



SentrySuite®

software platform for intelligent respiratory diagnostics

SentrySuite 360° – one screen, all in

Quick change to different levels like Pre, Post, etc.

Clear overview about applied medication

Quickly view, print or store reports

Available in 16 languages

Quick patient data access

Direct access to calibration programs

Easily switch between measurement programs

All test results in one adjustable table

Switch into Edit Mode

All important graphs in one view

Detailed information about quality and repeatability of the test according to ATS/ERS

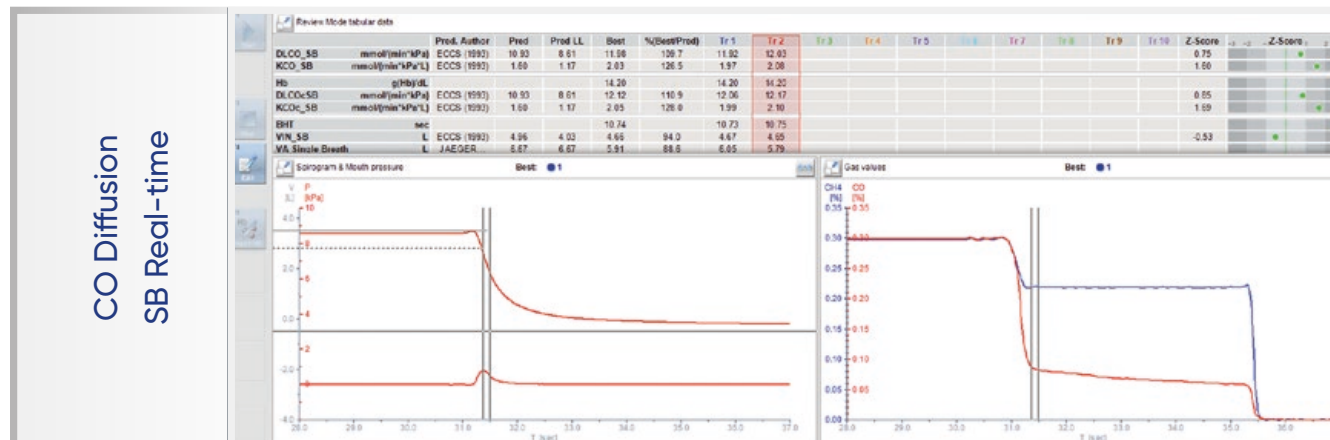
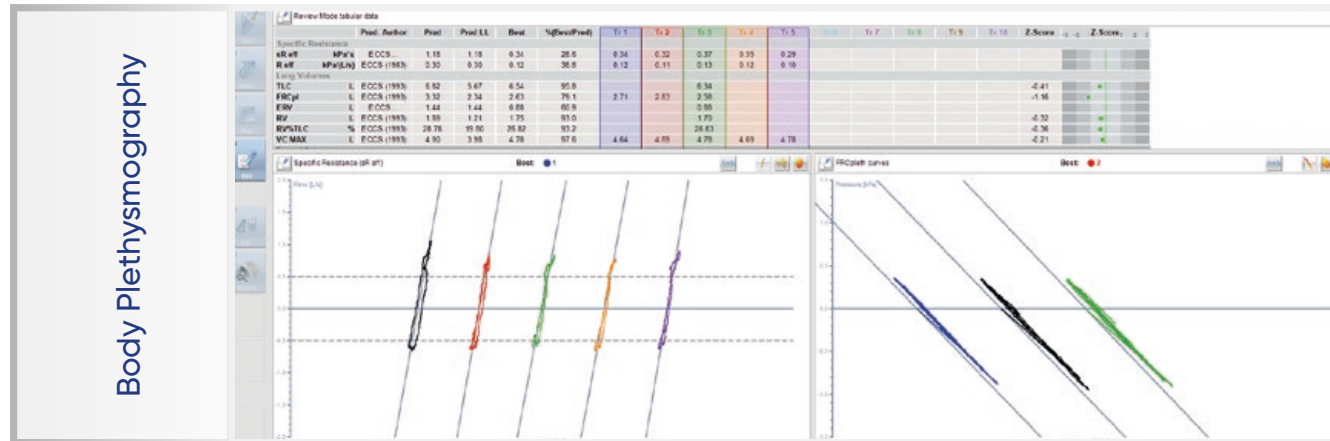
Color-coded classification bar

Automated interpretation with a choice of different authors

Ease-of-use measurement concept

Keep the overview without switching programs. **All important steps**; calibration, patient data entry, measurements, interpretation and reporting can be navigated **within ONE screen.**

SentrySuite supports a comprehensive list of PFT and CPET measurements



Whether the **MasterScreen** series or the new **Vyntus®** series, they are all **powered by SentrySuite** – from small PC spirometers to high-end PFT to ECG and CPET devices.

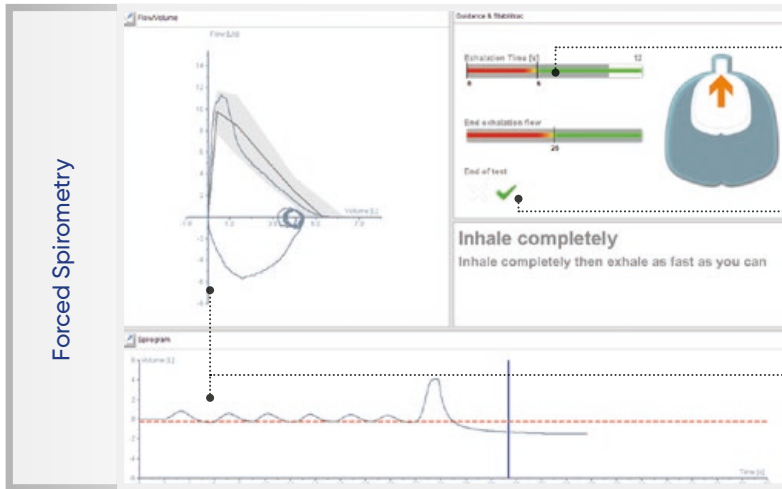
All PFT measurement programs show the same graph and table arrangement with a **consistent user interface**. **Intuitive operation** and **quick learning** of new measurements are guaranteed.

Measurement capabilities:

- Slow Spirometry
- Forced Spirometry
- MVV
- Bronchial Challenge Testing
- Body Plethysmography
- FRC N₂ Washout
- FRC HE Rebreathing
- SB Diffusion Real-time
- SB Diffusion Intrabreath
- NO Diffusion
- Rocc
- Impulse Oscillometry (IOS)
- Rhinomanometry
- PO.1
- MIP/MEP
- SNIP
- Compliance
- Resting ECG
- Stress ECG
- CPET breath-by-breath
- CPET High/Low FIO₂
- REE Canopy

Guidance and Quality

Coaching for operator and patient



Colored **guidance bar** for in-test exhalation time and plateau recognition

Check marks for spirometry end-of-test criteria

Online breathing curves



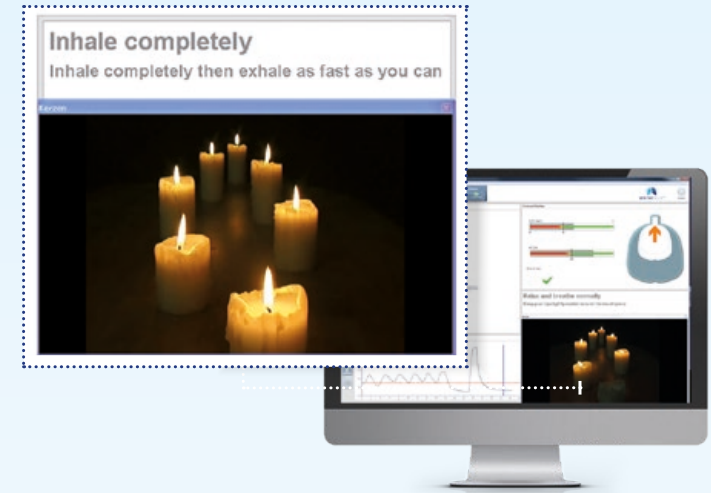
Colored **stability bar** for VT, BF, sRaw and FRCpleth during body plethysmography

FRCpleth notification for reproducibility



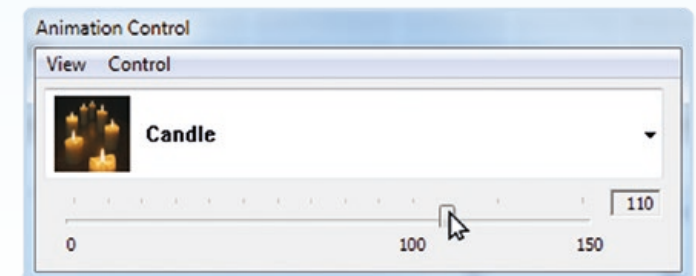
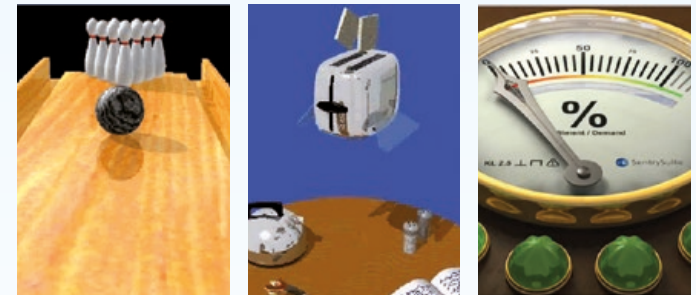
Breath-hold timer and **mouth pressure control**

Online textual guidance ideal for new personnel



Animation incentives

Choose from 10 different patient animations for forced spirometry.



Adjust the target scale to your patient needs.

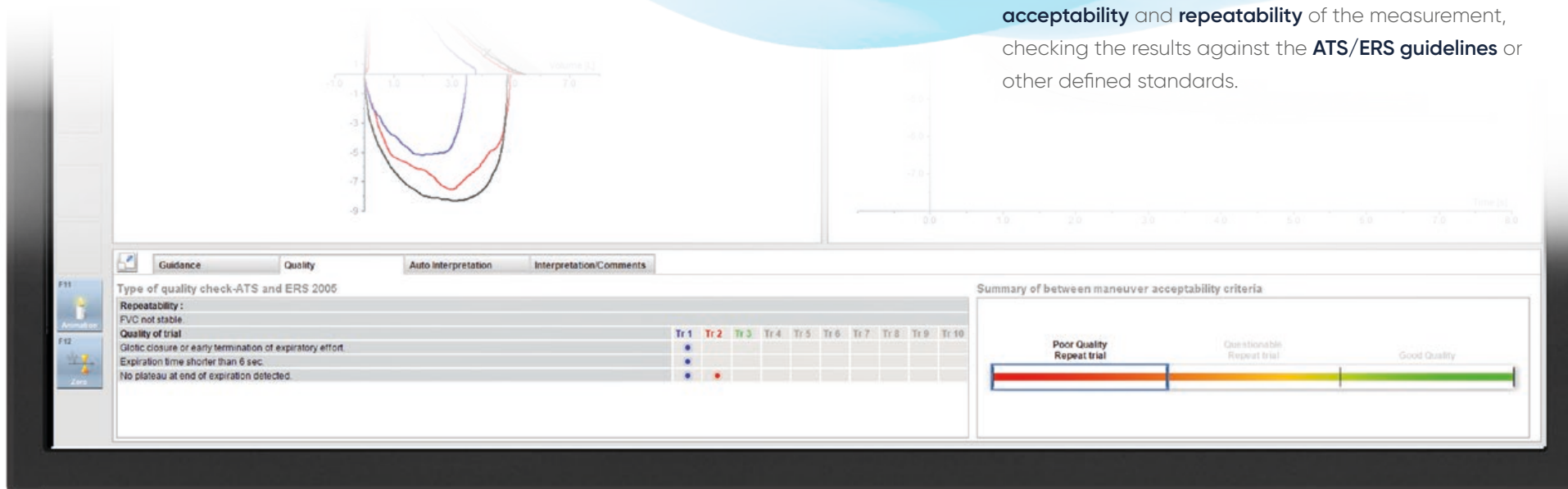
SentrySuite Quality Assurance—approved results

SentrySuite offers many tools to approve the quality and accuracy of your measurements.



QUALITY CHECK

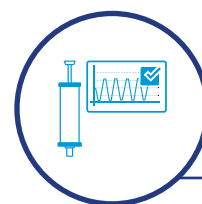
After each trial, SentrySuite provides feedback on the **acceptability** and **repeatability** of the measurement, checking the results against the **ATS/ERS guidelines** or other defined standards.



Biological Control

SentrySuite supports biologic control testing with a **separate BIO QC database**. The BIO QC data is easily identified and separated out for trending and further analysis.

According to the ATS/ERS guidelines, tests should be performed on a "standard subject".



Mechanical Quality Control

With **SentrySuite Quality Management** you can validate your measurement device using calibrated syringes, FRCpleth or DLCO simulators. Pre-defined special SeS QM patients automatically switch-off BTPS compensation and correct appropriately for mechanical dead space.

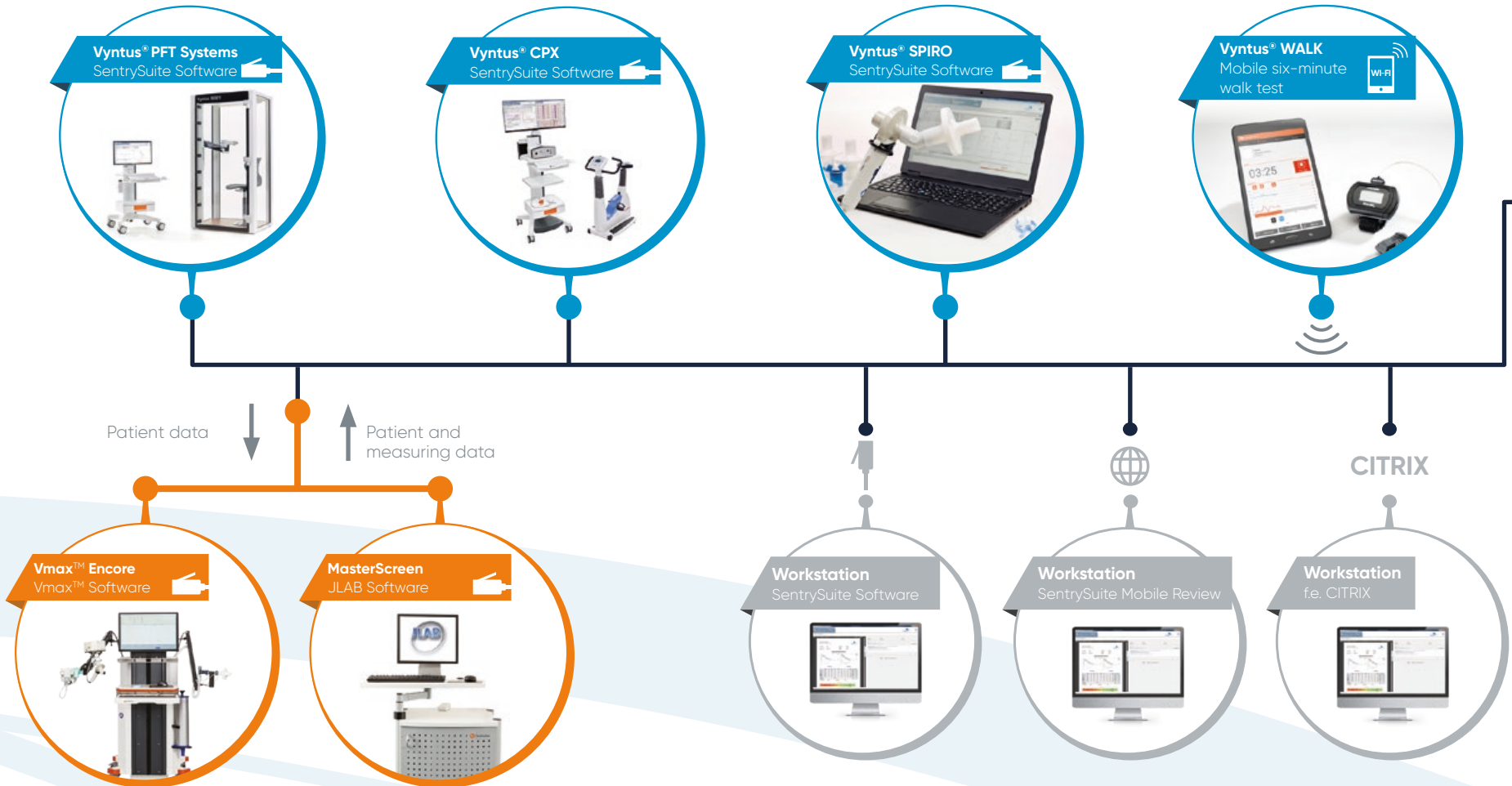
Type of Patient

- Patient
- Demo Patient
- BIO QC
- SeS QM validation

Networking

The united data of SentrySuite

Devices powered by SentrySuite Software



Older Devices

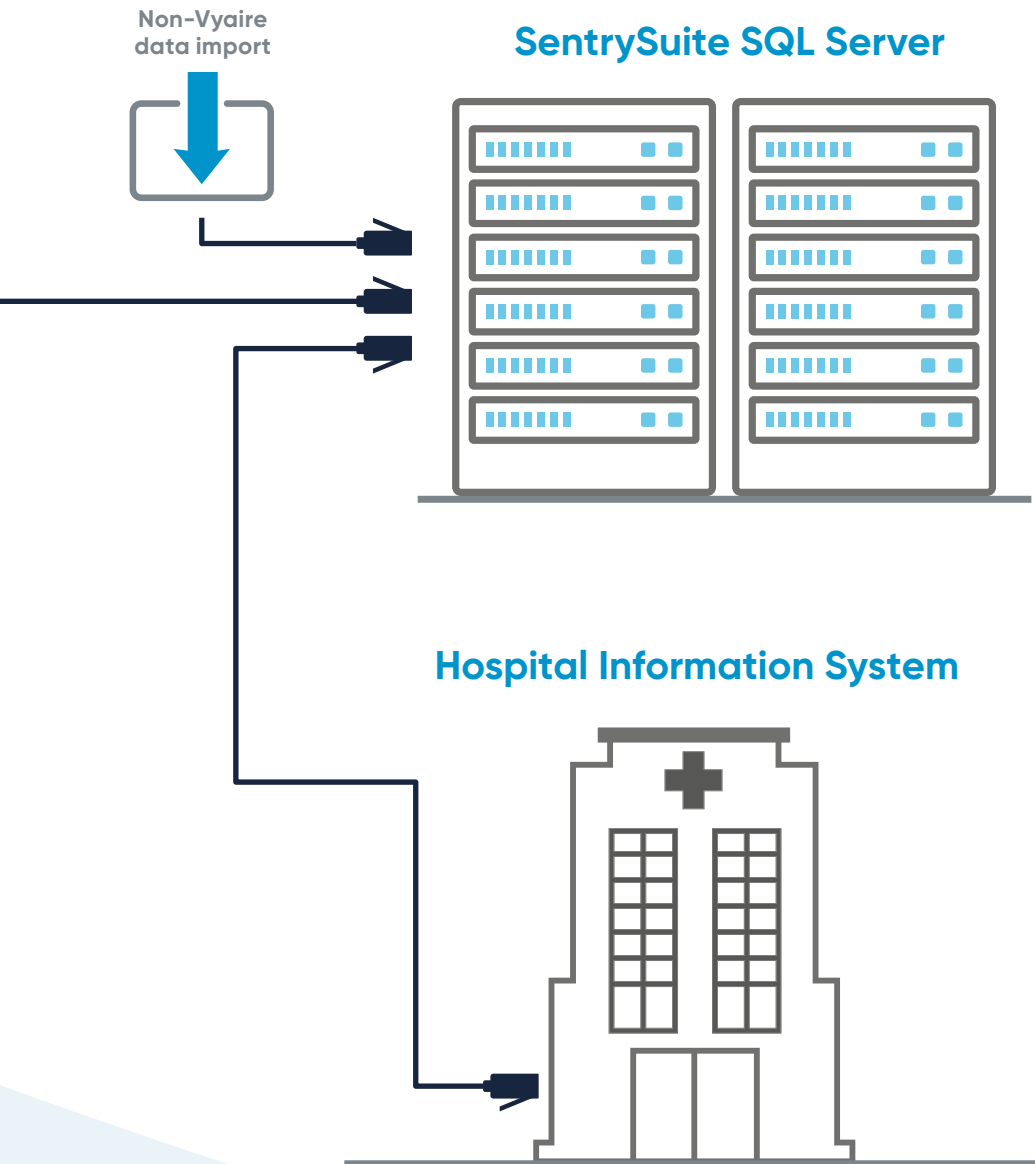
Renew your lab step by step. **Vmax™ Encore** or **JAEGER®** devices running **JLAB Software** connect to the **SentrySuite** database.

Physician's review workplace

Use your existing network environments:
client-based, web-based, Citrix.

Central Patient Database and HIS Interface

Server – SQL unlimited – HL7 – web-based – HIS – DICOM – GDT



One central patient database, so many advantages:

One-time patient data entry saves time

Several measurements from different devices on **one single report**

Measure **spirometry one time only** and use it for further measurements like SB Diffusion or CPET

Avoid duplication of **effort** – changes or creation of new reports, layouts, predicted sets are globally deployed

Automatic backup secures important patient data

Connect your cardiopulmonary lab with your HIS using SentryConnect

The powerful interoperability solution. Create your individual solution. Our **experienced IT specialists** are there for you every step of the way.

Easily **retrieve patient data** from your HIS and send back the measurement results

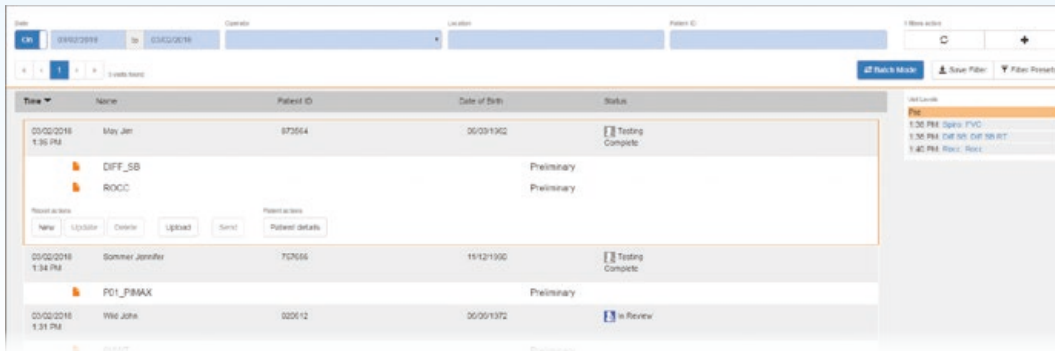
HL7 messaging with discrete data and **PDF** graphics providing full visual reporting to clinicians

Use **orders with worklists**

Modules for advanced tasks like **billing**

GDT interface for praxis systems

Save time with the workflow driven physician's review tool



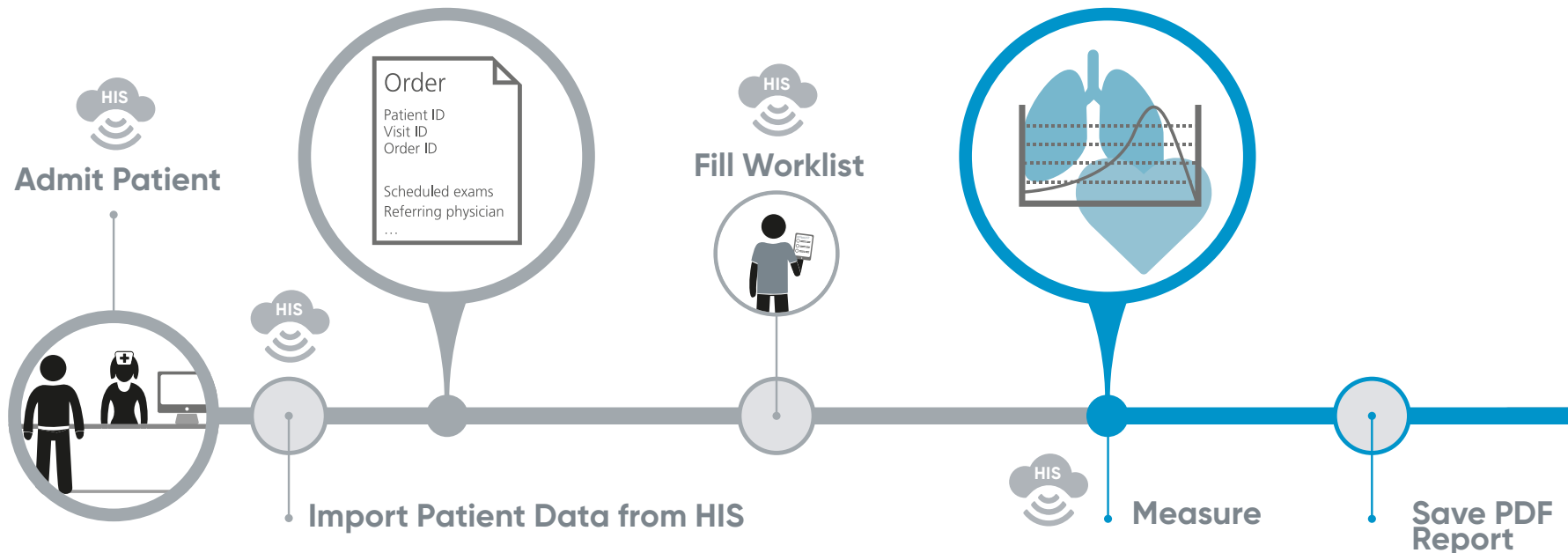
With SentrySuite, technician and physician work hand in hand

The technician performs the measurement and saves the proper report.

The physician sees all visits with their associated reports for interpretation.

Flexible workflow status design allows for optional steps such as a preliminary interpretation by a fellow, with subsequent confirmation or revision by the attending physician.

Apply filters to create individual work lists.





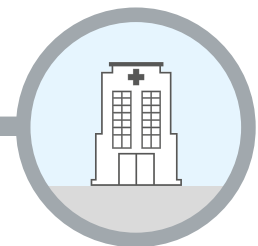
Review Tool

A standard with SentrySuite

- **Ultra-fast report view** with results on the left and interpretation on the right
- Customized interpretation templates and macros
- **Electronic signature**
- Automated Send-To-HIS functionality
- Status management
- Also available as **web-based solution** named **SentrySuite Mobile Review**



Send to HIS



Interpret

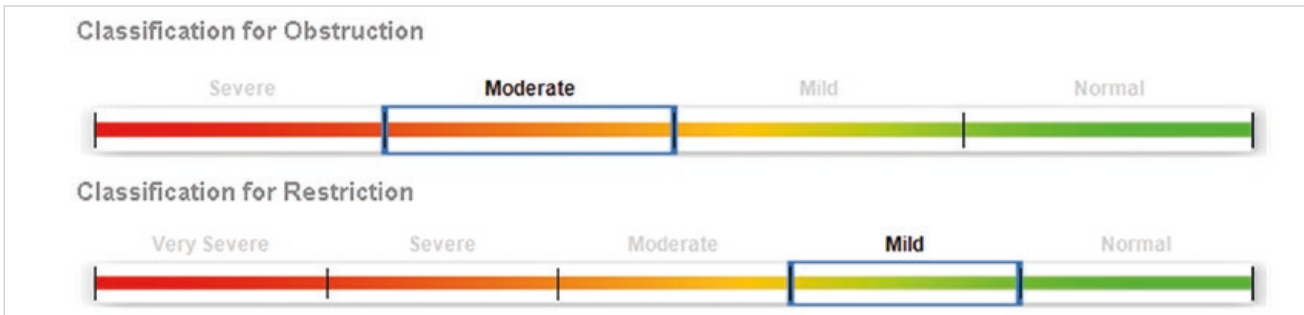
Electronic Signature

Tools go hand in hand with the workflow

FVC	L	Quanjer...	5.07	4.06	4.85	96	4.85	4.83	4.83	-0.36		
FEV 1	L	Quanjer...	4.15	3.29	4.07	98	4.07	4.03	4.03	-0.16		
FEV 1 % FVC	%	Quanjer...	81.97	71.36	83.85	102	83.85	83.47	83.52	0.33		
PEF	L/s	ECCS (1993)	9.33	7.34	12.26	131	12.26	12.69	11.95	2.42		
FEF 75	L/s	Quanjer...	1.63	0.83	1.92	117	1.92	1.86	1.85	0.41		
FEF 50	L/s	Quanjer...	4.16	2.51	4.77	115	4.77	4.82	4.80	0.51		
FEF 75	L/s	Quanjer...	1.63	0.83	1.92	117	1.92	1.86	1.85	0.41		
Error ATS ERS 05					0		0	0	0			

Scoring

SentrySuite offers all important parameter related scores; %Predicted, Lower Limit, Upper Limit, Z-Score, Standard Deviation



Classification

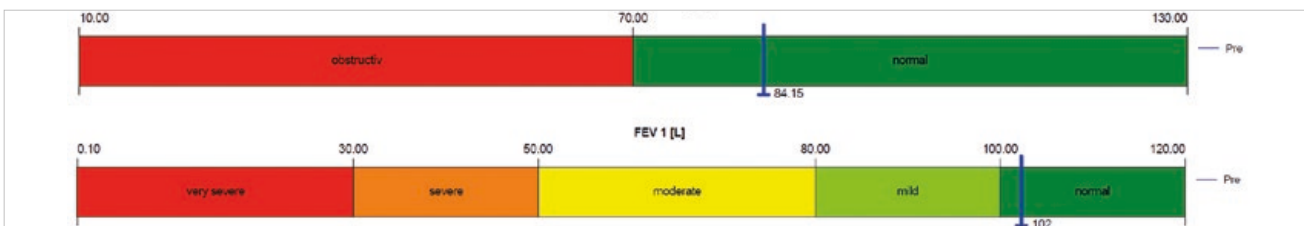
Each measurement program shows a classification bar indicating the possible limitation

Interpretation Templates

Create your own templates with macros

Automatic Interpretation

Several authors come standard: Ellis, Jaeger (1994), ATS/ERS 2005, Intermountain Thoracic Society (1984), Methodist Hospital (1994), IOS, CPET Eschenbacher/Mannina (1990)



Individual Bar Graphs

Create your own interpretation bar with the flexible Report Designer

Trending—monitor patient results over time

Measurement Parameter		Medication	Spiro		
Date	Time		FVC (L)	FEV1 (L)	MMEF (L/s)
21.07.2010	16:26:28		4.85	4.07	3.81
21.07.2010	16:32:53	Salbutamol	4.87	4.05	3.70
25.01.2011	13:22:44		4.84	4.07	3.99
09.09.2011	12:57:24		4.72	4.02	4.26
27.04.2012	11:12:17		4.79	4.03	4.19
13.04.2013	10:55:39		4.57	3.73	3.64
Mean value			4.77	3.99	3.93
Standard dev.			0.10	0.12	0.23
Var. coeff. [%]			2.13	2.94	5.96



Trending reports are standard in SentrySuite. Show your long term data with one click for any parameter.

Questionnaires

Digitally integrated into SentrySuite—
paperless and mobile solutions

Collect patient answers electronically and integrate them seamlessly into the SentrySuite database. The completed questionnaires are saved into the patient's database and can become part of your report.

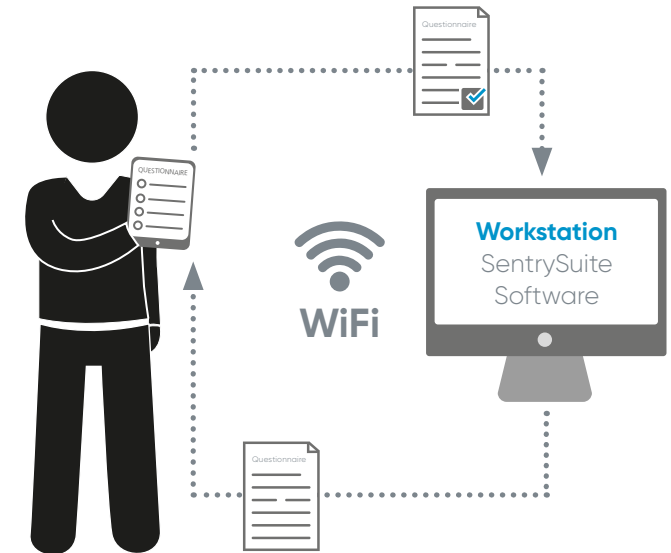
Choose from our standard questionnaires or create your own with the optional Questionnaire Designer with six different question types.

SentrySuite even brings scoring functionality to your questionnaires.

1 Tobacco smoking		0 ✓
1 Have you ever smoked cigarettes? (NO means less than 20 packs of cigarettes lifetime or less than 1 cigarette a day for 1 year.)		0 ✓
✓ 1 Yes		
2 No		2 ✓
2 Do you now smoke cigarettes (as of 1 month ago)?		
✓ 1 Yes		
2 No		
3 Does not apply		
3 How old were you when you first started cigarette smoking? (-1 = Does not apply)		0 ✓
15	Age in Years	
4 How many cigarettes do you smoke per day now? (-1 = Does not apply)		0 ✓
20	Cigarettes/day	
5 Do or did you inhale the cigarette smoke?		2 ✓
1 Does not apply		
2 Not at all		
3 Slightly		
✓ 4 Moderate		
5 Deeply		
Thank you		
		Total score: 8

Vyntus® QUESTIONNAIRE App

Go mobile with tablet or phone



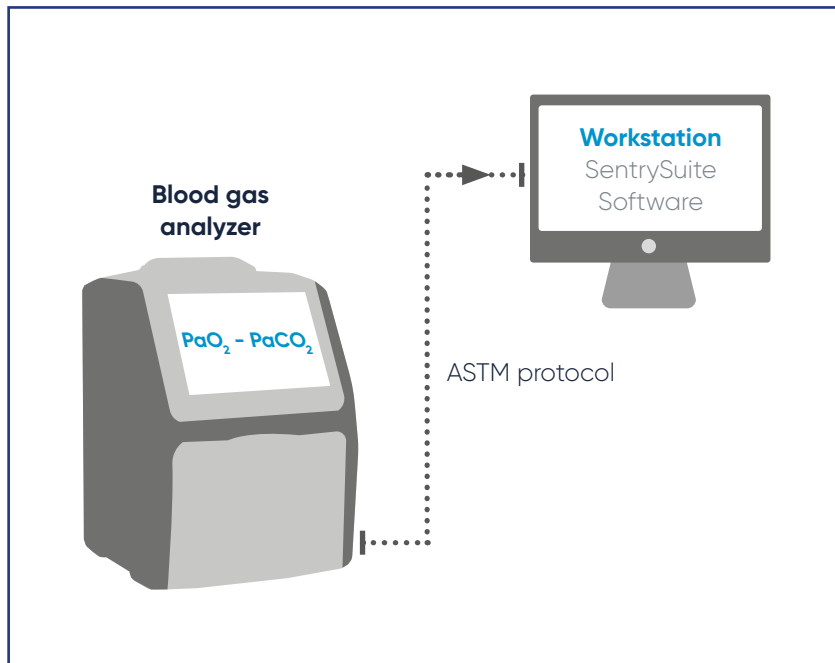
- Mobile multi-platform—iOS or Android
- Multilingual and intuitive menu navigation
- Secure communication
- Integration of patient image



Blood gas online connection

Connect your blood gas analyzer with SentrySuite


- Automate import and storing of blood gas measurements into the SentrySuite patient data record
- PFT / CPET and blood gas results on one report ready for interpretation
- Supports many types of blood gas analyzers





Offline data input

Offline data input—a standard in SentrySuite

Extend and feed your SentrySuite database with further external measurements like exhaled NO, lactate values and blood gases.

- 

Create a new parameter set or use implemented parameter sets like blood gases
- 

Type in and save your measurement results into the SentrySuite database
- 

Interpret, view and print together with your PFT / CPET data on one common report

		Pred	Best	%(B/P)	1	2	3	-3	-2	-Z-Score	2	3
Spirometry												
FVC	L	4.69	4.57	97	4.57	4.31	4.46					
FEV 1	L	3.89	3.73	96	3.73	3.54	3.71					
FEV 1 % VC MAX	%	80.37	81.67	102	81.67	77.38	81.17					
Exhaled NO												
NO	ppb		23									
Level date			13.04.13									
Level time			10:55									

Example of a spirometry report showing also an offline typed in Nitric Oxide measurement



Clinical research

Sentry Data Cube

Access your lung function data for clinical research and statistics using the **Sentry Data Cube**.

Easy **Query Builder** user interface

- Direct output into Microsoft Excel® or others
- Profit from various table configurations
- Customize your query and output tables



SentrySuite provides access to your patient data for clinical research.

From SentrySuite Query Builder to Excel® Outcome

	A	B	C	D	E	F	G	H	I	GT	HC	HI	JK	JN	LA	LD	LJ	LY
1	Visit Date	Patient ID	Gender	Race	Test Date	Age	Height	Weight	LevelType	FEV 0.5	FEV 1	FEV 1 % FVC	FVC	FVC in	MEF 25	MEF 50	MEF 75	MFEF 75/25
4	27.11.2014	GAB10031963	male	Caucasian	27.11.2014	51	1,74	90	1	3,492	4,255	83,613	5,089	5,484	1,137	4,788	11,253	4,643
5	13.04.2013	CFNSPJO750209	male	Caucasian	13.04.2013	38	1,74	80	1	3,129	3,986	84,485	4,718	4,691	1,974	4,819	8,318	4,179
6	27.04.2012	CFNSPJO750209	male	Caucasian	27.04.2012	37	1,74	80	1	3,24	4,139	84,014	4,965	5,002	1,868	4,898	9,183	4,188
7	09.09.2011	CFNSPJO750209	male	Caucasian	12.09.2011	36	1,74	80	1	3,145	4,024	85,226	4,721	4,766	2,015	4,785	8,101	4,339
8	25.01.2011	CFNSPJO750209	male	Caucasian	25.01.2011	36	1,74	80	5	2,984	3,779	91,57	4,127	3,408	2,506	5,183	7,748	4,733
9	25.01.2011	CFNSPJO750209	male	Caucasian	25.01.2011	36	1,74	80	5	3,022	3,873	91,855	4,216	3,622	2,642	5,196	7,761	4,748
10	25.01.2011	CFNSPJO750209	male	Caucasian	25.01.2011	36	1,74	80	5	1,424	1,848	91,439	2,021	1,399	1,2	2,424	3,628	2,276
11	25.01.2011	CFNSPJO750209	male	Caucasian	25.01.2011	36	1,74	80	6	3,041	3,911	82,642	4,732	4,485	1,74	4,502	7,489	3,997
12	25.01.2011	CFNSPJO750209	male	Caucasian	25.01.2011	36	1,74	80	5	2,752	3,378	91,721	3,683	2,956	2,252	4,986	7,813	4,558



SentrySuite security

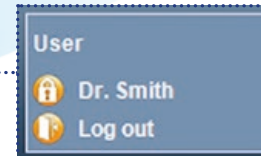
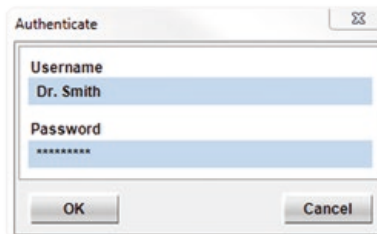
Data security and access control are the keys to protecting health information. SentrySuite offers several security features and comprehensive user administration.

Three steps to secure your patient data:



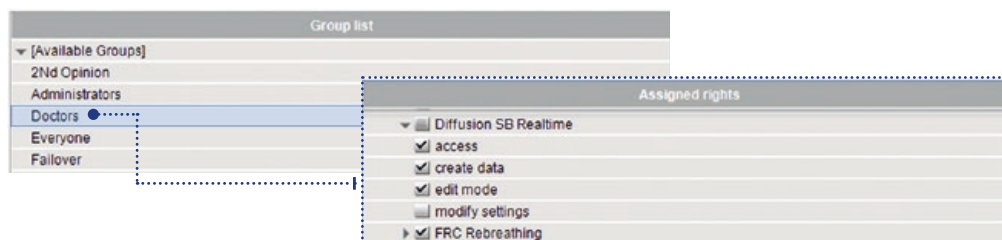
1. AUTHENTICATION

SentrySuite offers comprehensive settings for your password protection including the use of Single Sign On and Active Directory linking through LDAP.



2. AUTHORIZATION

The SentrySuite program User Administration allows easy to create user and user groups with their assigned rights. Make sure that only authorized users have access to the different sub programs.



3. AUDIT


The program Log File Viewer reports all proceeded steps within the SentrySuite Software with their appropriate user.

Date Time	User name	Workstation ID	Site	Event ID	Event text	Application
2017-02-14 10:59:26,070	Dr. Smith	LWDEU073XL56R1	n/a	4021	Startup program	Bodyplethysmography
2017-02-14 10:59:25,250	n/a	LWDEU073XL56R1	n/a	4013	Dr. Smith	Session Manager
2017-02-14 10:59:24,090	Dr. Smith	LWDEU073XL56R1	n/a	4021	Exit program	Spirometry
2017-02-14 10:20:25,890	Dr. Smith	LWDEU073XL56R1	n/a	4021	Startup program	Spirometry
2017-02-14 10:20:25,150	n/a	LWDEU073XL56R1	n/a	4013	Dr. Smith	Session Manager
2017-02-14 10:20:23,800	n/a	LWDEU073XL56R1	n/a	4021	Starting Application 'Spirometry'	SentryDesktop
2017-02-14 10:20:14,030	n/a	LWDEU073XL56R1	n/a	1000	Run Automatic: Completed Task 'Start up database'	SentryDesktop



GLOBAL HEADQUARTERS

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