

# The Evolution of the Docking Station™

By: Dave Kuiawa

Even with an implicit acceptance into mainstream safety and industrial hygiene operations, gas monitors have been viewed by those who use and maintain them as somewhat of a necessary evil. Equipment they had to purchase, utilize, and maintain, but nothing to be enthusiastic about. The challenges vocalized by users included the disdain for routine calibration, record keeping, data downloads, and safety audits. Understandably, this is because maintaining instrumentation is not part of their core business like, pumping and refining oil, manufacturing steel, processing waste water, or mining coal.

Without a doubt, abandoning gas monitor maintenance practices was simply not practical. What the market was asking for was a technology solution – one that would automate these processes while limiting the users' liability. To draw an analogy, at the turn of the 20th Century, a farmer was convinced he needed a horse that ate less and could plow for a longer period of time. What he really needed was a tractor, but it simply had not been invented yet. Once this technology solution was revealed, the agricultural industry was never the same.

In 1999, Industrial Scientific pioneered the first commercially viable tool for automatic gas monitor maintenance, the DS1000 Docking Station™. The DS1000 mechanized the processes of calibration, bump testing, data downloading, charging, and record keeping – all according to the user's terms. The Docking Station™ could be programmed to perform these functions at various off-peak times, which allowed users to achieve their safety goals and keep the inconvenience to a minimum.

Because a variety of instruments ranging from single gas monitors to multi-gas monitors to photoionization detectors could interface with the DS1000 Docking Station™, safety professionals could standardize entire companies on the system and immediately feel the impact in real time and financial savings. In a world of forced efficiencies where everyone is doing the job of two people, the DS1000 was accepted and revered for its ability to remove a burden by automating gas monitoring maintenance processes.

Like any unique, revolutionary invention, rivals of the Docking Station™ spent considerable effort in trying to disprove the idea. How could a computer replace human interaction? The answer is quite simple. The new system required no training, was infallibly consistent, worked around the clock, and was not on the payroll. The cost savings were simply too significant to ignore. Over the first three years of existence, over one thousand DS1000's were deployed. Because of the efficiencies and cost savings realized, the Docking Station™ was here to stay.

Over the next few years many competitive DS1000 Docking Station™ clones were released into the marketplace delivering similar performance and savings. Customer acceptance was widespread and the bar was raised, as were customers' expectations. With the advent of this new age of automated maintenance routines, company policies were

rethought, and best practices were rewritten. Safety professionals, now free from the manual tasks of calibration and record-keeping, came forward with new ideas and unrestrained input toward the next generation tool, the DS2 Docking Station™.



With new challenges presented, the focus shifted to greater system control, increased reporting, and the ability to network the Docking Stations™ system-wide. Of course, the continuing need to reduce costs and limit liability remained constant. The new DS2 needed to deliver around-the-clock control of maintenance functions like calibration, bump testing, diagnostics, system troubleshooting, settings updates, and data downloading, all the while documenting these activities for future reference.

After listening to the users and evaluating operating system platforms, the technology chosen was a server-based system for the DS2 Docking Station™. Servers, by nature, are designed to archive, transfer, and access large chunks of data for future reporting. Operating as a standalone or part of an existing network, the DS2 provides the user with the ability to network up to 100 individual Docking Stations™ in a format that is not limited by distance. Installations can be as simple as a single DS2 on a standalone server or a multiple DS2 network operating in multiple states or countries communicating with each other on the company's network server. Connections to the network are simply made through a standard RJ-45 Ethernet cable or via a wireless 802.11b compact Ethernet compact flash card.

DS2 systems are comprised of three main components. Initially there is the hardware portion, the DS2 Instrument Docking Station™ (IDS) - this is where the instrument is placed to "dock." The DS2 IDS interfaces with the "soft" portion of the system, the DSS or Docking Station™ Server software, that resides on the company's standalone or network (SQL or MSDE) server. The DSS operates behind the scenes and is blind to the end user. Finally, the system is manipulated by the DSSAC or Docking Station™ Server Administration Console. This Microsoft® based program allows the user to set specific times to perform calibration and maintenance routines and the access window to records on these activities.

The DSSAC can be set up so that it has limited access by users in the field and provides the ultimate in control for the Administrator's gas monitoring program. Through this program safety professionals can control all aspects of their gas monitors including calibration and



bump test data, instrument set-up profiles, downloaded and archived data, and diagnostic results. This is the nerve center of the system and is password protected. The DS2 itself has a liquid crystal display that provides all of the information the end user needs to understand with respect to the operation of the system. Both the DS2 and

DSSAC “speak” four languages - English, Spanish, French, and German - so that multi-national companies need not conform their system to accommodate the



Docking Station™.

Once the DS2 was ready for the market we needed to go back and review the original project drivers. The new generation Docking Station™ needed to be more practical, reliable, and economical than anything on the market. A good benchmark for comparison was the first generation DS1000.

In the area of providing more practicality, the DS2 network can accommodate from one to one hundred individual Docking Stations™. The DS1000 could accommodate five. DS2s can be set up for clustered (up to 5 in a group sharing the same gas inputs) or individual operation, saving money through efficiency. Connection to the network server can be accomplished through hard wired Ethernet connections or via a wireless network card, and because the DS2 can provide simultaneous execution of tasks, maintenance activities can be performed in a fraction of the time.

Considering reliability, the DS2 Docking Station™ operates on an SQL or MSDE server systems, and employs the latest Microsoft® technology which is the worldwide standard. Additionally, all communication is based on standard network protocol. There are no “homegrown” or proprietary programs or routines to reduce the effectiveness of the system.

Finally, we come to the driver most companies are most interested in, making the DS2 more economical. In this area the cost of the DS2 was reduced significantly below a DS1000 accommodating the same number of instruments – up to 65% in savings for a single unit system, and 30% less in a 6-unit arrangement.

At the end of the fiscal day, budgets are crunched, everybody is doing more with less and more will be expected of each of us next year. In the area of gas monitoring maintenance and record keeping, the DS2 will prove to be a financial cost saver. But there is one area that you simply cannot put a price tag on, and that is the peace of mind that comes from offloading your gas monitor liability and recovering a few extra hours each day.

While the advancement of gas monitoring instrumentation was sparked by the confined space regulations put into place by OSHA in 1993, the introduction of the DS1000 Docking Station™ triggered a paradigm shift in the industry. The evolution of automated maintenance systems continues as the DS2 Docking Station™ reengineers the automated processes for maximum cost-efficiencies and benefits for instrumentation owners.

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