



# Terumo® Advanced Perfusion System 1 **NEWS**

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Welcome to the first issue of the Terumo Advanced Perfusion System 1 NEWS, a quarterly publication by Terumo Cardiovascular Systems with news and information for current and new users of the Terumo System 1.

### *In this issue...*

*Fully integrated electronic gas blender*

*Master/Follower mode*

*Clinical support and training*

*Coming soon*

## **The Heart Center of Indiana finds out just what System 1 can do**

Carl Freytag, Manager/Perfusion Services at The Heart Center of Indiana, has been in the perfusion business for over 30 years.

For many years, Carl had purchased and used Sarns™ Heart-Lung Machines. But, in 2003, when it was time to buy a new machine, Carl had his team evaluate several, including the Stockert SIII and the newly introduced Terumo® Advanced Perfusion System 1. Carl made his decision based on many factors, focusing on the benefits that a new machine could bring to his patients and his practice.

“Terumo has instant name recognition for me due to their connection with Sarns. I believe that System 1 has the most intuitive platform I’ve seen. I learned it in one hour. It also has the safest platform on the market and incomparable modularity,” says Carl.

In May 2003, right after its introduction in the United States, Carl became one of the first users of the Terumo Advanced Perfusion System 1. Since then, he and his team have been able to think outside the box to take advantage of many of the unique features of System 1.

Their arterial pump is now remote-mounted next to the oxygenator. This has significantly reduced tubing length which helps minimize priming volume. They are also using the pump rotating raceway feature so they can reduce the length of the circuit lines. Carl states that this flexibility improves patient outcomes and enables the perfusionist to better organize the set-up. The team prefers to use the Central Control Monitor (CCM) to control their cases and some members are using the advanced function of cardioplegia auto dose delivery.

According to Carl, “We’re still educating ourselves to use other advanced functions. Our staff gets regular training and competency tests. We’re really happy with the training that Terumo provides; it’s a



*Terumo Advanced Perfusion System 1 in use at The Heart Center of Indiana*

major strength of theirs. It adds value to our relationship with Terumo as a vendor.”

The perfusion group at The Heart Center of Indiana takes advantage of System 1’s capability to configure and save various set-ups. They have six screens with different configurations to accommodate different procedures. They also appreciate the ability to temporarily change the set-up on the fly if required during a case. The integrated safety features and priority messaging displays on the CCM help prioritize the perfusionist’s responses to the system. Along with the central control that allows remote control of the system components, this makes a difference almost daily in the perfusion practice at The Heart Center of Indiana.

When asked how to investigate a new heart-lung machine, Carl’s advice is to make sure the vendor has done their homework regarding the needs of the perfusionist and the patient; look for a safe, reliable system that is modular and intuitive; and look for flexibility that will allow the system to grow.

When asked about his own wish-list for future heart-lung machines, Carl would like to see an even smaller footprint, taking up less space in the OR. He comments, “Terumo thought of everything else!”



*The Heart Center of Indiana Perfusion Team, L-R John Augenstine, Grady Johnson, Scott Skokal, Carl Freytag, Charles Brown*

## **Terumo Advanced Perfusion System 1... It CAN.**



To download issues of System 1 NEWS, be notified of future issues, or to add your name to the Optimizing Cardiac Surgery<sup>SM</sup> (OCS) mailing list, go to [www.terumo-cvs.com/system1news](http://www.terumo-cvs.com/system1news). We’ll also send you the 2006 OCS symposia schedule when it is available.

>> SYSTEM 1 FOCUS

## Fully integrated Electronic Gas Blender

Taking a tried and trusted technology, and updating and improving it for use on the Terumo® Advanced Perfusion System 1, became a source of pride for Terumo's engineers. They converted the dependable Sechrist® mechanical blender into an electronic device controlled by a microprocessor and incorporated it into the design of System 1. It is available as an optional component fully integrated into the system base.

Former users of the Sarns™ Perfusion System 9000 may already be familiar with the knobs on the electronic blender. The new electronic gas blender/O<sub>2</sub> analyzer can be controlled from similar flow control knobs located on the front panel of the system base and/or from the CCM.

The System 1 CCM uses a simple perfusion circuit graphic with icons for easy identification and control of system devices and parameters, including the electronic gas blender.

With one touch of the CCM, users can set and control gas flow rate (Gas) and oxygen content (%O<sub>2</sub>). Other features designed into the electronic gas blender include:



Central control for the electronic gas blender/O<sub>2</sub> analyzer



The blender/O<sub>2</sub> analyzer is fully integrated into the system base.

- An integrated oxygen analyzer that measures the oxygen content of the blended gas and displays it on the CCM. The user can set a low FiO<sub>2</sub> alarm which will display on the screen in the event of an out-of-range level.
- High and/or low gas source pressure alarms that will display on the CCM if the gas supply is higher or lower than the recommended rate. With a fluctuating gas source pressure, the blender adjusts to maintain the set flow.
- A multi-colored LED on the electronic gas blender that provides status indications.
- The ability to send data for electronic charting.

The electronic gas blender is a highly sophisticated addition to the Terumo Advanced Perfusion System 1. It provides a safe, convenient method of setting, controlling and monitoring important gas data with the touch of a screen. ☀

>> ADVANCED FUNCTIONS: A CLINICIAN'S VIEW

## Master/Follower mode for cardioplegia delivery:

One of the unique features of the Terumo® Advanced Perfusion System 1 is its ability to designate any two roller pumps in the CCM configuration area as Master/Follower. This mode involves two pumps running in tandem where the Follower pump demand flow rate or speed is a percentage of the Master pump flow rate or speed. This feature is available to all System 1 users without the need for specialized hardware.

Curtis Bakk, Chief Perfusionist at St. Mary's Hospital Medical Center, Madison, Wisconsin, uses this feature. We asked him how it has impacted his practice:

**Terumo:** Why did you choose the Master/Follower mode for delivering cardioplegia?

**Curtis:** I believe that cardioplegia delivery should be tailored for every patient. Having the ability to change blood to crystalloid ratios during delivery helps establish better control over the composition of the cardioplegic solution, which gives us precise control over K<sup>+</sup> management.

**Terumo:** What was your protocol for delivering cardioplegia before using this feature?

**Curtis:** Before System 1, we used the Century pump which did not have the option of delivering cardioplegia using two pumps. We used to have both the blood and crystalloid lines in one pump head. Although we had a bridge that helped us deliver only blood when required, we were not able to deliver multi ratios of blood to crystalloid, which limited our creativity in customizing our protocol to meet patients' needs.

When it was time to buy a new heart-lung machine, the determining factor was getting a system with the capability of delivering cardioplegia in different ratios. We evaluated several machines and chose System 1 due to the ease of changing the Follower pump delivery ratio on the fly. This can be done by a simple turn of the knob or from the CCM. We also liked the fine control of System 1's pump control knobs, which helps during retrograde cardioplegia delivery.

**Terumo:** How has using this feature impacted your practice?

**Curtis:** Being able to control the delivered volume of the crystalloid solution allowed us to minimize hemodilution, which, in turn, improves patient outcome. We became more creative in customizing our protocol, and we started to depend on other factors like temperature to protect the myocardium. Our goal is to keep evolving our technique to reach more specific cardioplegia delivery modes.



Master/Follower mode configured on the CCM

# Terumo Advanced Perfusion System 1... It CAN.

## >> CLINICAL SUPPORT

### Industry-leading clinical support and training

Terumo CVS' dedicated clinical support team for System 1 includes highly qualified members who help train clinicians and assist them in using the unique features of System 1 in their day-to-day practice. As part of Terumo's commitment to maintain the quality of our service to our customers, members of our clinical group will be present during clinical evaluations, as well as post-purchase product installations.

When an evaluation is scheduled, your Terumo CVS service representative and sales representative will work with you to set up the System 1 trial equipment according to your hospital's requirement. Clinical Support will train your perfusion team and be present during clinical cases. When your practice has made the purchase decision and your System 1 is ready for installation, Terumo's clinical support team will provide refresher training.

And the support doesn't stop there. Terumo has recently introduced an advanced training course for System 1 designed for customers interested in utilizing the system's advanced features and capabilities. The course highlights various techniques and the advantages of implementing them in the perfusion practice. This advanced course is offered at selected perfusion meetings. Pre-registration is recommended by contacting your local Terumo CVS sales representative.

From the initial contact to on-going advanced training, Terumo's clinical support team is your partner in advancing the expertise of your perfusion group and the continued successful use of your Terumo Advanced Perfusion System 1. ☀



Terumo Cardiovascular Systems' clinical support group trains perfusion teams and is present during clinical cases.

## >> CALENDAR

### Coming soon...

Terumo Cardiovascular Systems will offer both the System 1 Overview Session and the Advanced Course at the following perfusion meetings:

#### American Academy of Cardiovascular Perfusion Annual Meeting

January 27-30, 2006, Reno, Nevada

#### CREF: San Diego Cardiothoracic Surgery Symposium: Science and Techniques of Perfusion

February 16-19, 2006, San Diego, California

#### American Society of Extracorporeal Technology, 44<sup>th</sup> International Conference

April 19-23, 2006, Las Vegas, Nevada

#### Mechanisms of Perfusion XXI

May 18-21, 2006, Orlando, Florida

You can pre-register for either of the System 1 sessions by contacting your Terumo CVS sales representative.



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