Vyntus™ CPX and Vyntus™ ECG

Cardiopulmonary exercise testing

JAEGER™

Vyntus™ CPX metabolic cart

High tech flexibility that is easy-to-learn and easy-to-use

The versatile Vyntus™ CPX Metabolic Cart combines Jaeger's pioneering experience with the latest innovations, to deliver the newest generation of clinical cardiopulmonary exercise testing. Utilizing highly accurate sensors to collect full breath-by-breath gas measurement data, the system provides helpful guidance and tools to make it easier for technicians. And, the fully workflow-driven evaluation helps simplify and standardize data reporting for physicians.

- **Digital Volume Transducer (DVT)** compact, lightweight design with little dead space and minimal resistance to airflow in both cleanable and single-use, disposable options
- **On-board pulse oximetry** with finger, ear-clip and forehead sensors
- **Powered by SentrySuite™** with cues and guidance during measurement and post-test workflow to help standardize evaluations and reduce time to results
- **Smart tools automate** processes for clinicians such as automatic slope calculations and automatic trending of patient data
- **Automatic volume calibration** ensures consistency, saves time and hassle
- **Utilities for customization** including our extensive, global library of adult and pediatric predicted equations and our comprehensive report generation capabilities
- **Ready to perform all essential CPET applications** including breath-by-breath, spirometry pre/post, exercise flow-volume loops, combined legacy and new 9-Panel Wasserman Graph and the possible limitation graph

Our CPX module

Packed with innovative, robust technologies and features that simplify and improve both testing and maintenance

"Tool-free" O_2 Cell Replacement

Notifies you when replacement is needed (typically ~2 years). Effortlessly changed by you; no need for a service call

Proven Digital Volume Transducer (DVT)

- Compact, lightweight design (45 g) is comfortable to wear with Hans Rudolph masks
- Meets the ATS/ERS 24-waveform test guidelines

No syringe required!

CPX automated volume calibration eliminates time-consuming and technique-dependent syringe calibration

Vyntus™ ECG – Integrate ECG data into one single database

When you combine our Vyntus™ CPX with our Bluetooth Vyntus™ ECG you enjoy the power, functionality and ease-of-use of two comprehensive devices in **ONE** integrated diagnostic and monitoring solution.

ONE

- user interface
- network interface
- HIS connection
- combined report
- program to train
- central database

- Small and light weight wireless ECG amplifier with cable-free Bluetooth communication improves patient comfort.
- Full disclosure for storing unfiltered, continuous ECG signals with ability to look back during real-time data collection on any lead.
- Linked gas exchange data and ECG are time-aligned so you can move anywhere in study review and all screens follow.
- Go paperless! All data is available from a review station and can also populate into your EMR.

Resting ECG

Proven technology: Utilization of the proven Hannover ECG System® (HES-stress) for automatic evaluation and analysis of signals.

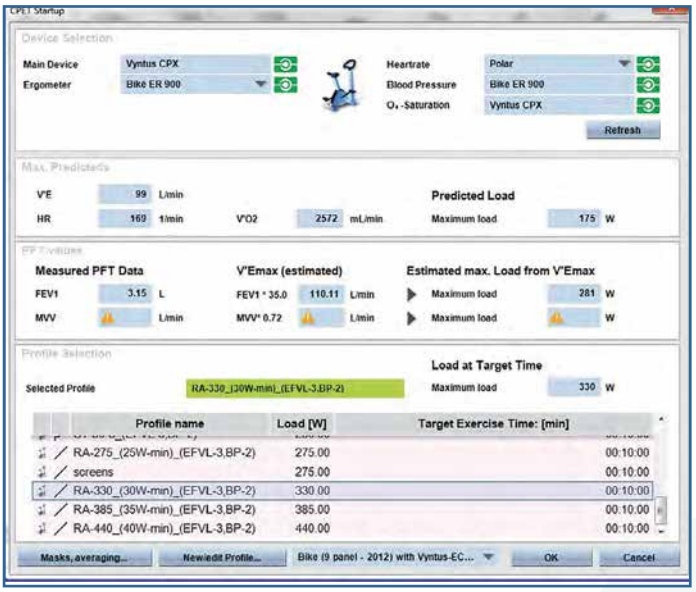
Repeatability check: Multi-trial resting ECG standard with Vyntus™ ECG.

Multiple configurations: Available as standalone device or as option to each Jaeger device running SentrySuite™ software.

Hassle-free, pre-test planning

Brought to you by SentrySuite™

In CPET testing, pre-test set-up can be detailed and time-consuming. SentrySuite™ provides easy to use tools for pre-exercise decision making and protocol modification. Plus, all pre-test questionnaires can be collected.
Everything is right where you need it, when you need it most.

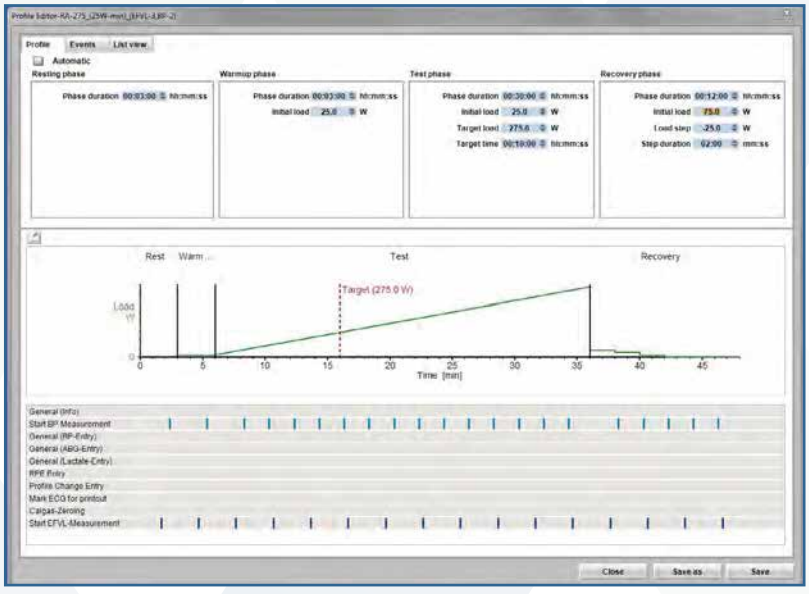


CPET start-up menu: All pre-exercise decisions on a single screen

- Color-coded hardware connection check
- Provides suggested target load and automated protocol selection, based on measured PFT values and max predicted values
- Choose preferred test layouts, mask size, and breath averaging from start-up screen

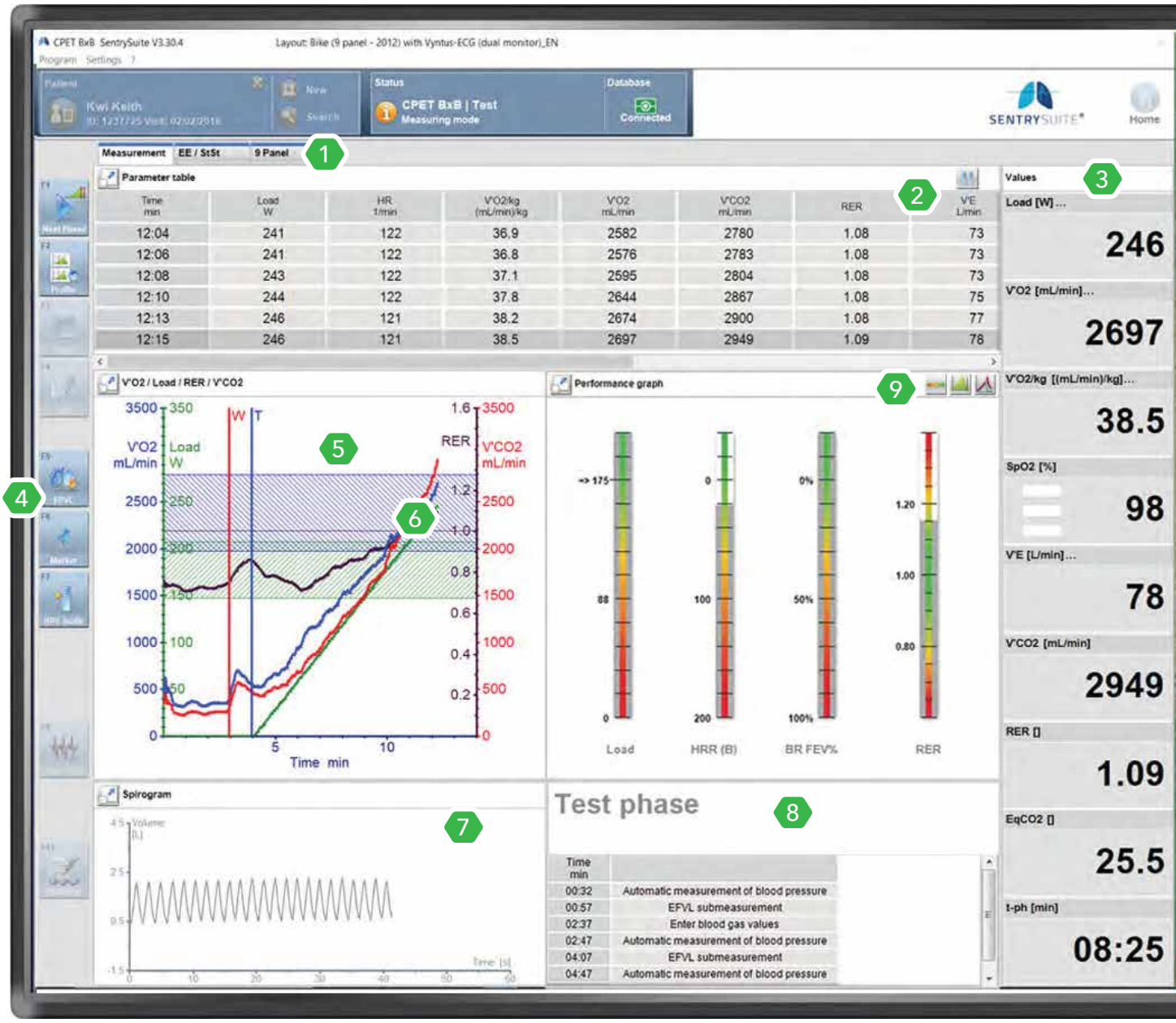
Profile editor tool: Build powerful automated protocols and sub-measurement events

- Easily create individual ramp, step and weight dependent protocols
- Add sub-measurements including automated BP, RPE, exercise flow volume loops, lactates, and blood gas
- Coordinated graphical and tabular representation of events
- Multi-stepdown recovery capability



Vyntus™ CPX Big Cinema

Vyntus™ CPX combined with Vyntus™ ECG or GE Healthcare CardioSoft ECG creates an all-in-one device for a simplified, space saving solution showing all gas exchange and ECG information on a single screen.



1. Tabs to quickly switch to view different graphics
2. Live Parameter Table displays live numeric representation of the measurement
3. Display your selected metabolic parameters
4. F-key buttons for quick access to sub-measurement programs (EFVL, Markers, RPE)
5. Display of up to 4 preferred parameters
6. Real-time data with color-coded maximum predicted ranges
7. 60 second view of patient breathing
8. Countdown to upcoming sub-measurement showing when next programmed events will occur
9. View ongoing performance relative to predicted max values, workload graph or 2nd graph with up to 4 parameters

10 ECG median display

11 Display ECG real-time: 12 x 1, 6 x 2, 3 x 4, 3 x 1

12 Display your selected cardiac parameters

13 Display selected ECG lead as full disclosure

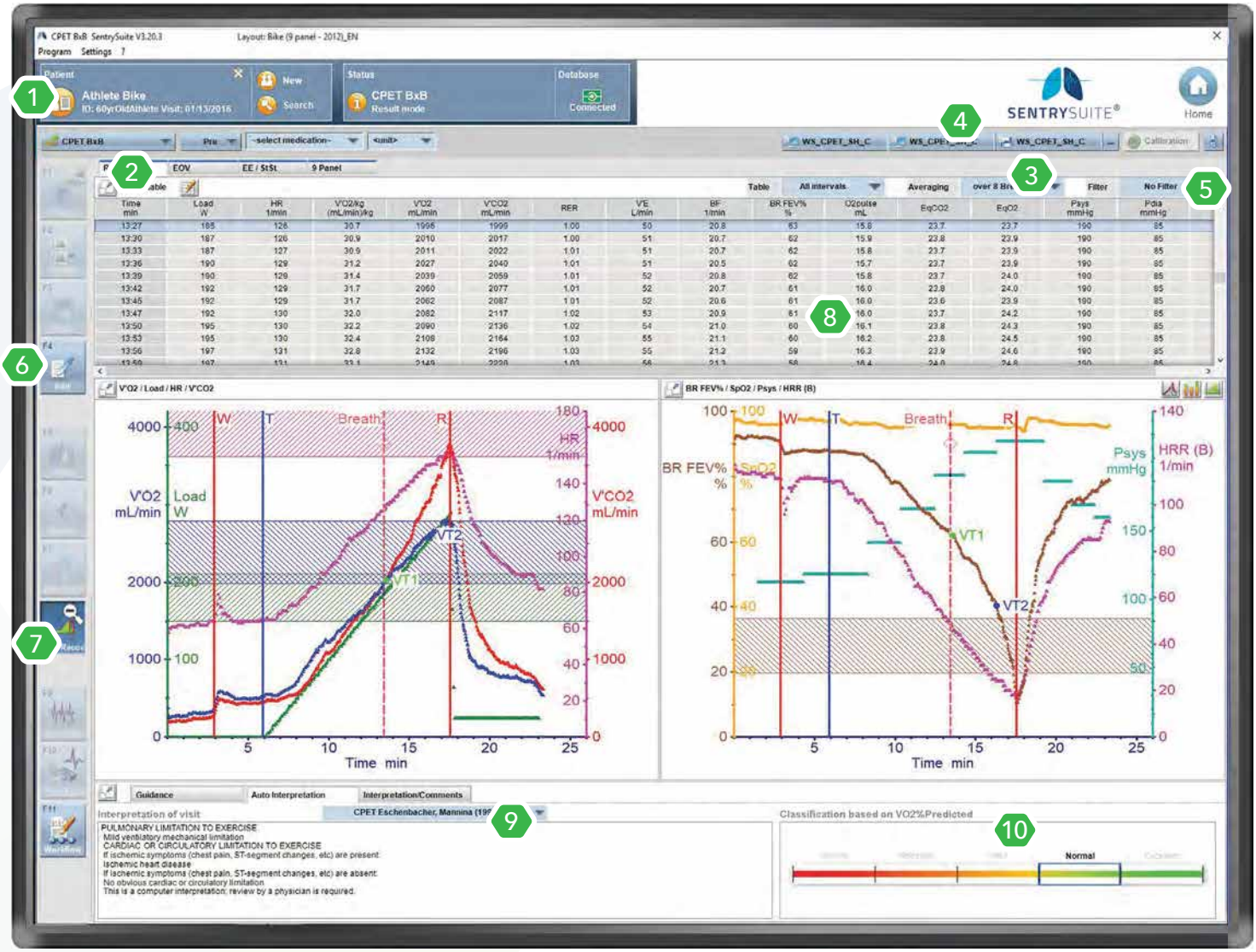
14 Sample cardiac cycle

9-Panel Wasserman graph

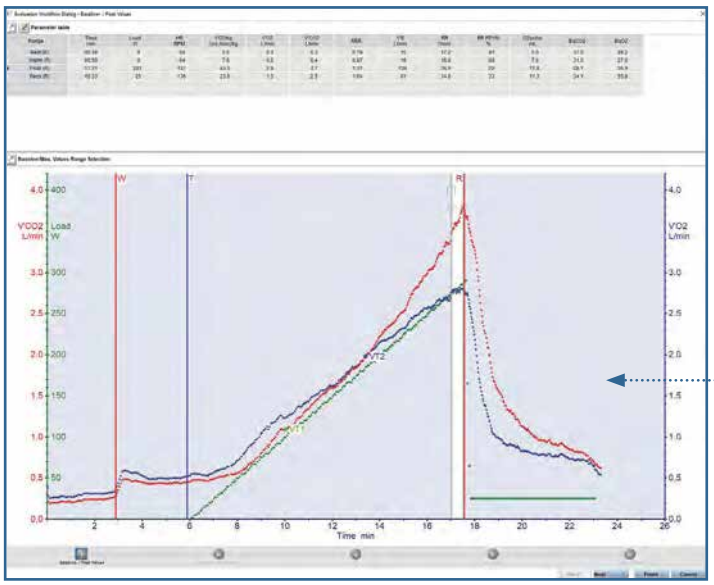
Key post-test reporting features

Focused and integrated

Complete data review and reporting is both intuitive and automated.



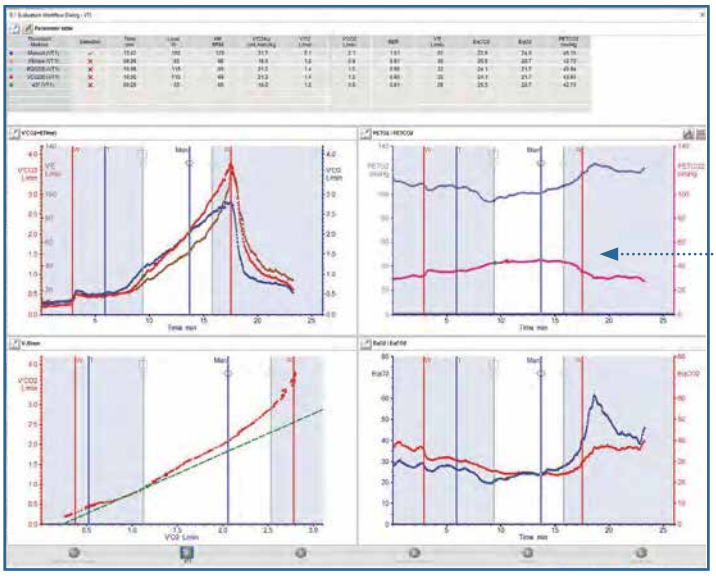
1. Quick patient data access
2. Tabs to quickly switch to view different graphics
3. Choose breath or time averaging
4. Quickly view, print or store reports
5. Quickly search for stored markers like e.g., lactate or blood gases
6. Start edit mode for editing of thresholds, slopes, ranges, markers or exercise flow volume loops (EFVL)
7. View/Hide recovery data from graphical displays
8. Tabular data with adjustable filtering/averaging
9. Comments/interpretation tool with user-definable templates and automated CPET interpretation included
10. Color-coded classification bar based on $V'O_2$ peak predicted[1]



Accept SentrySuite™ software's automatic selection of baseline and peak data, or manually over-ride with simple click and drag.

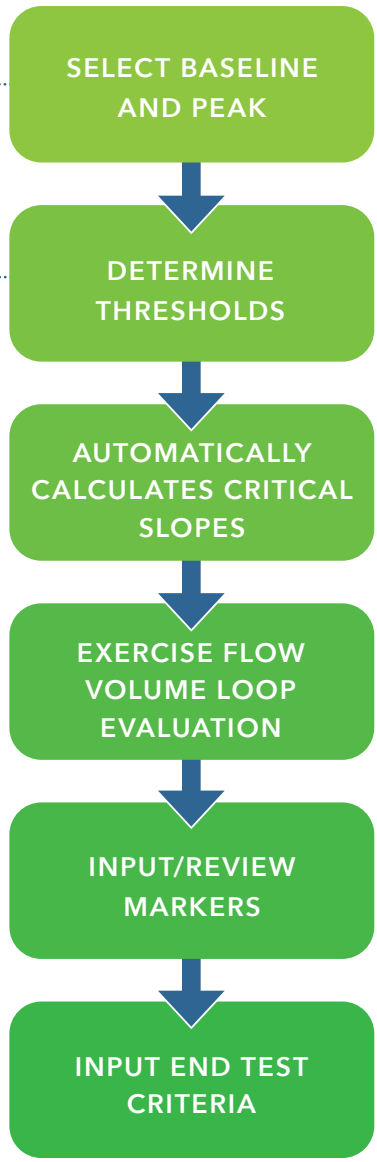
Intuitive step-by-step evaluation for occasional and frequent users

Using step-by-step guidance, SentrySuite™ makes post-test evaluation simple, fluid and systematic. Now evaluation and interpretation can be standardized, reducing time to result. And, workflows can be configured for individual users in relation to desired tasks and sequences. For experts, SentrySuite™ also provides an easy post-test way to enter offline blood gases for automatic P(A-a) O_2 and VD/VT calculation.



Ventilatory threshold VT1. Side-by-side graphics with plausibility checks makes viewing ventilatory thresholds accurate and easy.

Workflow steps

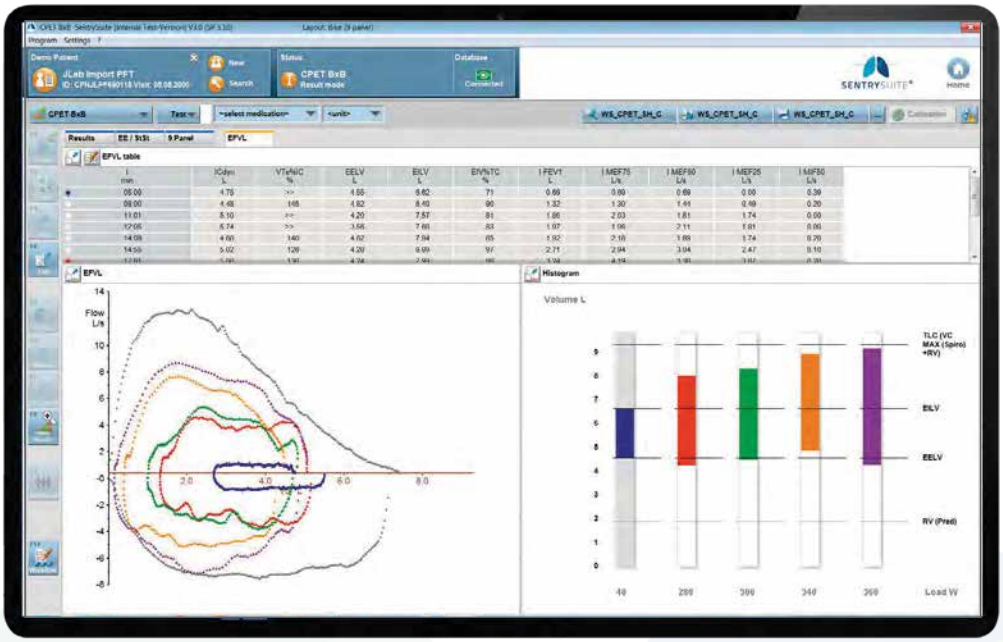


Ventilatory thresholds

- Multiple threshold evaluations (VT1, VT2, VT3)
- Automatic or manually set calculation of each threshold with different methods in one view
- Ability to modify upper and lower VT range
- Plausibility check by viewing the threshold parameters

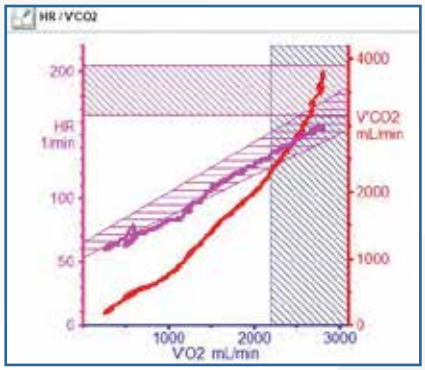
With SentrySuite™ software, clear and concise results are available on every page

Of course, SentrySuite™ provides all standard reports, including the 9-panel graph. But where it really shines is its capacity to redefine how you visually present your data in more powerful and meaningful ways. Three great examples include our Exercise Flow Volume Loops, CPET comparison graph, and Dynamic Predicted Ranges.

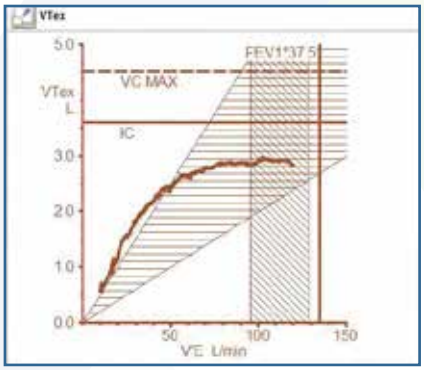


Quickly see dynamic airway hyperinflation and flow limitation by trending Flow/ Volume and EILV/EELV throughout exercise.

Dynamic predicted ranges:

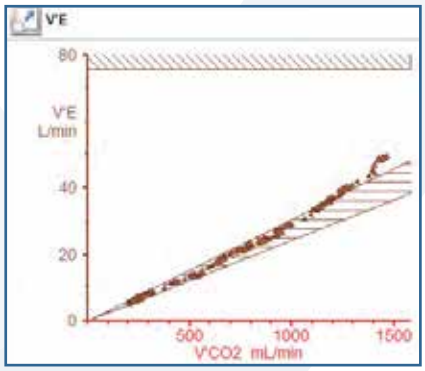


Dynamic predicted range for heart rate over VO2

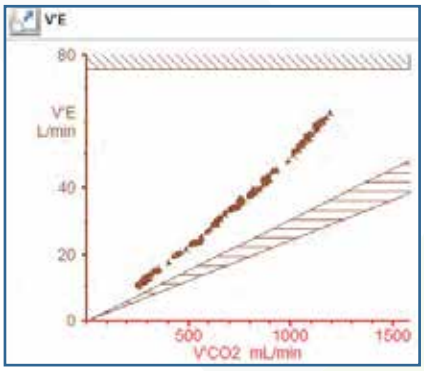


HEY plot provides the 20 to 50 breathing frequency range

Continually monitor VE/VCO_2 data during the test.



A normal response to exercise



An elevated response to exercise

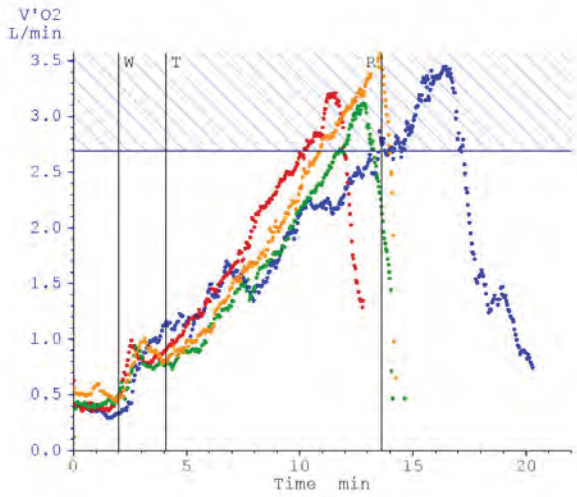
Trending patient data over time is key

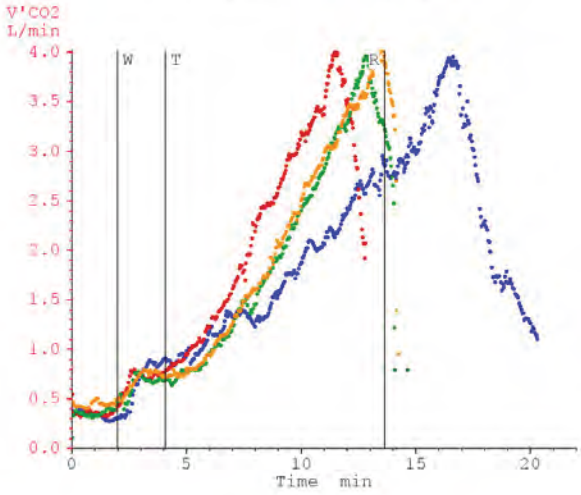
SentrySuite™ software's ability to compare a patient's metabolic data longitudinally, in both graphical and tabular forms, has taken on a whole new meaning in the post COVID-19 era. This unique ability is more powerful than ever.

Report Generation, our unique report designer, is both simple to use and comprehensive.

CARDIOPULMONARY EXERCISE DATA COMPARISON- CURRENT TO PREVIOUS

Identification:	TEST 2	Last Name:	OD	First Name:	B
Date of Birth:	5/18/1977	Height:	69.0 Inch	Gender:	male
Age:	41 Years	Weight:	180.0 lbs	BMI:	27 kg/m²





		NOW	PREV	% DIFF	PREV -1	PREV -2	PREV -3	PREV -4	PREV -5
Measurement date		10/25/18	10/25/18		03/29/16	12/16/15			
Age		41 Years	38 Years		38 Years	38 Years			
PEAK CARDIOVASCULAR RESPONSES									
V'O2	**L/min**	3.4	3.2	6.3	3.1	3.5			
V'O2/kg	**(mL/min)/kg**	41.8	34.5	21.1	33.0	37.7			
V'CO2	**L/min**	3.9	4.0	-2.3	3.9	4.0			
Load	**W**	415	284	46.1	292	312			
HR	**BPM**	171	162	5.6	171	181			
O2pulse	**mL**	20.0	19.8	0.7	17.9	19.3			
Psys	**mmHg**	150	187	-19.8	195	140			

Trend Table

Parameter / *Date*	*Load (W)*	*V'O2 (mL/min)*	*V'O2/kg ((mL/min)/kg)*	*V'CO2 (mL/min)*	*V'E (L/min)*	*VTex (L)*	*BF (1/min)*	*O2pulse (mL)*
2020-09-21	75	1179	18.1	1085	28	1.746	16.3	9.8
2020-09-21	75	1243	19.1	1150	30	1.625	18.5	10.4
2020-11-30	75	1188	18.3	1074	27	1.696	16.1	13.3
2020-11-30	75	1270	19.5	1140	29	1.760	16.6	14.1
2021-02-22	75	1185	18.2	1063	27	1.693	15.8	13.2
2021-02-22	75	1193	18.4	1052	27	1.661	16.0	13.6
2022-08-04	287	2796	43.0	3871	108	2.936	36.9	17.8
2023-05-02	300	3159	48.8	4167	134	2.953	45.5	20.4
2023-05-02	240	3317	51.0	3864	115	2.805	41.0	21.4
2023-05-02	230	3120	48.0	3605	112	2.953	38.0	20.4
Mean value	151	1966	30.2	2187	64	2.183	26.1	15.4
Standard dev.	95	935	14.4	1346	44	0.596	11.9	4.0
Var. coeff. [%]	62.78	47.54	47.54	61.55	69.35	27.38	45.51	26.14

Optional canopy module for indirect calorimetry

Resting energy expenditure

Resting energy expenditure (REE) including fats, proteins, and carbohydrates contribution, is included in the software package.

Automated steady-state detection.

Select up to four areas of steady-state conditions showing data averages with coefficient of variation (CV).

Optional mixing chamber module

For athlete testing or long protocols

- Patient friendly setup, accommodates temporary disconnection of patient for a drink
- Integrated and stackable to your Vyntus™ CPX
- Easy to disassemble and clean

Expand your capabilities

Vyntus™ CPX with peripheral devices

GEH-ECG-1200 & Cam Connect 14

Our flexible Vyntus™ CPX system integrates several commercially available ECG devices; including GE Healthcare CASE™ Exercise Testing System, CardioSoft®, Mortara and others. It is also compatible with several 3rd party ergometers such as Ergoline bikes and HP-COSMOS treadmills.

CardioSoft™ ECG

- CardioSoft data automatically transfers to Vyntus™ CPX
- Acquisition module (CAM Connect 14) connects to a standard PC USB port
- Full Disclosure stores unfiltered, continuous ECG signals

Vyntus™ CPX Standard Display

Whether it's the CASE™ system from GE Healthcare or other existing ECG systems, Vyntus™ CPX is the ideal compliment. Our standard single monitor display option allows you to view your gas exchange data while leveraging your already existing monitor for ECG.

GEH - CASE™ System

Expand your capabilities

Vyntus™ CPX with peripheral devices

Ergoselect 5

Tango blood pressure monitor

Polar® Bluetooth® interface

Ergoselect 600P
recumbent bike

quasar® med | LE300

pluto® med | LE200

REFERENCES

[1] Löllgen H, Erdmann E, Gitt AK. Ergometrie, Belastungsuntersuchungen in Klinik und Praxis. 3rd ed. Springer Medizin Verlag Heidelberg; 2010. doi: 10.1007 / 978–3–540–92730–3.

[2] Progress in Respiratory Research. Basel. Karger. Weisman IM, Zeballos RJ eds. Clinical Exercise Testing. 2002;(32)300–322. doi:10.1159/000062230.

⚠ Where applicable – country availability is dependent on the successful product registration with the National Authority of that country.

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For international use.