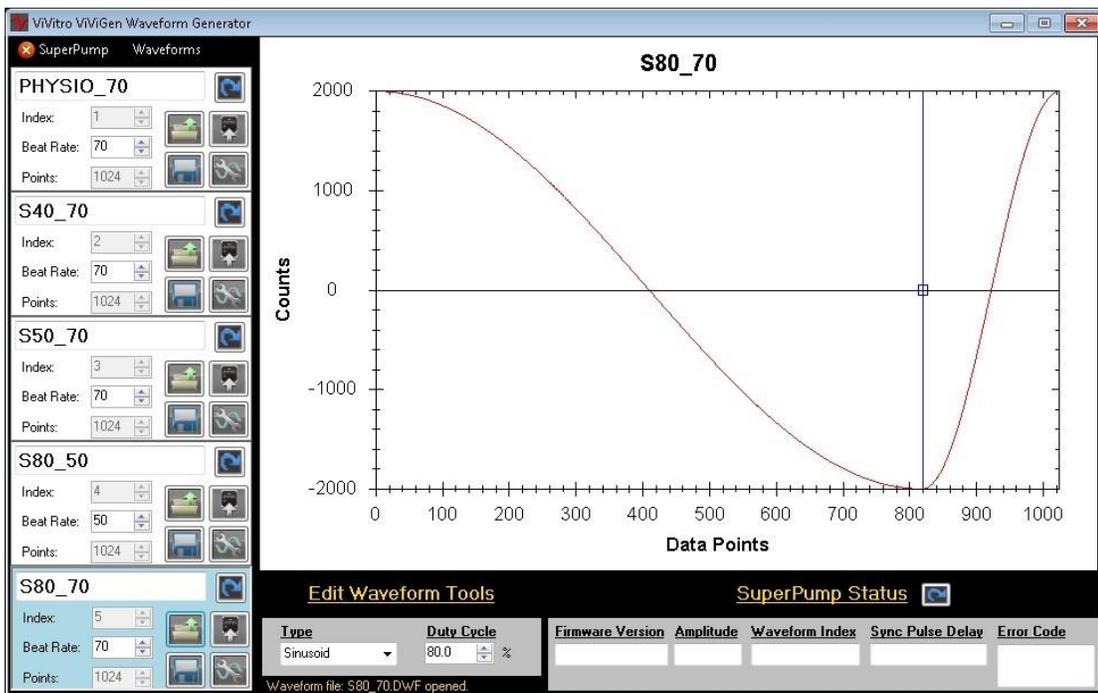# Custom waveforms options for ViVitro Labs equipment

A major advantage of the ViVitro Labs SuperPump AR is its ability to accurately follow user-defined waveforms. The system can provide accurate flows for a wide variety of applications.

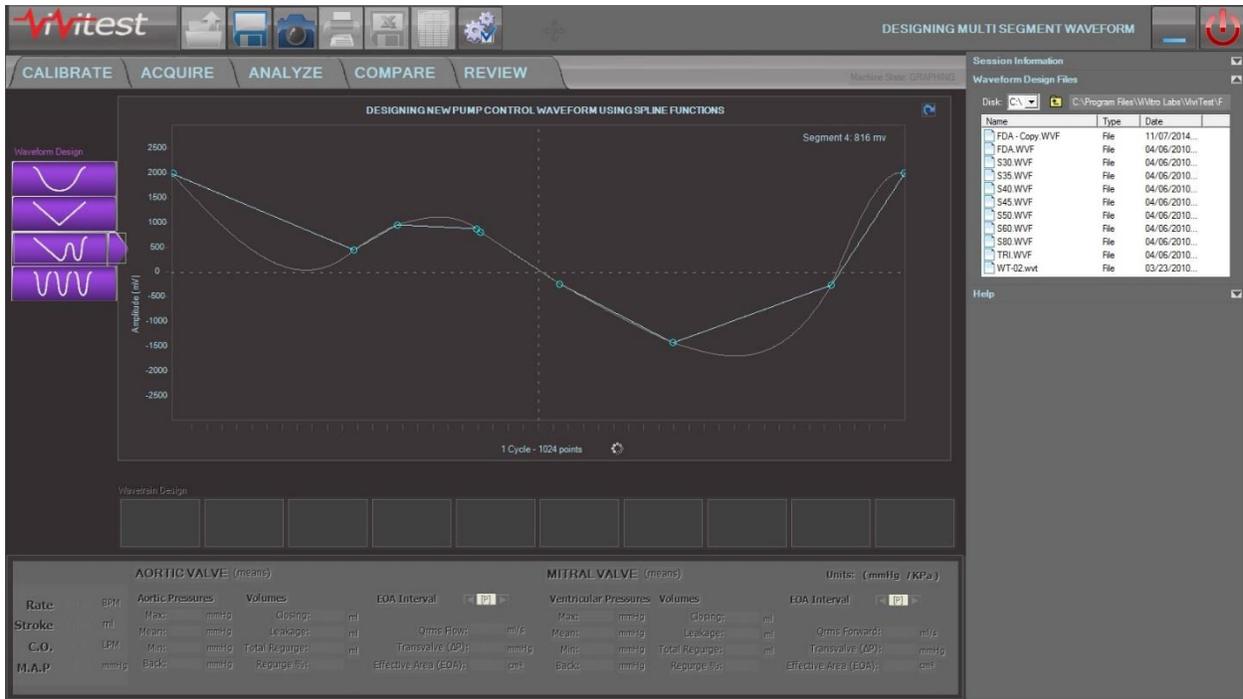## Four options to run the SuperPump AR with customized waveforms:

1) The SuperPump AR can be pre-loaded with up to 5 waveforms which are stored internally on the controller. This is a great option for those who require a standalone device or have very specific testing and do not require a large number of flow patterns.

2) ViVitro Labs ViViGen software enables users to create and upload their own waveforms to the SuperPump. Sinusoidal or linear waveforms can be modified with the ViVigen interface. Complex waveforms can be created numerically in a spreadsheet for more precise waveforms. Waveforms are sent via a standard USB interface from the computer directly to the controller. ViViGen software is intended for those who use the SuperPump with their own testing system, or for those who need a wide range of waveforms.

Waveform created with ViViGen software.

3) The ViVitro Labs SuperPump can be driven by most external waveform sources. Function generators, personal computers with I/O functionality, custom hardware, microcontroller development boards, and even smartphones will directly control the flow output of our pump. This is a great low-cost option for very basic requirements that require high accuracy and dependability. Feedback from the pump can be captured using an oscilloscope or other capture device to ensure that it is following the waveform accurately.

4) ViVitro Labs ViViTest is our most advanced solution for the ViVitro Labs Pulse Duplicator system. It has all of the waveform generation, storage, and review capabilities of the ViViGen software, and drives the controller directly during testing. There is no limit to the number of waveforms that can be stored in ViViTest. Users can quickly change between large numbers of waveforms.

Screen shot of a complex waveform created with ViViTest software

One of the most powerful, yet overlooked, functions of ViViTest software is the ability to create wave trains. These are highly customized flow patterns comprised of up to 10 individual waveforms run in sequence. This enables creation of very specific and complex flow patterns or variable testing patterns that can be saved and run as needed.

Close-up of ViViTest waveform train.

If you have any questions about our SuperPump AR system or any of our other testing products and services please contact info@vivitrolabs.com for information.

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