



Vyntus™ CPX and Vyntus™ ECG

Cardiopulmonary Exercise Testing

VYNTUS™ CPX | VYNTUS™ ECG

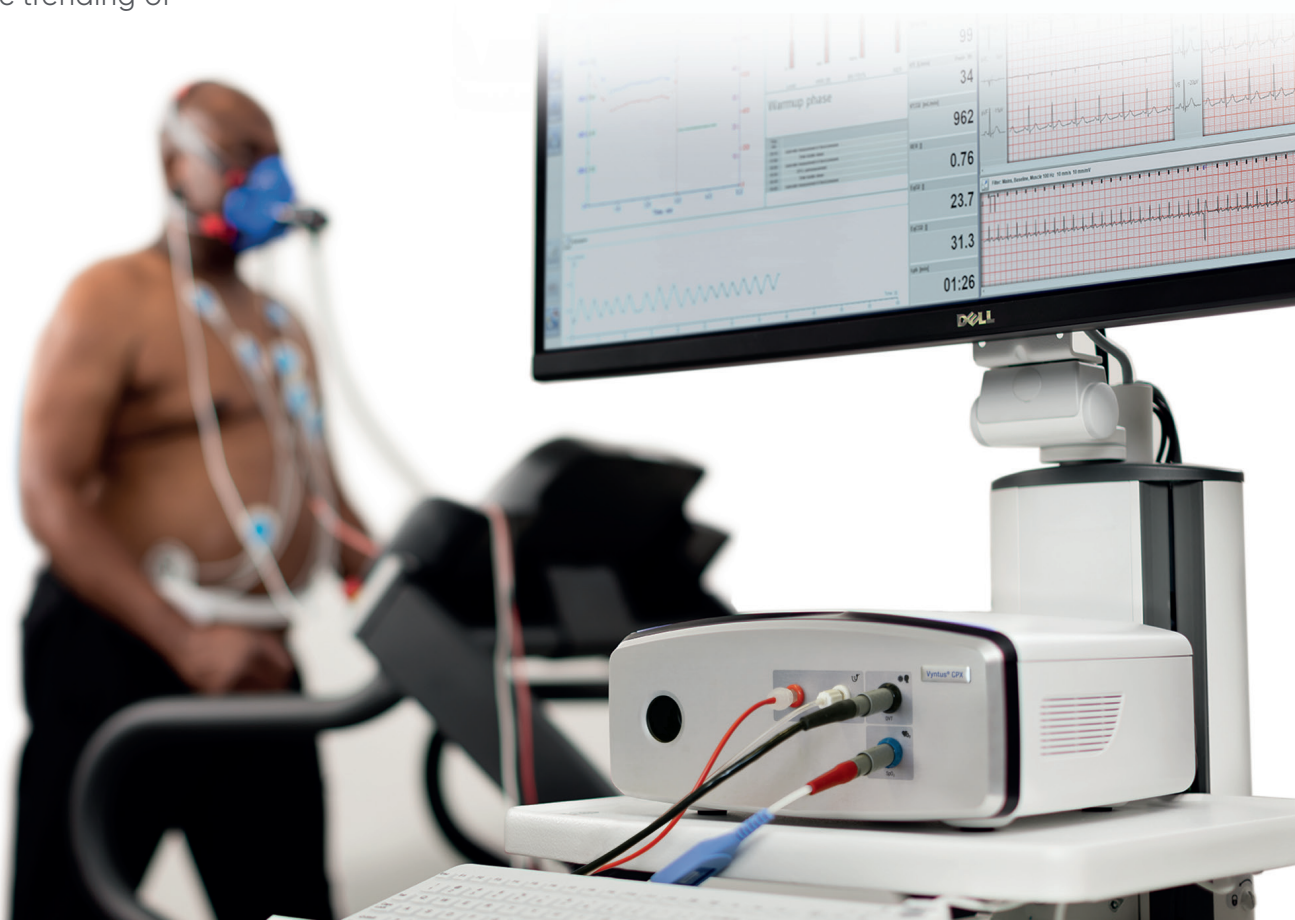


Vyntus™ CPX metabolic cart

Striking the perfect balance between high tech flexibility that is easy-to-learn and easy-to-perform.

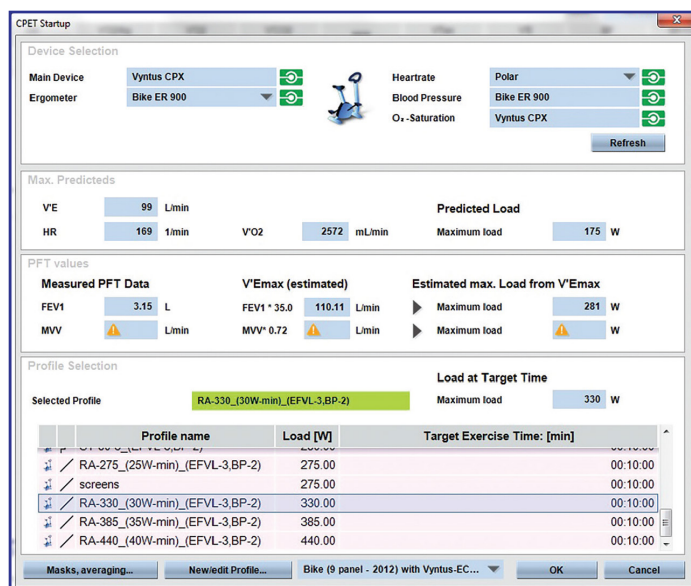
The versatile Vyntus™ CPX Metabolic Cart combines Vyair's pioneering experience with the latest innovations, to deliver the newest generation of clinical cardiopulmonary exercise testing. Utilizing highly accurate sensors to collect full breath-by-breath gas measurement data, the system provides helpful 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



Pain-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 questionnaire information can be collected via iPad and automatically uploaded to SentrySuite. Everything is right where you need it, when you need it most.

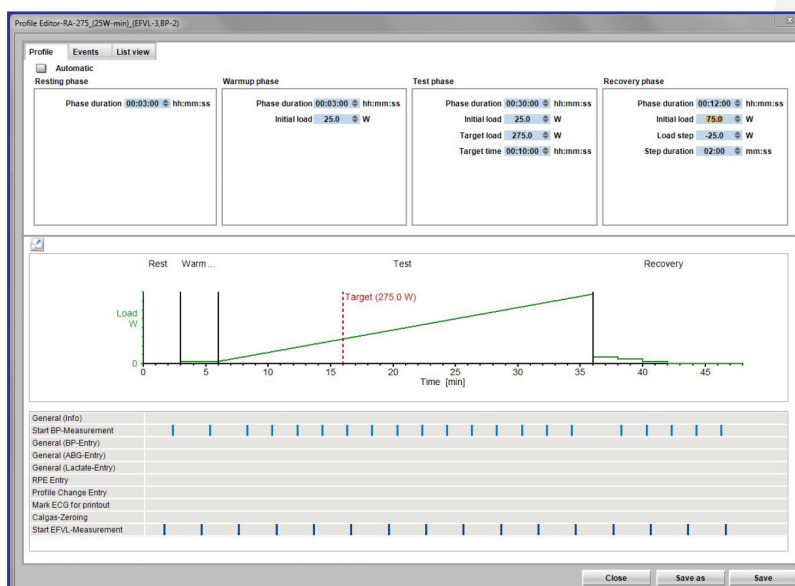


CPET Start-Up Menu: All Pre-Exercise Decisions on a Single Screen

- 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

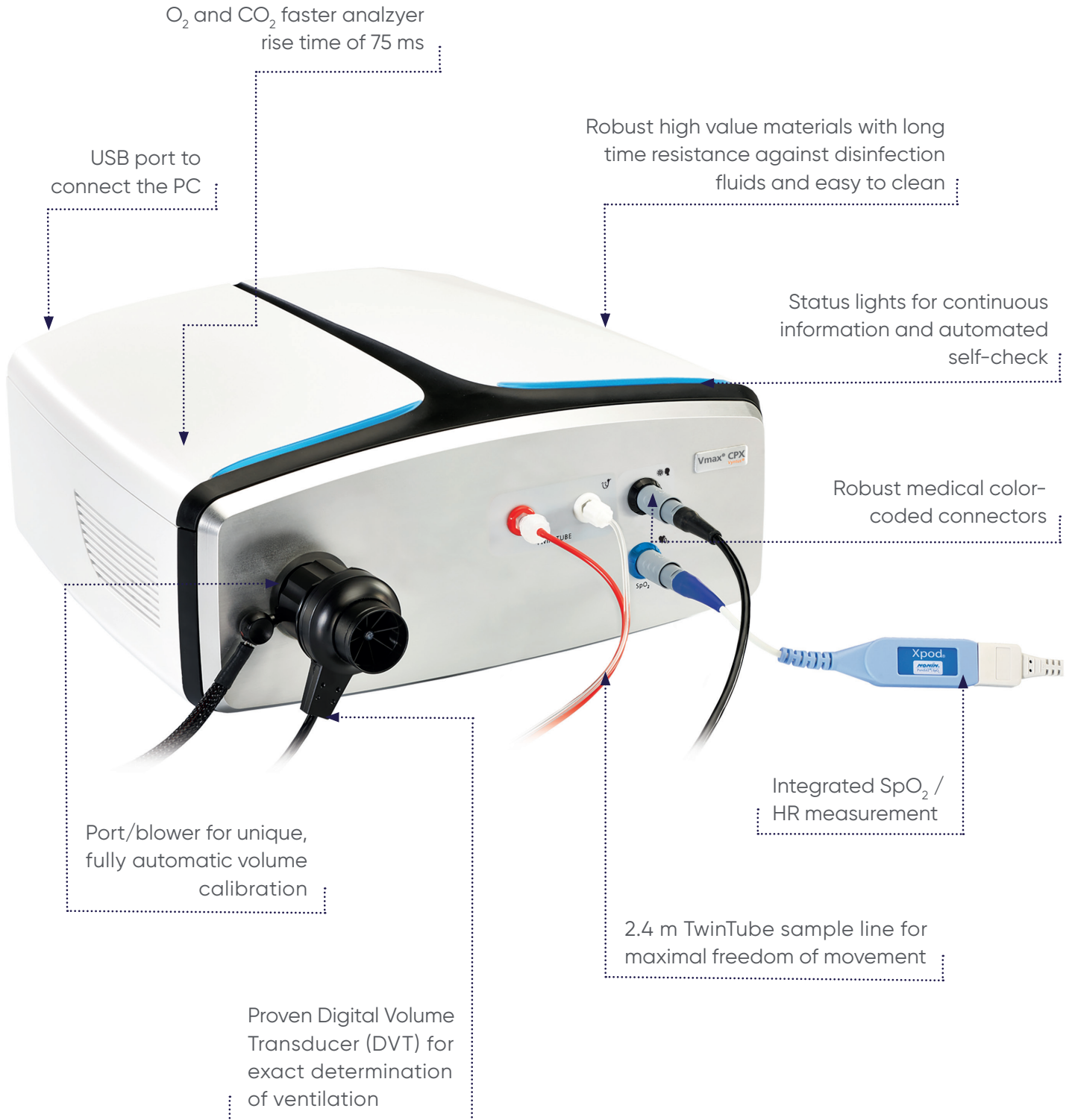
Profile Editor Tool: Build powerful automated Protocol and Submeasurement Programs

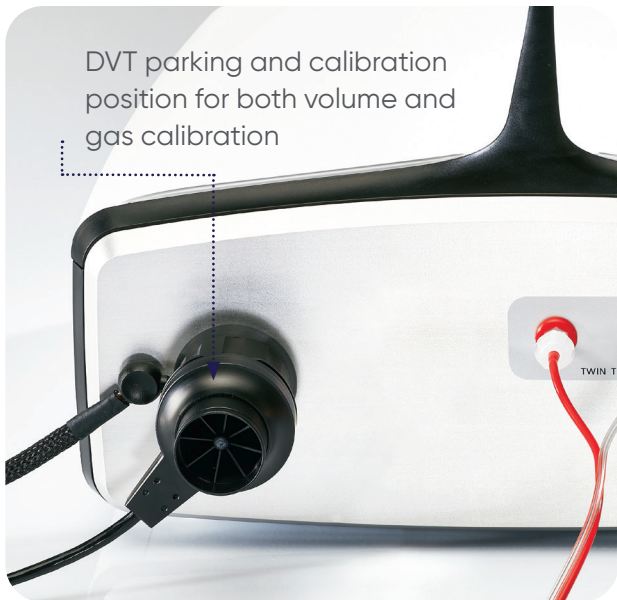
- Easily create individual ramp, step and weight dependent protocols
- Add measurements including automated BP, RPE, exercise flow volume loops, lactates, and blood gas
- Coordinated graphical and tabular representation of events
- Multi-stepdown recovery capability



The heart of the system

The highly accurate and proven O₂/CO₂ analyzer





Automatic volume and gas calibration

No syringe required! CPX automated volume calibration eliminates time-consuming and technique-dependent syringe calibration.

Gas calibration is automated:

- Only one gas tank needed
- No moving of sample line to cal port anymore
- Results include delay and response times



Digital volume transducer

Our **lightweight** digital volume transducer (DVT) with **very small dead space** is the perfect choice for testing patients to high-level athletes.

The DVT flat-vane system doesn't have the lag of a turbine system or the need for laminar airflow like a traditional pneumotach. It adds **minimal resistance** to airflow and **meets the 24-wave form test of ATS/ERS.**

The DVT is comfortable to wear while exercising with **mask or mouthpiece.**



"Tool-free" O₂ Cell

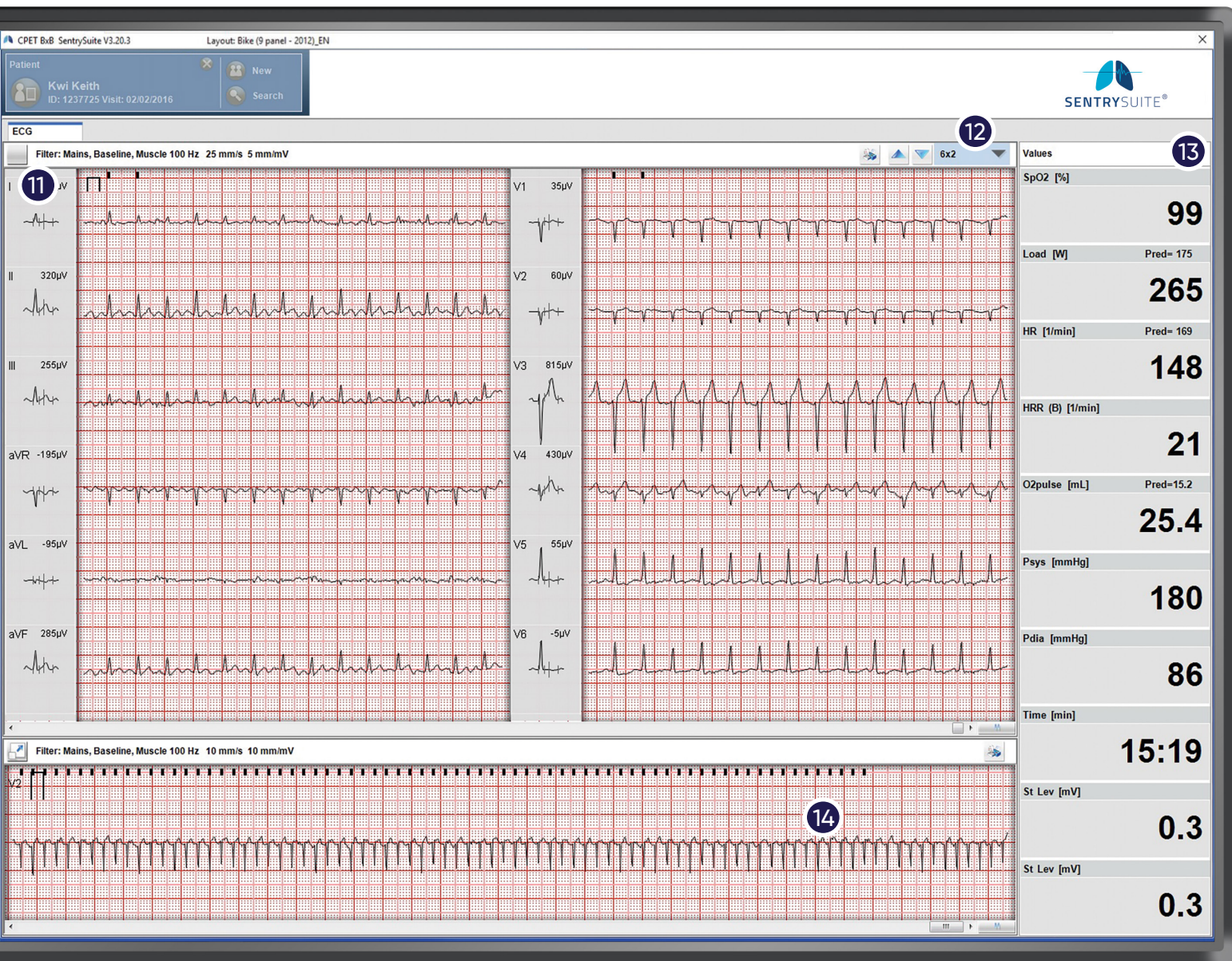
Notifies you when replacement is needed (typically ~2 years). Effortlessly changed by you; no need for a service call.

Vyntus™ CPX big cinema

Introducing 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.



- Quick patient data access
- Manual override of bike or treadmill protocol
- Tabs to quickly switch to view different graphics
- View ongoing performance relative to predicted max values
- Display your selected metabolic parameters
- Real-time ECG print button
- Edit graph axes to display preferred parameters
- Real-time data with color-coded maximum predicted ranges
- 60 second view of patient breathing
- Countdown to upcoming submeasurement programs showing when next programmed events will occur



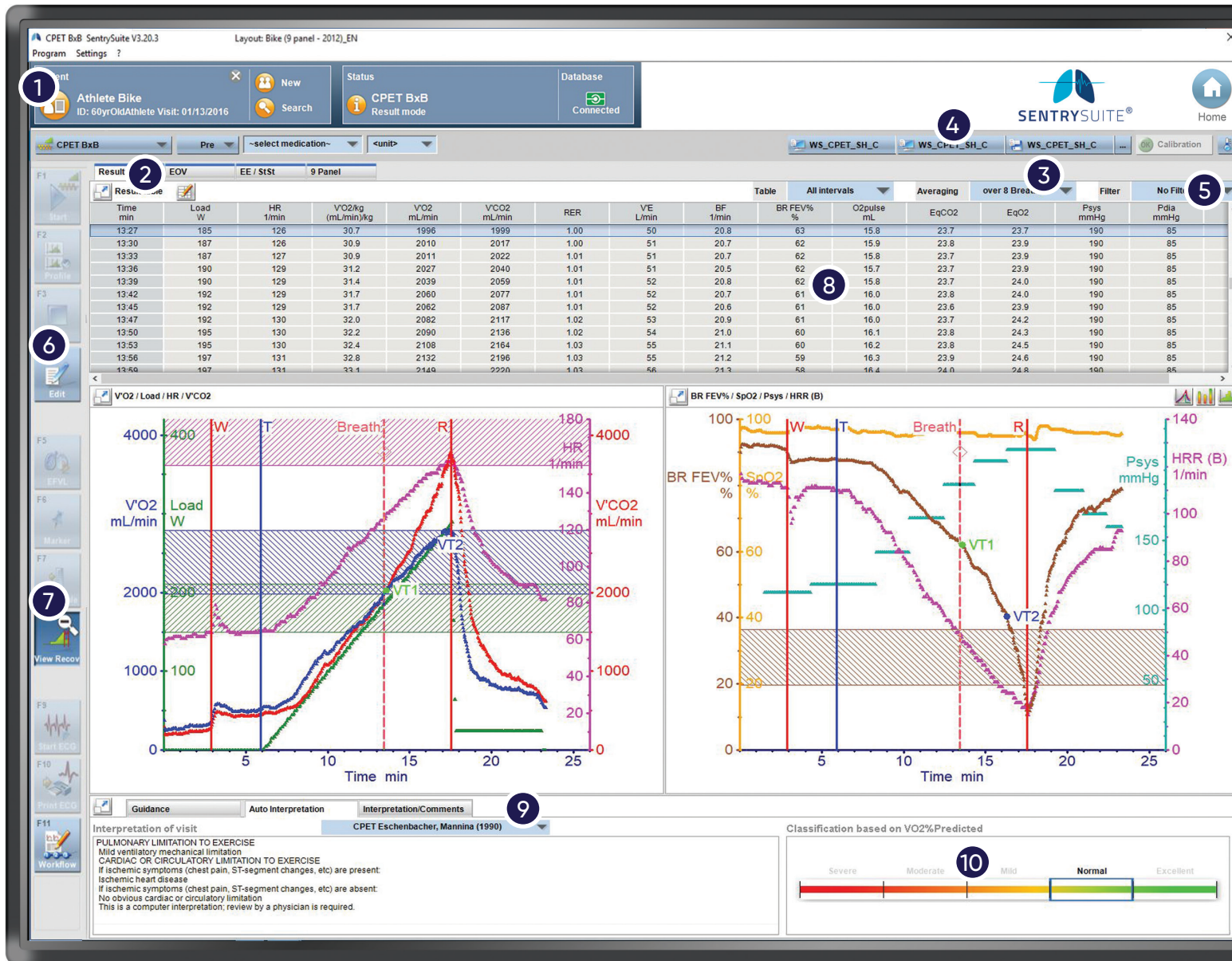
- 11 ECG median display
- 12 Display ECG real-time:
12 x 1, 6 x 2, 3 x 4, 3 x 1
- 13 Display your selected
cardiac parameters
- 14 Display selected ECG
lead as full disclosure

9-Panel Wasserman graph

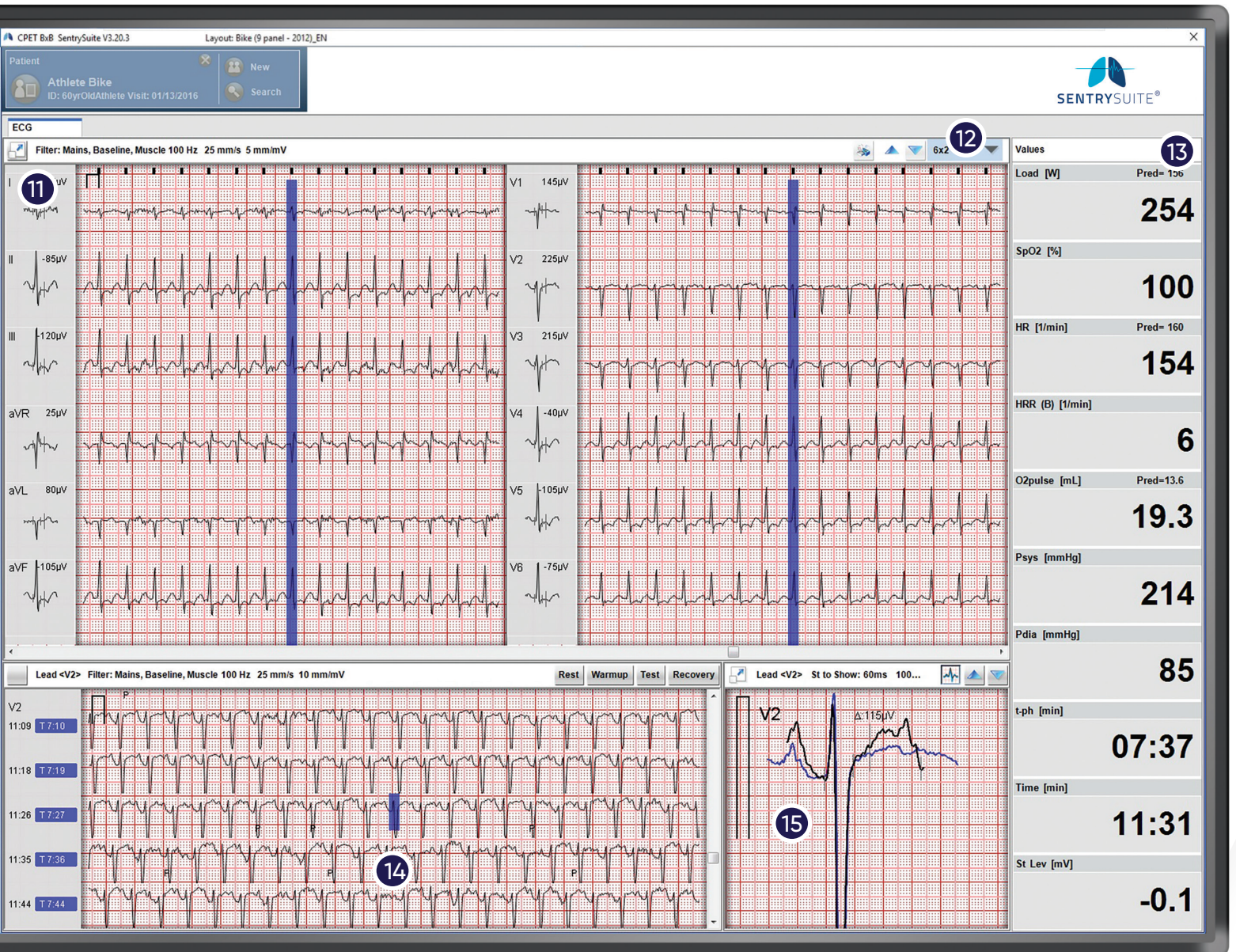


Key post-test reporting features

Focused and integrated : Complete data review and reporting is both intuitive and automated.



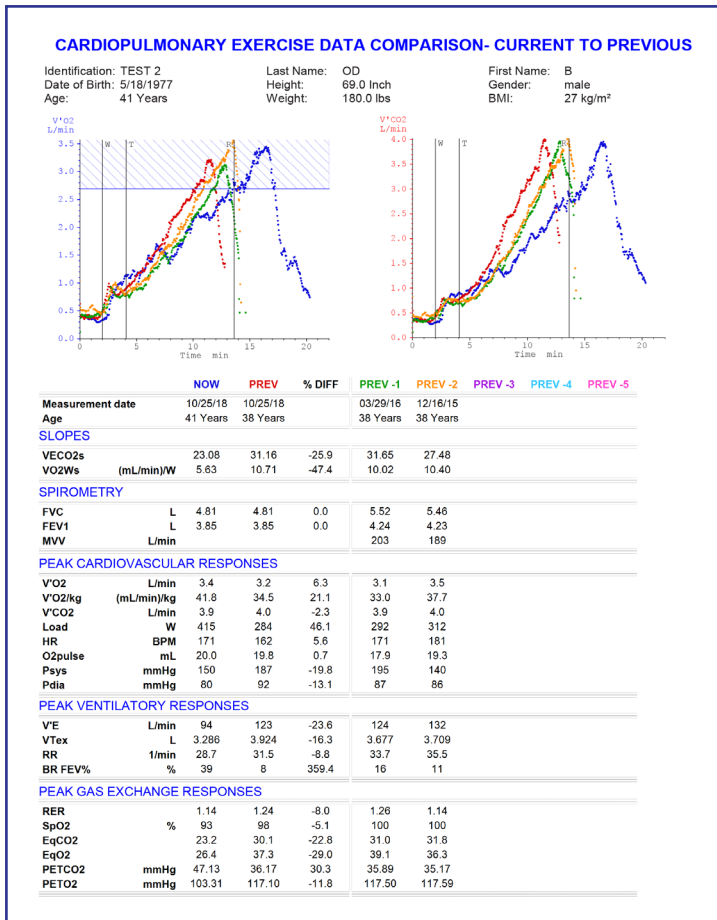
- 1 Quick patient data access
- 2 Tabs to quickly switch to view different graphics
- 3 Choose breath or time averaging
- 4 Quickly view, print or store reports
- 5 Quickly search for stored markers like e.g., lactate or blood gases
- 6 Start edit mode for thresholds, slopes, ranges, markers or exercise 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 $\dot{V}O_2$ Max predicted¹



- 11 ECG median display
- 12 Display ECG real-time:
12 x 1, 6 x 2, 3 x 4, 3 x 1
- 13 Display your selected cardiac parameters
- 14 Full disclosure of ECG data – is time aligned with all other gas exchange measurements
- 15 Compare current median to baseline median



Vyntus™ CPX evaluation workflow – from beginners to experts



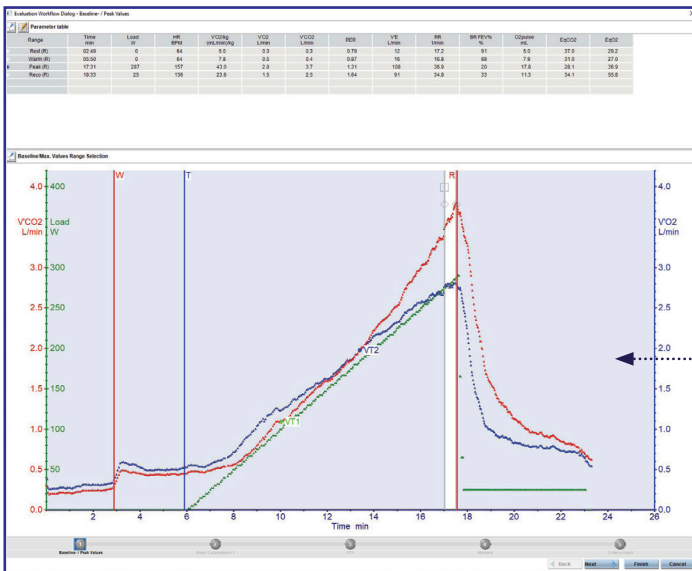
Trending patient data over time is key

SentrySuite™'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. SentrySuite's unique ability is more powerful than ever.

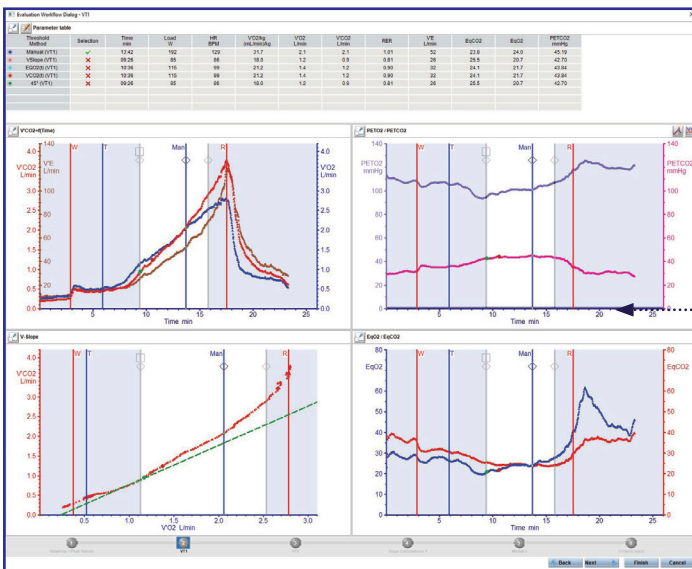
Report Generation, our unique report designer, is both simple to use, and extremely comprehensive.

Intuitive step-wise evaluation for occasional and frequent users

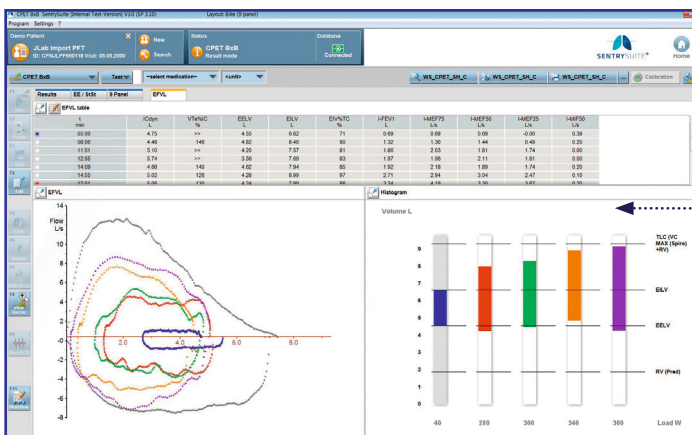
Using step-by-step guidance, SentrySuite™ makes post-test evaluation simple, fluid and systematic. Now, evaluation and interpretation can be standardized, reducing time to result. And, workflows can be configured for individual users in relation to desired tasks and sequences. For experts, SentrySuite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



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

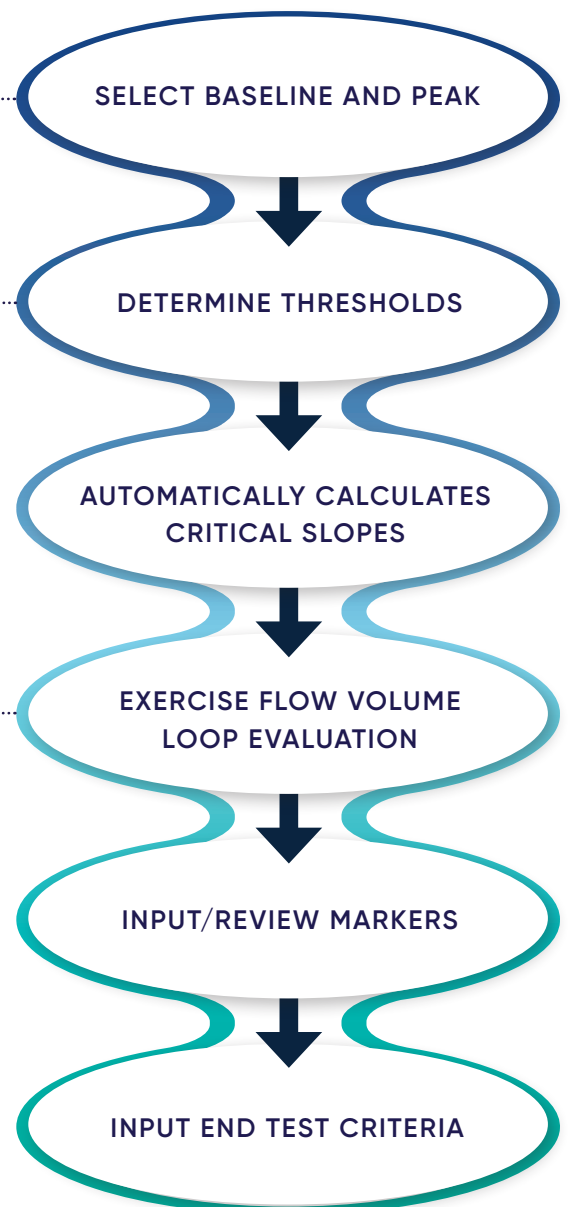


Pic.: Ventilatory threshold VT1. Side-by-side graphics with plausibility checks makes viewing ventilatory thresholds accurate and easy.



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

Workflow steps



With SentrySuite™, eye-catching results available on every page



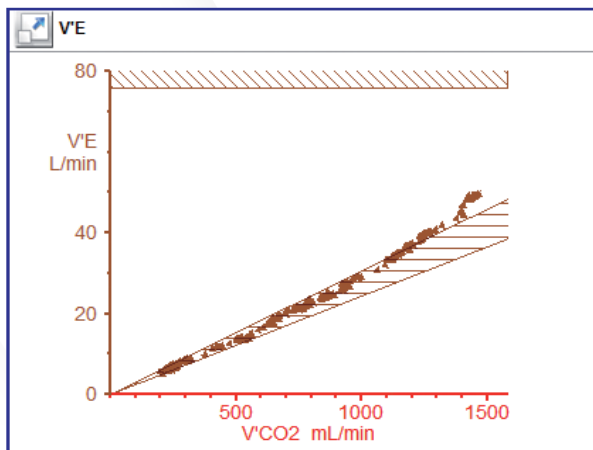
Ventilatory thresholds

- 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

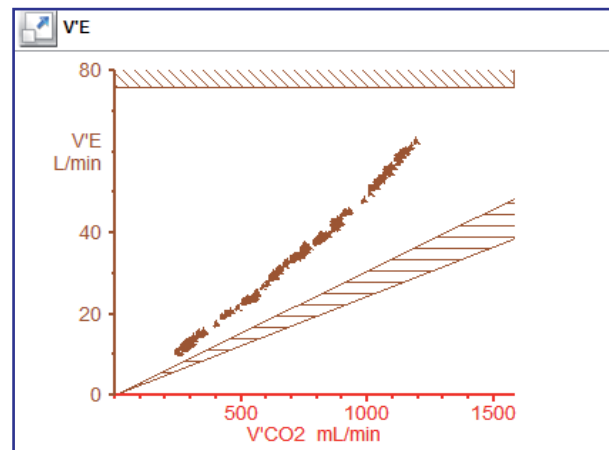
Pic.: Ventilatory threshold VT2

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.

Dynamic Predicted Ranges: Continually monitor VE/VCO₂ data during the test.



Pic.: A normal response to exercise



Pic.: An elevated response to exercise



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 is time-aligned so you can move anywhere in study review and all screens follow.
- Go paperless! All data is available as 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 Vyaire device running SentrySuite software.

Optional canopy module for indirect calorimetry

Resting energy expenditure

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

Easily view with 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



- The standard for exercise testing in athletes
- 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 capability by combining Vyntus™ CPX with other devices




Our flexible Vyntus™ CPX system integrates several commercially available ECG devices; including GE Healthcare CASE™ Exercise Testing System, CardioSoft®, Mortara and others. Vyntus CPX changes everything by changing nothing on your end.



Ergoselect 5




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
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