

# Selecting Cutting-Edge

**T**ime, money, tools and information. These are the factors that define the working life of an auto technician. Wouldn't it be great if you had a limitless supply of each? Since most of us don't, one thing is certain: Your success in the shop depends on your ability to manage and make the most of what you have.

The tools and information that are available to you will greatly affect your ability to effectively use your time and to make money. Without access to the proper tools and information, nearly everything you do is likely to take longer and cost more. What do we mean by "tools and information"? Certainly a combination wrench is a tool. But so are lab scopes and scan tools. And what about information? A service manual contains information. But so do a multifunction tester or a PC. The lines between these classifications are blurring.

Diagnostic tools are more than just "testers." Many have become hand-held information stations designed to access information either from a circuit test point, ALDL connector or information source. Since the days of the

\$40,000 analyzer-o-saurus, we've seen diagnostic tools evolve into simple, affordable hand-held testers. Today, there are a variety of species, ranging from the basic to-the-point tester to multifunction platforms. And when you combine individual testers with a PC, you have the reincarnation of the big-box analyzer, streamlined and ready for today's repair environment.

As a technician or shop owner, determining which tools are best for you presents some challenges. Considering all of the scan tools, lab scopes and special testers out there, plus the need to access diagnostic information in a timely manner, your budget and your desire to keep up-to-date, how do you decide on the best way to invest?

Before you invest in new equipment, it's important to have an understanding of the capabilities of the tools you already own, your learning and diagnostic styles and the kinds of vehicles you work on. You also need to know what new technology is coming up—both short term and long term—then adapt it to solutions that are available now. Make sure you're maximizing the equipment you already have. We've all heard the saying, I'd rather have a knowledgeable tech with a

mediocre tool than an unknowledgeable tech with a powerful tool.

Analyzing your tool situation should lead to the development of a personal diagnostic tool strategy. For example, do you buy individual tools from various companies? Or do you buy into one tool company's vision of the ultimate system? The system-type solution is one approach. Here are three system strategies:

The *do-it-yourself information station* allows you to buy what you need as you need it and tie it together with software. This approach will allow you to buy tools that best match your needs and budget. For example, if you're a little unsure of lab scope technology, you may wish to start with one of the powerful but under-a-grand two-channel lab scopes. Most companies offer software for their equipment that will at least allow you to log, display and share your data.

The *multifunction power box* is a base unit with plug-in modules that was first popularized by Interro and Edge Diagnostics. Different modules plug into the base unit to convert it to a lab scope, gas analyzer, scan tool or other special tester. Recent entries in this category include OTC's Genisys

# Diagnostic Tools

BY JORGE MENCHU

Having the right tools and information in your hands maximizes your chances for diagnostic success. But how do you decide *which* tools and information are right for you?

and Snap-on's MODIS (see below).

The *power suite* is based on tools from a single company that have similar interfaces and are joined via PC software. At this time, Vetronix is the primary example of this strategy. Its TechView software ties together the Vetronix five-gas analyzer, Mastertech and MTS 5100.

These are potentially expensive decisions, so it's important to have faith in the company you select. Are they going to stick with it or drop it as soon as the next new thing comes along? For higher end tools, this should not be an issue, considering the investment in development they've made!

How much are the updates going to cost? What about the promised features? Protect yourself by getting answers to these questions during the sales negotiation. At the same time, realize that if you're buying the first release of a new tool, you're likely to be a part of its continuing development process.

Here are some tips to include in your prepurchase investigation:

- Interview the sales people for the instrument you're interested in, as well those representing competitive models. The people behind the competitive

tool might bring up issues that you'd want to consider.

- Research the Internet. Look for technical support forums, user groups and FAQ sites that deal with the equipment you're considering.

- Talk to your colleagues at seminars and other gatherings. Compare how they satisfied their needs, which might be similar to yours.

- Ask the tech support people for the device you're interested in about any problems that may be cropping up and how they've been resolved.

## What's Out There

There are a great many tools available, each having unique features that may or may not be suitable for you. And there's something for everyone in almost every price range. Each tool has strengths and weaknesses. Follow the links provided here for each tool to learn more for yourself.

**Snap-on MODIS.** This multifunction tool is designed to tie together all of Snap-on's hand-held information and technology, including a four-channel scope, a scan tool with Fast-Track, Vantage power graphing meter features, the Vantage diagnostic database and a five-gas analyzer. With

MODIS you can run a test and have the connector and test information on the screen at the same time. The following information also can be accessed with MODIS: circuit/system operation, connector location, component information, test selection, tech notes, signature test and expected pattern.

The MODIS base unit runs on the Windows CE operating system, includes a 640x480 active matrix screen and features the now-familiar Snap-on control trio: "Y," "N" and thumbwheel. All of the input and output ports you'd expect, including Compact Flash, are also present.

*Bottom Line:* A multifunction tablet PC designed for information and automotive data acquisition that takes advantage of Windows. For further MODIS information and case studies, refer to <http://buy.snapon.com/products/diagnostics/modis-system-screens.asp>.

**OTC Genisys.** The core feature of the multifunction Genisys is a scan tool with great overall coverage. A welcome replacement for the earlier OTC Monitor series, Genisys displays data on a large color screen. The user interface is fairly easy to navigate with a few more buttons than MODIS.

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Snap-on MODIS

If you've already made an investment in Monitor scan tool cartridges, you'll be happy to learn that Genisys is backwards-compatible and will accept these cartridges. This is accomplished by mounting an adapter to the back of the unit and plugging in your cartridge. In use, the scan tool automatically records data into a large but fixed-size buffer. It also includes the Pathfinder troubleshooter software, with aftermarket TSBs for 1996 to 2002 vehicles.

Optional modules can also be added to the base unit, allowing

Genisys to function as a four-channel lab scope and five-gas exhaust analyzer. The lab scope seems to be a cross between the original OTC Vision scope and Perception graphing multimeter (GMM). In fact, Genisys includes the Perception's glitch capture feature. The instrument monitors an incoming signal, and when a change occurs that's above a certain percentage, the instrument takes a snapshot of the waveform and displays it in a second window while the live waveform is displayed above.

*Bottom Line:* A traditional yet contemporary multifunction automotive tool platform that offers the full range of information, including lab scope, five-gas analyzer and scan tool. To learn more about Genisys, visit [www.genisysotc.com](http://www.genisysotc.com).

### Omitec Interro PDA.

The PDA has been a steady performer since its introduction several years ago. Originally a four-channel lab scope with a reputation for its ignition capabilities, a complete set of add-ons are now available, including the new OBD II scan tool module. Connecting the PDA to a PC via the Omitec Interro PC-Link offers control from the

PC, turning the PDA into the equivalent of a big-box analyzer.

Recently, I was able to test the Ultrasonic Diagnostic System, another addition to the PDA system. This module allows you to hear what you normally cannot hear. For example, a bearing that's beginning to fail makes noises that are beyond the range of human hearing. The Ultrasonic Diagnostic System allows you to hear them via headphones or display them on the PDA.

The headphones do a very good job of finding all sorts of noises such as air leaks, knocks and bad bearings. It will take some experience to master sound waveform interpretation, but the capability is there.

*Bottom Line:* A proven, hard-working, traditional automotive lab scope with unique accessories. To learn more, visit [www.interro.com](http://www.interro.com).

**Vetronix TechView Pro.** Unlike the above-mentioned tools, the power tool suite solution doesn't put all your eggs into one basket. Instead, a traditional lab scope, five-gas analyzer and scan tool are tied together with TechView Pro software. Also unlike the others, Vetronix focuses not on diagnostic repair information but on data acquisition.

TechView Pro is a very capable and



OTC Genisys



Omitec Interro PDA

complete program. For this report, I set up the MTS 5100 automotive engine analyzer to work over my office network. I connected to the vehicle, then went back to my office desk and ran the instrument from my PC. The waveforms updated quickly and I was able to fine-tune the setups to my liking. If you set up your network correctly, you could also run any of the Mastertech Series tools from a remote site via the Internet.

TechView Pro includes all the features you'd expect, including database functions for storing waveforms and related graphics. It also has the ability to annotate the waveforms.

The MTS 5100 is a very powerful four-channel lab scope with the entire array of contemporary ports. A gray-scale touch screen offers decent contrast. One unique feature is a vacuum test found under the Mechanical menu. The relationship between the vacuum waveform and the cylinders is fully explained—another diagnostic tool.

*Bottom Line:* A high-end data-acquisition system with a PC at the heart, surrounded by very powerful hand-held testers. To learn more, log on to [www.vetronix.com](http://www.vetronix.com).

## **Fish or Fowl?**

Some of the automotive diagnostic tools that are hitting the market tend to defy categorization. They may not have a whole lot in common with the hand-held scopes, scanners and other tools we've grown accustomed to working with over the last 10 to 15 years. They aren't multifunction power boxes and they aren't a part of a larger diagnostic system. But each offers powerful features, which might make them a worthwhile addition to your diagnostic arsenal.

**Delphi Wireless Information System.** The DS800 Wireless Information System is wireless and web-ready (unlike most of the other tools described here). It brings together information from many sources, including the web and the front office, and puts it into the hands of the tech in the service bay.

A true tablet PC, it accomplishes

what a desktop PC cannot—mobility in the shop without sacrificing power and data access. It's also an OBD II scan tool.

As a shop system, the DS800 offers many advantages—for example, saving time by eliminating the need to repeat the data entry task. More im-

portantly, from the technician's perspective, this tool offers a central point to access all sorts of relevant information for effective and efficient diagnosis. Features include Driver-Seat-Diagnostics that includes component locators, tests and specs. You have web access to such services as



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Vetronix TechView Pro

ALLDATA and an online technical support hotline.

**Bottom Line:** An information delivery system and OBD II scan tool based on a wireless touch screen tablet computer. For more information, visit [www.delphi-iss.com](http://www.delphi-iss.com).

**VTTi Toolbox OBDConnect.** This is definitely something new! It's a Java-enabled Motorola NEXTEL phone that can be used as an OBD II scanner. Okay, how about being able

to "phone" the data to an Internet page for remote observation? This is from a nonautomotive company, one that specializes in pool and spa monitoring.

I was surprised by how easy it was to get going. It has all the expected OBD II functions, including monitor status and resetting DTCs. Currently, the data can be displayed on the phone as an eight-parameter list that updates automatically every 5 sec-

onds, or manually. In gauges format, it will display one parameter and updates very quickly.

The tool's most interesting feature is its ability to send data over the phone, for display on the VTTi OBD II data server. Sending data for remote viewing is also easy. On the VTTi web server, you can view the data as gauges or graph. For diagnostics, it's still limited due to the long graph times—6 hours! I've been assured that an updated version for professional technicians is on the way.

**Bottom Line:** Possibly the next step in the evolution of consumer-platform-based diagnostic tools for automotive service professionals. Is it a tool or a toy? You decide. To learn more, visit [www.vtti.org](http://www.vtti.org).

**Pico Technology PicoScope.** Computer-based scopes have been around for a while, but they haven't been as popular as hand-held units. The low cost of computers and the convenience of tablet PCs may give new life to the computer-based scope and scan tool—such as those from EASE Diagnostics and Autotap, for example.

PC-based scopes offer some great features, the most obvious being the ability to display waveforms on large and bright PC screens. The PicoScope has automotive presets that make getting started easy. When you select a preset, a reference waveform is loaded, all necessary adjustments are made and it will open a web page offering tips and techniques.

One power feature is the waveform detail. Most scopes offer 8-bit vertical resolution; Pico offers 12 bits, resulting in 4000 vertical "dots," compared to the usual 200. It also includes a large waveform buffer of 32,000 bytes.

Other features include a "save on trigger" that helps automate waveform captures based on signal. You can also install the software on as many machines you want. After that, simply connect the PicoScope hardware to get going. The PicoScope is also ideal for training. It has highly adjustable controls that allow you to maximize the waveform display, and



Vetronix MTS 5100

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it's easy to connect to a multimedia projector.

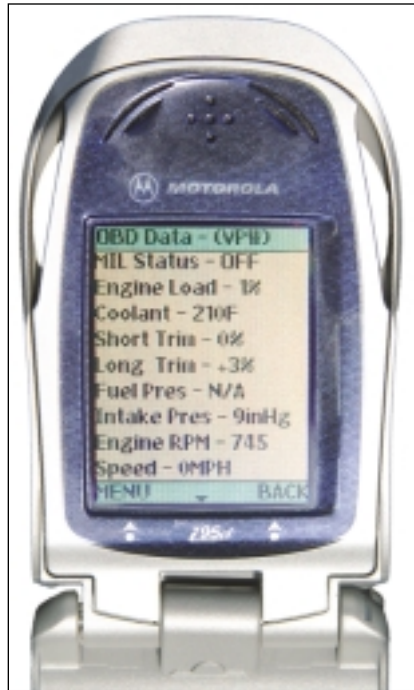
*Bottom Line:* Extreme detail in waveform capture, zoom in and zoom out functions. To learn more, visit [www.picotech.com](http://www.picotech.com).

**SenX Technology FirstLook Engine Diagnostic Sensor.** FirstLook is to the exhaust what the vacuum transducer is to the intake. It offers an interesting way to examine the dynamics of engine efficiency and condition—via the pulses of the exhaust. Just slip the FirstLook hose into the exhaust and connect a BNC cable from the sensor to your lab scope. Make a few scope adjustments and start analyzing.

FirstLook can produce some very complex waveforms, which may also vary greatly from one vehicle to the next. The key to interpreting this information is a comparative analysis of the pulses in each waveform. Using a trigger pickup makes it easy to identify a complete engine cycle.

*Bottom Line:* This new technology may require further study on your part before it finds a place in your diagnostic routine. To learn more, log on to [www.senxtech.com](http://www.senxtech.com).

**Jendham AutoDiagnosticDisk.** The AutoDiagnosticDisk is a web-based information service that allows the user to enter typical vehicle information, including trouble code, to access the code definition, code enable criteria, possible



VTTi Toolbox OBDConnect

causes and how to drive the vehicle to validate the repair. To learn more, visit [www.jendham.com/demo/default.asp](http://www.jendham.com/demo/default.asp).

### Tips, Tricks & Other New Stuff

The PC is the heart of your personal diagnostic system. Use it to tie together all of your test equipment, to network and share information between stations, for databasing and sharing infor-

mation with others or to view manuals on CDs. Your PC can also be used to communicate some of what you've learned to your customers.

Here are some cool things your colleagues are doing with computers and other equipment:

**Local content.** Have a lot of reference material on CDs? Copy them direct to your hard drive. Power users Howard Pitkow and Steve Brotherton have loaded all of the information from CDs directly onto their hard drives. Steve was dealing with over a hundred different CDs before he made the switch. How much time is he saving by not having to load and unload CDs every time he needs to retrieve a different piece of information? Hard drives have gotten pretty cheap and there's no risk of damaging the original CDs.

- Brad Peterson makes recordings of common automotive clicks, cracks and bangs. If a customer complains about a clicking sound while turning, Brad plays the CV joint tune to verify the complaint.

- Digital cameras are an important computer accessory. Brian Ferriter uses his for service contracts and "C.Y.A."—for the fresh dent or cracked glass the customer swears wasn't there before. Pictures are also ideal for educating customers and for your personal knowledge base... and protection.

- On every job you learn something; the hope is you won't have to learn it



Pico Technology PicoScope



SenX Technology FirstLook Engine Diagnostic Sensor

again later. You won't if you enter the information into a database. Several database programs are available for this purpose. Bill Van Orden now has 1730 records in his main database, plus three other databases of disassembly/re-assembly info and other system data.

- Printing wiring diagrams and procedures alone is worth having your diagnostic data in digital form, such as on CDs. Print a wiring diagram to color-code and plan your diagnosis, then save it in a customer file.

**E-mail.** E-mail has revolutionized communications. It's convenient and allows for easy sharing of digital data, including pictures, video, documentation and even sound.

- One of Danny Iwamma's customers e-mailed him from Danny's iATN web page. She asked about her emergency brake warning light, which stayed on. He responded with his suspicions. She brought in the vehicle. He e-mailed a picture of the offending part and finalized authorization over the phone.

- Jim Linder of LTS has created a lo-

cal "e-mail ring"—kind of like a club where members share information. Technicians and shop owners have set up guidelines regarding the types of information they wish to share. With the correct e-mail programs, you can send one e-mail that's delivered to everyone in your ring.

- Most up-to-date Windows programs offer a SEND TO | EMAIL RECIPIENT feature that makes it easy to e-mail graphics.


**Instant messengers.** Robert Chestney uses Electronic Post-it notes to communicate from the service bay to the front office. Type a note, send it and it will appear on the recipient's screen. Of course, you need a network to make this happen.

- We use Yahoo Messenger for interoffice communications at AES and I use it to communicate with our office when I work at home. Messenger allows the use of video and audio. Suppose a customer wants to see what's going on with his car. He can stay at your service counter while the tech in the

shop points the video camera at the problem area.

- Create a messenger ring to share info and help in real-time. MSN Messenger, AOL Instant Messenger and mIRC also offer instant messenger capabilities.

**Internet.** Your PC is the portal to the greatest information library in the world—the Internet. Accessing this information is important for self-training, as well as as a diagnostic resource.

Did you know that all auto manufacturers are required to offer online information on vehicle repair, training and tools? For an up-to-date listing of all of these website addresses, refer to the National Automotive Service Task Force website at *www.nastf.org*. NASTF is a cooperative effort among the automotive service industry, the equipment and tool industry and the auto manufacturers. 

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