?)*	
How will you demonstrate to the college that this was an effective use of funds? *(How will you evaluate the goals listed as Expected Outcomes?)*	I will survey our students and Technical Advisory Committee.
How will you determine the success or shortcomings of the project?	I will survey our students and Technical advisory Committee. After this equipment and curriculum is implemented, and once it is marketed we should see an increase in enrollments. Higher job placement. More Corporate clients requesting training

Budget **(You must also include an itemized budget statement.)**	
What do you need to complete this project? *(Be specific about equipment, software, and training.)*	10 Siemens PLC trainers that will come 10 touchscreen panels (HMI) and software See quote
What is the TOTAL COST? *(You must attach an itemized cost analysis with this proposal.)*	$61,440
How recent is your quote?	September 5, 2012
Are changes to the college infrastructure necessary to support this project?	**[ ] Yes [x] No** *If "yes" provide an explanation from the Directors of Data & Voice and Buildings & Grounds, and from the Administrator in charge of the affected room(s).*
What other monetary commitments exist? *(Department/Division/ External) Please be specific; include documentation wherever possible.*	

If other sources of funding are not available, why? • **Doesn't have the support?** • **Not viewed as feasible?** • **Not a priority?** • **Other?**	Due to a great deal of last minute transition in the Perkins office,. the approved Perkins projects does not match the approved College Operational Plan

Strategic Plan

Include with your application a document that indicates the ways in which your project addresses the goals and objectives of the Henry Ford Community College Strategic Plan. Also, indicate how your project addresses your Division or Department plan. Be as specific as possible.

This project is particularly applicable to goals 2 and 8 in the college's strategic plan.

Goal 2: Promote excellence in teaching and learning in order to meet individual and societal goals.

To adequately prepare our students to enter the workforce in advanced manufacturing requires that we use an integrated manufacturing systems approach in the classroom. Structuring learning in this area as we have in the past, by teaching skills as being independent and discreet, no longer is sufficient to meet the demands of today's employers. Purchasing this equipment dramatically improves teaching and learning in our electronics and manufacturing curriculum, enabling us to better meet the goals of both our students and the employers who hire them.

Goal 8: Provide academic programs and specialized training opportunities in order to contribute to the economic development of the region.

Although the economy in southeastern Michigan will become increasingly diversified, manufacturing will remain a vital part of economic activity in the region for the foreseeable future. If the region is to move forward economically, the College must be positioned to adequately train individuals in the manufacturing skills that will be required by companies in the region so that the needed workforce will be available. The equipment in this proposal is essential for this to occur.

A goal of the Career Education area of the college is program development. Within this goal is the objective for the Skilled Trades Division to "explore the development of Skilled Manufacturing & Maintenance education pathways including Integrated Manufacturing Systems Technology". The equipment requested in this proposal is exactly what is needed to meet this objective.

If your proposal is Non-Instructional (Library Services, Learning Lab, Counseling, Placement Services), please skip this section and complete the information in the Non-Instructional section.

Instructional Proposals

Complete this section if this is an Instructional Proposal, directly impacting student teaching and learning.

Expected Outcomes *(Project Objectives)*	
What is your current teaching method? How will this project fit into your current plan?	Currently 60% of instruction is delivered in "hands-on" based applied theoretical learning experiences in related Technology and Skilled Trades courses. This equipment will allow for the integration of applied systems fundamentals to the current approach.
How will this improve student learning? *(List specific goals.)*	*As a result of this project students will:* 1. *Demonstrate proficiency in writing programs that use the latest software Step7* 2. *Demonstrate proficiency in interfacing the industry standard PLC Siemens S7 to basic electrical equipment.* 3. *Demonstrate proficiency in entering and troubleshooting an Step7 program from a computer terminal.* 4. *Demonstrate the ability to solve control problems utilizing the capability of the Siemens S7 PLC.* 5. *Prepare and organize a written lab report (machine control package) used to emphasize the importance of written and graphical communication.* 6. *The student will be more qualified high skilled high paying jobs.* 7. *Develop touch screen panels that represent the machine and are used to creat alarms to decrease downtime.*

Instructional Proposals (continued)

State how the project addresses the Seven Principles of Good Practice in Undergraduate Education. *(Address only the relevant criteria.)*	
Supports student-faculty contact	For example, learning elements can be explored through hands-on system manipulations
Supports cooperation among students	A systems model includes a team based approach in both the workplace and the classroom. This equipment will be utilized by teams of students working simultaneously across the entire system.
Supports active learning	Students will be in lab 60-70% of the time. Students are given a lab experiment that consists of the initial conditions of a machine, the mechanical sequential operations, and a statement of safeties. They will then write a program using the industrial software and download to the plc. The plc will control the machine sequence or it will have to be debugged. The student then will create an animated that shows the machine in operation. If the machine does not complete a mechanical step correctly an alarm will appear on the HMI that will aid in troubleshooting.
Supports prompt feedback	Lab experiments will either work according to the machine sequence or students will have to debug their programs
Supports time on task	Students will have a student copy of the software program. This will allow them to develop some of the program for the lab offline at home. However, they must come into the lab and download to the processor and debug the program on line.
Supports high expectations	Once the program has been debugged and is working correctly. The students must prepare an individual lab experiment in an industrial format that mimics a plant-engineering manual.
Supports diverse talents and ways of learning	Students must be able to assimilate the lecture/theory, apply the theory to real world problems, program their solution, and trouble shoots their program.

SIGNATURES:

**Project Director Date *Associate Dean/Department Head Date *Vice President Date

Supports time on task	
Supports high expectations	
Supports diverse talents and ways of learning	Students must be able to assimilate the lecture/theory, apply the theory to real world problems, program their solution, and trouble shoot their program.

SIGNATURES:

Mark Sadlick 9-4-12
**Project Director Date

*Associate Dean/Department Head Date

**Vice President 9/4/12
Date

T. McC 9/4/12
**Director of Building & Grounds Date

**Director of Data & Voice 9/4/2012
Date

* For notification purposes only
* * For project feasibility

NO INFRASTRUCTURE CHANGES

Non-Instructional Proposals

Complete this section if this is a Non-Instructional Proposal, related to college areas that serve and support student instructional progress. *(Non-Instructional areas include Library Services, the Learning Lab, Counseling, and Placement Services.)*

Expected Outcomes *(Project Objectives)*	
What will this project accomplish that you can't accomplish now?	

Henry Ford Community College

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Project Funding Request

Executive Summary

DATE OF APPLICATION	PROJECT TYPE
August 30, 2012	x ☐ New ☐ Upgrade/Expansion
NAME OF PROJECT DIRECTOR OR PRESENTER	**DEPARTMENT/DIVISION**
Mark Siedlik	ELEC. TECH./Technology
COST OF PROPOSED PROJECT	**NUMBER OF STUDENTS SERVED ANNUALLY**
$61440	160-175 potentially much higher

SUMMARY

Adopt the newest generation of Programmable Logic Controllers.
Why?

7. To maintain HFCC leadership in this area.
8. Because more and more job descriptions are asking for Technicians with programming skills with the newer processor.
9. Because as equipment is obsolete the new equipment that is adopted has the latest controls on it.
10. Because the current trend in Industry is to adopt the latest processor.
11. Adopting the Siemens S7 PLC with HMI line would mean that HFCC is the only College/University in Michigan to do so. It would give HFCC a monopoly on advanced PLC training..
12. This TIF proposal would supplement the $45k received from Perkins allocation. This would give us 10 Siemens trainers that come equipped with a PLC and Human Machine Interface (HMI).

There is a massive need for technicians and engineers with training on the latest plc and software.

SIEMENS **Industry**

Mark Siedlik
Henry Ford Community College
Ford Road
Dearborn, Michigan 48128

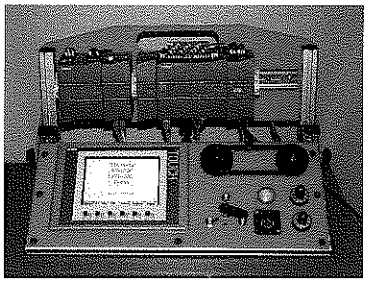
Date: 9/5/2012
Quote 4988

Re: Siemens Simulator Systems
CC: Rob Carper

Dear Mr. Siedlik,

Thanks for the opportunity to provide this proposal for equipping your classroom with automation equipment from Siemens. We appreciate the opportunity and your recognition of Siemens as a global leader in industrial automation. We are excited to work with such an impressive technical school that is also well connected to your community needs.

The equipment options detailed below includes two of Siemens' latest edition automation hardware platforms, the SIMATIC S7-1200 PLC and SINAMICS G120 Drive systems. Both of these systems are fully assembled training rigs identical to the units used for Siemens factory training courses. These simulators bring together the key components of most PLC and Drive applications including the sensors, I/O, communications, motor with brake and the system operator panel. Descriptions, pictures, part numbers and pricing are provided in the table below.

Siemens S7-1200 Simulator 	A6X30048408 Educator Price: List: $6400 -10% school discount **$5760 net school price** **Price includes travel case** **X10** **Subtotal = $57,600**	The S7-1200 Simulator System is a complete package designed for automation training, engineering and testing. The unit includes simulation devices for all major signal and process types including digital inputs (switch simulator), digital outputs (LEDs, lamp), basic positioning (servo motor), bit logic (reversible DC Motor), pulse / PID functions (fan with encoder) and analog inputs (trimpots). The 6" color touch panel display completes the system and provides a realistic industrial environment. The S7-1200 components include the S7-1214C CPU, SM1223 (8 dc in / 8 relay out), CM1241 (RS232), CM1277 (Ethernet switch, 4 point) and PM1207 (power supply) and 2M memory card. All system connections are Ethernet with cables included.

Siemens Software Trainer Package 12+60 	6ES78221AA014YA5 **$ 3840** **X1** **Subtotal = $3840**	This value bundle of our full Step 7 Professional software provides 1 USB stick with 12 industrial licenses of Simatic Step 7 V5.5, S7 Distributed Safety V5.4 SP5, IMAP V3.0 SP2, and S7 Technology V4.2. The PLCSIM V5.4 SP4 simulator is also included for simulation without the need for hardware. In addition to 1 USB stick with 12 Professional licenses are 3 USB sticks, each with 20 identical student versions (60 student licenses) of the Step 7 Professional software. The student version is identical to the industrial version except it expires 365 days after loading.
Total	***$61,440***	

Supporting this equipment installation Siemens provides instructor training tuition free at Siemens Training Centers. Siemens Simulator systems may have a 8-10 week lead time for delivery. Due to the custom built nature of these systems, once a purchase order is received, this order is non-cancellable and non-returnable. Should you find this proposal acceptable, your order can be processed through your Siemens partner distributor.

Standard Terms and Conditions: Siemens Industry, Inc. Standard Terms and Conditions of Sale dated March 1, 2010 (Rev. 1) applies.
http://www.sea.siemens.com/us/AboutUs/Pages/Terms-and-Conditions.aspx

Best Regards,

amanda.beaton@siemens.com

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