

AutoTeacher News

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New Teachers and New Programs

How does a high school automotive teacher handle four daily classes of twenty students each? How does a post-secondary automotive teacher handle an open entry - open exit program? Neither of these program structures fit the locked-step lecture approach of higher education. In these situations, the lecture approach will frustrate both the teacher and the students. Student progress will be haphazard and the teacher may feel that things are out of control.

First, the teacher must accept not being the focal point of attention. The program must be organized with each student as the focus. Training aids must be utilized to free the teacher to manage instruction not be the primary means of delivery. Is there a place for lecture? Yes, but lecturing assumes that all students have a common need at a specific point in time. That is unusual in programs such as automotive which require the development of both cognitive and manipulative skills and, let's be honest, the wide range of entering student abilities.

How to start? Pick a section of the program that is suitable for entry level students based on safety concerns, interest of the students, and availability of training aids. Let's examine each one individually.

Safety is the number one concern. If you want a guaranteed lawsuit, operate your program as a job shop with beginning students performing live work. After the accident, how will you answer the question, "Please show the jury this student's documented skill evaluations before he/she was allowed to perform this task on someone's vehicle". Don't believe that letting the student only work on their own car gets you out of that possibility. It doesn't. The teacher is responsible, period.

The easiest way to motivate students in any program is to let them work on what interests them. What are the primary interests of the majority of your entering students, NASCAR, hot-rods, drag racers, custom cars? The one common theme in those areas that may be suitable for beginners is mechanical (engines). Organizing your program to let entry students do an engine on a stand tear down can be good if it is organized to teach the relationship of specific engine parts and function. There aren't many jobs for engine rebuilders today. But, with the proper instruction and evaluation sheets, the process can provide the student with useful knowledge and help free the teacher to manage the total class instruction. With careful planning, safety concerns of this activity can be reduced.

The third concern, availability of training aids, also works well with engine tear down. Engines and stands suitable for this activity are readily available. Cost is almost

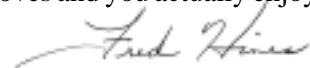
a non-issue. The key to effective use of this instructional activity is organization. Time spent here must be carefully controlled. It should not become a stay-busy activity.

What should follow this beginning mechanical section? I suggest electrical though it is not likely to be a subject that a student would choose. Electrical troubleshooting skill development will require many opportunities to practice the "black art" before students stop thinking electricity is magic. Safety on twelve volt systems is not a major concern and training aids can be home built or purchased. If your program has access to computers, reasonably priced simulation programs that will allow students to practice troubleshooting circuits logically are available. It is best to start troubleshooting circuits as soon as possible because the skill only comes with practice and the logical troubleshooting process will aid the student in understanding how the circuit works. A great program for beginning troubleshooting skill development is available on the Automotive Industry Planning Council website, www.autoipc.org. It is free for the download. The primary download includes the troubleshooting software and one faulted circuit. Periodically, new faulted circuits are made available for download. Each person who registers when they download the primary software will be notified by email of the availability of additional circuits as they are placed on the website. Currently there are three additional circuits available for download, giving a total of four for practice. Essentially, the number of circuits that can be utilized with the software is only limited by the amount of time ATech can give to creating new ones.

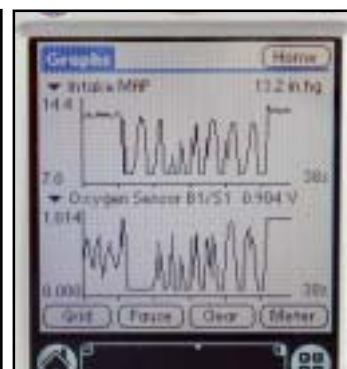
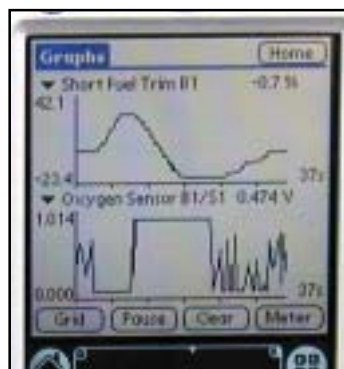
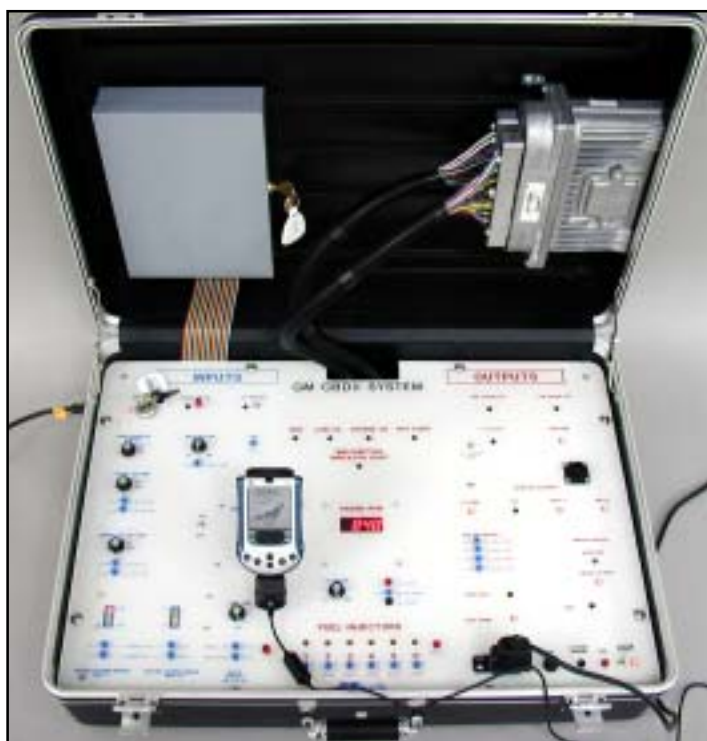
I would suggest that you also consider the virtual GM S.E.T. software that is available from ATech. It substitutes for the original S.E.T. hardware breadboard system for circuit construction. The S.E.T. hardware breadboard system was designed by ATech and the software "virtual" version allows all of the same circuit construction and measurement.

Organization is the key to handling difficult situations and difficult students in your program. Accept the facts that open entry - open exit and student entrance requirements are not likely to change. Would you have been allowed into a program that had the entrance requirements you want for your program?

Whether you use the two suggested starting areas or not, always develop your instruction plans with the goal of reducing your direct involvement. Over time you will find your program improves and you actually enjoy teaching.



“Hands-On” OBD II Training



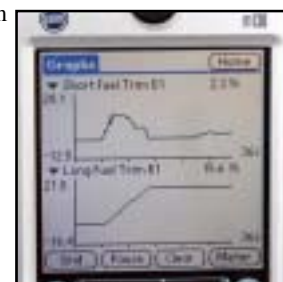
Oxy/Short Term Fuel Trim EGR Effect on MAP/HO2S

Topic List

1. System Hardware
2. Comprehensive Component Monitoring
3. Rationality Checks
4. System Status Flags
5. Intrusive Oxygen Sensor Testing
6. Non-Intrusive Oxygen Sensor Testing
7. DTC Types
8. Data Format Definition
9. Drive Cycle
10. Ford 2000 Drive Cycle
11. Catalytic Converter OBD II Monitor
12. Intrusive CAT Test
13. CAT Monitor Frequency Amplitude Relationship
14. Emission Levels during “Lean Punch-Thru”
15. Emission Levels during “Rich Punch-Thru”
16. Short Term Fuel Trim
17. Short Term/Long Term Fuel Trim Relationship
18. EGR Check with MAP
19. EGR Check with Short Term Fuel Trim
20. EGR Check with DPFE
21. Misfire
22. Knock Sensor
23. Evaporative Systems
24. Freeze Frame Data
25. MIL Illumination
26. TWC Test Count
27. Review of Engine Control System Troubleshooting



CAT “Punch-Thru”



Short Term/Long Term FT

ATech Training and Rio Hondo Community College are offering a “Hands-On” OBD II training seminar August 5, 6, and 7 at Rio Hondo’s campus, 3600 Workman Mill Road, Whittier CA. The primary focus of this seminar is to allow participants an opportunity to observe a completely operational OBD II system (no fault codes) in an educational setting. The emphasis is on understanding system component relationships, for example - oxygen sensor and fuel trim. Additional discussion will relate to teaching and presentation techniques.

Each work station will have a completely operational OBD II engine control system demonstrator, a PDA Scan Tool Interface, and a color Palm Pilot. Participants will:

- Perform a “drive cycle” and complete all OBD II monitors at their work station.
- Take control of the fuel control oxygen sensor signal in a closed loop system and observe the effects on short term fuel trim, long term fuel trim, and injector pulse width.
- Study MAP sensor and oxygen sensor output signal changes in response to OBD II EGR monitor operation during drive cycle coast down.
- Cause DTCs in the system and then use the PDA Interface to read DTCs and Freeze Frame.
- Use the PDA to clear the faults.
- Manipulate and study short term/long term fuel trim.
- Perform their own Catalytic Converter “Punch Thru”.
- Receive Books and Completion Certificate.

(Class size limited, reserve your seat early.)

Don’t talk about it, do it!

Phone (562) 908-3433

Fax (562) 463-4603



An ATech Training Center

Engine Performance



GM OBD II (Suitcase) — Model 2651/60S

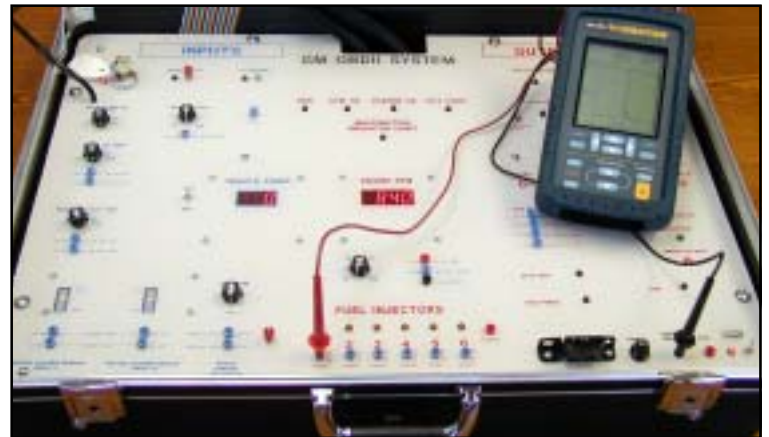


Fault Panel

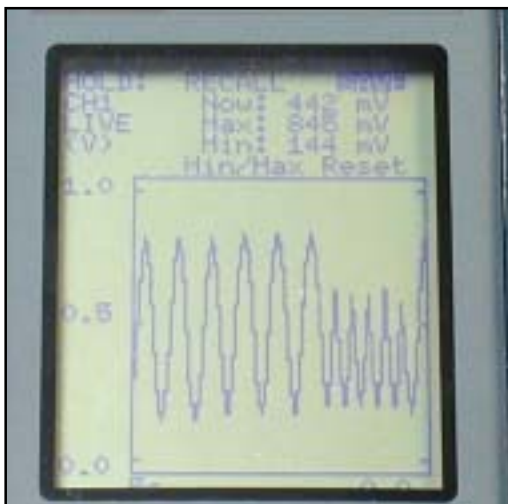
- Engine and Transmission Control
- Compatible with OBD II Scan Tools
- Enhanced Diagnostics with Code, Engine Protection, and OBD II Faults
- Interface with Suitcase C³I Ignition (Model 1771S)
- Courseware Available
- Trainer Size: 30 x 20 x 10 inches
- Trainer Weight: 40 pounds



Oxygen Sensors and Fuel Trim Control



Fuel Injector Waveform Measurement



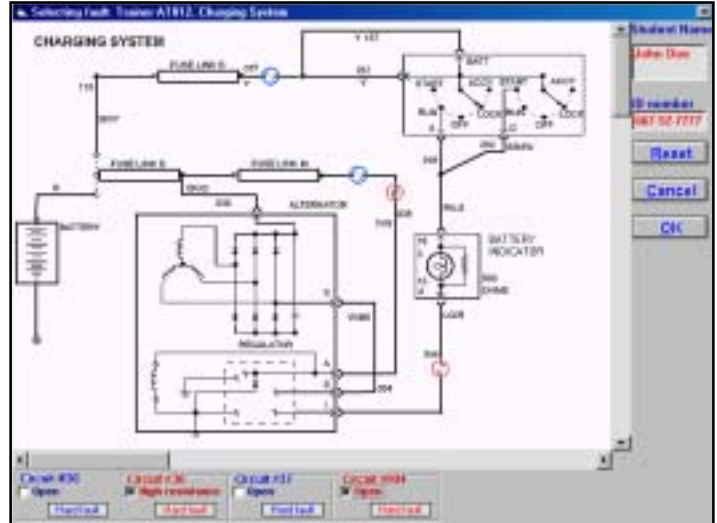
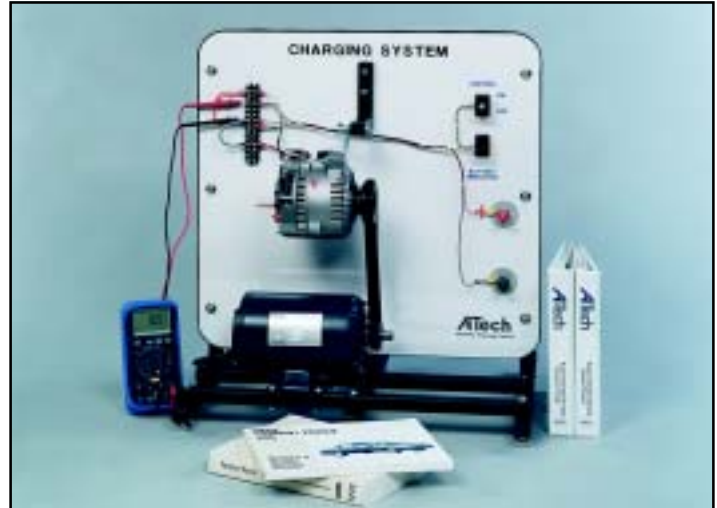
Fuel Control Oxygen Sensor Signal



OBDII Monitor Status

Stanadyne DB2 Diesel Injection Pump Cutaways

Networkable Faulted Electrical Trainers 800 Series



DB2 Cutaway Model 6681

Charging System Model 812F

The ATech Stanadyne DB2 injection pump cutaway is an effective tool to demonstrate rotary diesel injection pump operation. The relationship of individual systems can be illustrated as the pump is rotated manually. Color highlighting aids in distinguishing individual but related systems. Pump can be disassembled and reassembled as cutaway sections do not interfere with operation.

Cutaway portions allow easy inspection of all important assemblies:

- Mechanical Governor Assembly
- Fuel Injection Roller Cam
- Bearings and Surfaces
- Fuel Pathways
- Injection Advance Control
- Fuel Shutoff
- Transfer Pump

Contact ATech for specifications and pricing.

www.atechtraining.com

- Operates with most standard networks, does not require proprietary networking.
- Monitor students' activities from any networked computer running the Instructor's Management Program (Instructor's Computer).
- Instructor's Computer can be located anywhere on network.
- Single and/or multiple faults can be inserted in student training system(s) from the Instructor's Computer.
- Instructor's Computer automatically locates new trainers when connected to network.
- Students log in with individual identification.
- Students appear on Instructor's Computer properly located and identified on log in.
- Student activity records are stored in a selected central location.



In This Month's Newsletter

One topic of great interest in the last few years has been the lack of quality entry level students desiring training for an automotive career. There is a documented shortage of skilled automotive technicians. Some would say, "there is no shortage of technicians, only a shortage of **skilled** technicians". Automotive public school educators continue to repeat that highly skilled technicians cannot be produced from the academically deficient students they are given to train. What's the answer?

Traditionally, the automotive service field has been all male. That limits the number of prospective students to less than half the population. Tremendous opportunities for females exist today because of the positive efforts by companies such as **American Honda**. The first article in this month's newsletter was written by a young woman who has chosen a career in automotive with Honda. My request to Brian Moore, Industry Education Coordinator at Honda, produced this great article from Bethany Grausam. Read this article and gain insight into female recruitment for your program.

The second article contains the Automotive Industry Planning Council National Awards Banquet address by Mr. William Baul of Richmond Technical Center, Virginia. After successfully completing the difficult process of achieving Automotive Youth Educational Services (**AYES**) affiliation, Mr. Baul, fellow instructors, and school administration took on the self study process required for entering the AIPC National Awards for Excellence in Automotive Training competition. They became the National Winner in the "Secondary" category.

How important was winning the Award to Mr. Baul? The heavy trophies are given to each winner at the AIPC banquet and they must carry them to the additional presentation ceremonies over the next few days. At one ceremony, I commented to him that the AIPC council should probably come up with an arrangement so the winners didn't have to carry the trophies back and forth to all the ceremonies. His response, "I would carry this thing home on my back if I had to", says it all.

Fred Hines - Industrial Co-chairman

Achieving ASE Certification for Automotive Training Programs

The motor vehicle repair industry has taken on a new sophistication. It requires advanced technical training and computer literacy. Today's automotive technician must have:

- thorough knowledge of automotive systems and components
- good computer skills
- excellent communication skills
- above average mechanical aptitude
- good reasoning ability
- ability to read and follow instructions
- manual dexterity

According to the Occupational Outlook Handbook, jobs as automotive service professionals will be plentiful for persons who finish training programs in high school, vocational or technical school, or community college.

To help vocational educators recruit, mentor, and train tomorrow's technicians, the National Institute for Automotive Service Excellence (ASE) offers certification for technician training programs. The purpose of the automotive technician training certification program is to improve the quality of training offered at secondary and post-secondary, public and proprietary schools.

Programs can earn ASE certification upon the recommendation of the National Automotive Technicians Education Foundation (NATEF). NATEF was founded to develop, encourage, and improve automotive technician education. NATEF examines the structure and resources of training programs and evaluates them against nationally accepted standards of quality. NATEF's precise national standards reflect the skills that students must master. ASE certification through NATEF evaluation ensures that certified training programs meet or exceed industry-recognized, uniform standards of excellence. For schools, program certification:

- Increases potential for funding from public and corporate sources
- Provides a mechanism for recruiting students based on demonstrated program excellence

Learn more about Achieving ASE Certification for your program: www.natef.org

Women in Automotive

I became interested in pursuing a career in the automotive industry by pure chance. When I was a sophomore in high school, I got my license and a car. A 1989 Geo Spectrum, with 90,000 miles on it. To me, it was a beautiful car. I wanted to at least be able to change the oil on my car, and taking Beginning Auto Technology satisfied a requirement for graduation. Little did I know that taking the class would change my life. I took Beginning Auto Technology, and had a lot of fun in the class. It was challenging for someone who had no automotive background whatsoever. Learning the different systems and components, and discovering how interlocking the auto systems were was amazing for me. I continued my education by taking Intermediate Auto Technology my junior year, and began to realize it was something I wanted to pursue full-time, thanks to my automotive instructor, Brian Stretch. He made me realize that in the automotive industry there are so many options on what you could do as a career, from a technician to service manager to independent repair facilities or parts stores. I took Advanced Auto Technology my senior year, and began looking at the different college programs available. Shoreline Community College in Seattle, Washington offered four different manufacturers' programs. Of them, the Honda PACT program stood out to me. Honda had an excellent reputation for their vehicles, as well as being on the cutting edge for their technologies. They also had an excellent reputation for being environmentally friendly company. After touring the facilities and meeting the instructor, I applied and was accepted into the PACT program. It was a two year program that combined in class study with in dealership work experience. I graduated with my Associate of Applied Arts and Sciences degree in June of 2002, and began working full-time at my sponsoring dealership.

I am now interning at American Honda Motor Co., Inc. It is an interesting change from working in a Honda dealership as a technician, and being a student. The group I work in deals with industry education, as well as trying to recruit new technicians. As an intern, I am exposed to a wide variety of things that are going on at the corporate level. It has given my perspective on what I may want to do in the future. The area representatives have an interesting job, as do the Service Managers. Both are working together to make the dealerships more profitable while maintaining and increasing the level of customer satisfaction, increasing technician training, and providing excellent service. It is a field I find fascinating, and hope to enter one day. I've been very lucky in my career so far, from making the transition from working in a dealership as a technician to working at the corporate level in industry education.

I have been very lucky in my career so far. Being

a female automotive technician, one would expect the horror stories. However, that's not always the case. There were bumps along the way, though. I have had to fight stereotypes of what an automotive technician is. When I was in high school talking to the career counselor, she was dumbfounded to hear what I wanted to do with my life. People's perceptions are still at the "backyard mechanic" stage. They don't always realize that technicians are highly trained, and that one needs an incredible amount of knowledge and skill level in order to work on cars now. I never ran across anyone in the industry who wasn't completely supportive of me and my desire to be a technician. Going into both school and the dealership, I had to prove that I was both serious about being a technician, and that I would be a competent one. Once they realized I was serious, they couldn't have been more helpful. The people I have had the most comments from have been outside of the industry. I'm short, small, and female. Not exactly your idea of a typical technician. Some don't understand why I wanted to work on cars, others still don't think that women should be working on cars.

As a technician, I had an advantage sometimes because of my size. Smaller hands meant that I could maneuver better in engine compartments and doing under-dash electrical work.

Being female, I'm still a minority in the industry. There is a lot of growth opportunity because the industry is trying to promote competent females. I have continued with my education, and now have the luxury of being able to choose what I would like to do in the industry, whether it be working as a technician or working on the business end of the industry.

Bethany Grausam **American Honda Motor Company**



National Winner Richmond Technical Center



I am so grateful for God's Blessings in this life. This AIPC national award is truly a blessing. We were seeking this award to outfit students with toolboxes to enter the world of work. Most of our students were starting to work without tools until the dealerships purchased them. This award begins a legacy at my school, for all future technicians to enter the workforce. The ASE/Snap-on tools award will build confidence in our students and setup this legacy. For my coworkers at the school, this was a labor of love. After last year, I personally said, "I was not going to do all that work again," but in a conversation at the AYES summer conference the group of the automotive instructor roundtable members encouraged me to redo the portfolio. Several of the roundtable members expressed they had worked several years at the perfection of their portfolio and rewriting their program, they became winners.

One reason why so many schools have not had success at winning is time. I have two faithful coworkers that will take over my class for administration duties. They were especially helpful in allowing me time to work

I am especially thankful for support from my building principal Mrs. Mauricee Holmes; Mr. Russell Bennett- Trade and Industry Specialist; Mr. Vance Horne-Regional Apprenticeship Coordinator; Dr. Jerry Browder-Instruction Consultant, and Dr. Yvonne Brandon Assistant Superintendent of Instruction and Accountability. The AIPC award encourages me to work harder with more commitment. Students are what this award is all about. Students are committed to excellence by wanting to become the future technician, paid taxes and give back to the communities. Thank you, AIPC selection committee, it's because of your efforts that it is all possible. Thank

you, AIPC Council, and all who have been a part of this award.

William Baul
Automotive Instructor
Richmond Technical Center

2003 Awards Program

The 2003 Guidelines and Application are available on the AutoIPC website, www.autoipc.org. Registration is required at the website to receive the documents in an email. Ensure that the email address you enter is correct. In year 2002, 99% of the problems with receiving the documents was due to an incorrect email address. The first year for registration was 2002 and proved to be very valuable in tracking submissions from schools and obtaining input on improving the process.

As can be seen from the Richmond Technical Center article, the process requires some time and effort. You must perform a thorough self evaluation of your program and involve other members of your school, including the administration. The improvements in your program that will result from going through the process are worth the effort.

The prizes for this year's program have not been determined as they depend on donations and commitments received by AIPC during the year. If you know of any organizations or individuals who might participate in supplying items for the winners, please email fines@autoipc.org with the information. Additional funding for operations is also being solicited.



ATech Training Inc.
 12290 Chandler Drive
 P.O. Box 297
 Walton, Ky 41094
 (859) 485-7229
 www.atechtraining.com
 sales@atechtraining.com

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ATech Training is a member of:



Automotive Industry Planning Council



Automotive Training Managers Council

And actively supports:



Free Electrical Troubleshooting Skills Development Program

AutoIPC (AIPC) and ATech through a collaborative effort have made a free downloadable program available on www.autoipc.org. The program's purpose is to develop electrical troubleshooting skill in both technicians and students. It is free for you to use personally or in your classroom. All other copyright restrictions are maintained.

Two of AIPC's Areas of Concern are: "Reinforcement and support of existing training programs" and "Instructor Professional Development". This skill development program is the initial step in addressing these concerns.

The program is a variation of the ATech Skills For Electrical/Electronic Troubleshooting (SEET) program. The variation allows faulted circuits to be displayed and diagnosed using standard virtual instruments. The program as downloaded contains one faulted circuit. New faults for the circuit and new circuits will be made available periodically on the AutoIPC website for downloading.

As of February 1, additional faults are available for download on the AIPC website and all registered users have been notified of their availability.