SOT
Medical Systems

Advanced
Vascular Diagnostics

The Modular Vascular
Diagnostics System

www.sot-medical.com

ISO 13485 M-166

SOT Medical Systems

SOT Medical Systems is engaged in medical business since more than 30 years within Austria as well as internationally. In 1991 the family-owned company started operating in the fields of angiology, phlebology and cardiology.

Since 1999, a system for the fast and reliable diagnosis of pAOD patients has been self-developed: The **AngE**™ System. Due to its modularity, it constitutes the ideal expert-solution for angiologists, phlebologists, vascular surgeons and for the diagnosis of diabetic patients.

"We support vascular specialists to early diagnose blood flow disorders and to prevent amputations by providing the latest and most suitable measurement systems."

Karl Glantschnig
CEO

Made in Austria

Our AngE products have been developed, produced and assembled at our headquarters in Carinthia, Austria since the beginning. While doing so, we pay close attention to observe the highest quality standards (in compliance with ISO13485:2016) and invest steadily in the research and development of our leading vascular diagnostic systems.

As **Austrian family business**, we put our focus on providing sustainable solutions and the highest service quality to hospitals, clinics and doctors as well as on creating long-term and fulfilling jobs within our home region.

Modular and upgradeable

The AngE-System is conceived as **modular expert solution** for vascular diagnostics.

This enables us to provide **custom-made configurations** that can be adapted to your individual diagnostic requirements at any time.

	AngE™ Phlebo	AngE™ ABI+	AngE™ DIABETIC	AngE™ COMPLETE
	2-Channel Optical PPG	Early detection of PAD	Comprehensive Vascular Screening	Fully equipped Vascular Diagnostics Lab
	Page 3	Page 5	Page 7	Page 9
Patient Administration	●	●	●	●
Venous & Arterial PPG	●	optional	●	●
Temperature Recording	●	●	●	●
oTBI and Toe Pressure		●	●	●
oABI and PWI™		●	●	●
4-Channel Oscillography		●	●	●
Heart Rate Variability & PWV			●	●
4-Channel Segmental Oscillography			●	●
8-Channel Segmental Oscillography				●
Venous Occlusion Plethysmography				●
Bidirectional Doppler				●
Phlebodynamometry				●

Your Advantages

FLEXIBILITY

A modular system guarantees a well-fitting and future-proof investment.

EXACT PULSE WAVES

Sensitive pressure sensors and sophisticated algorithms ensure a detailed and nearly unfiltered pulse wave.

EXPERT KNOW-HOW

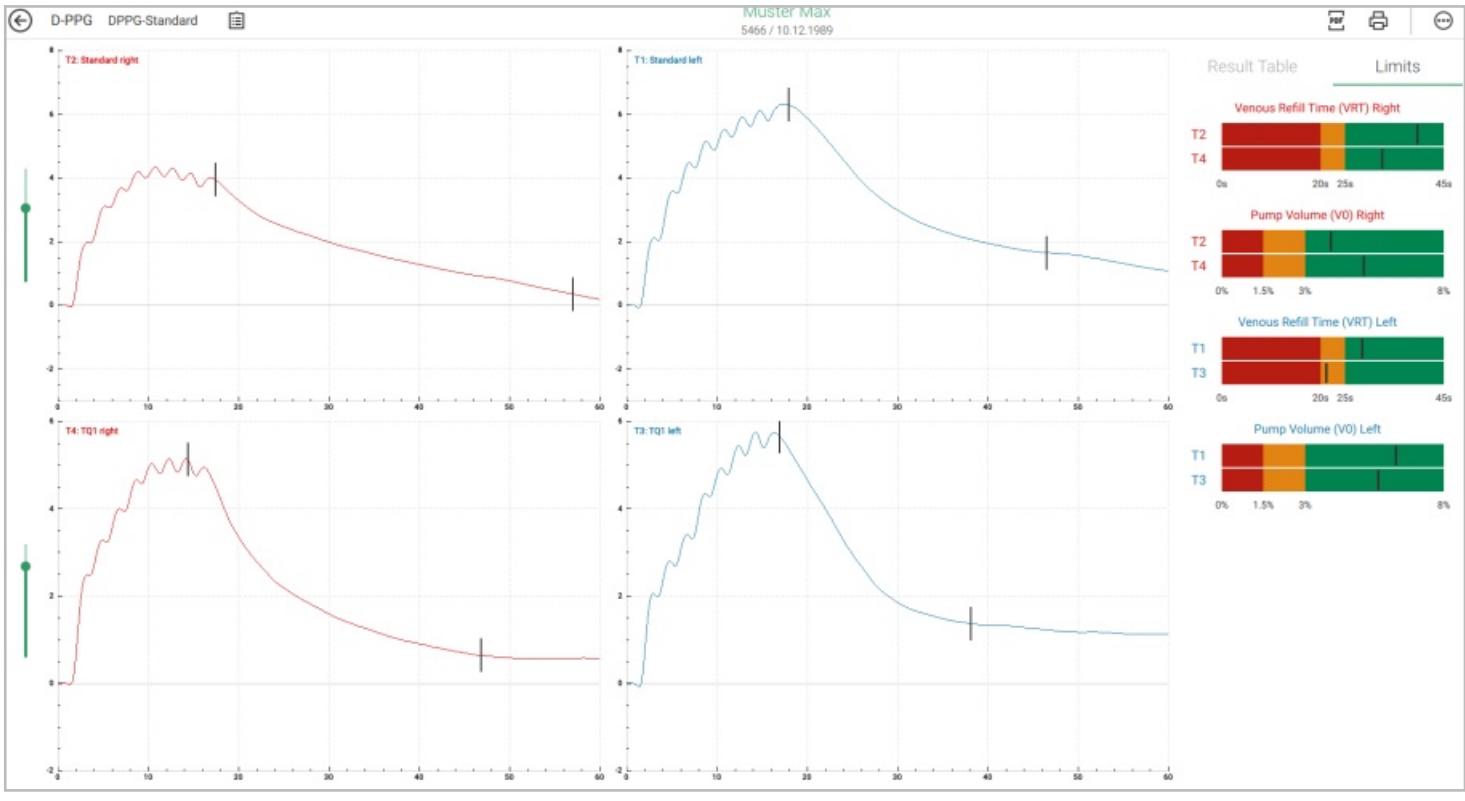
Our customer consultants are experienced vascular experts and will assist you before and after acquisition.

SOT Medical Systems

AngE™ Phlebo

Venous and Arterial Measurements at Credit Card Size

- 2 Optical PPG Sensors
- USB-Powered
- Temperature Probes
- Venous Valve Incompetence, Morbus Raynaud, Thoracic Outlet Syndrome and more
- Acral Oscillography on Fingers and Toes



Two times 2-channel Venous Function Test (without and with Tourniquet) with determination of Pump Volume (V_0), Fill Time (T_0), Half-Life Time (T_{50}) and Temperature.

Venous Function Measurement

The AngE Phlebo is a 2-channel D-PPG/LRR device that uses two IR-sensors to perform venous function measurements. This allows for a fast diagnosis of venous valve incompetences.

Pump Volume and Fill Time

AngE Phlebo calculates **the pump volume (V_0)** and the **venous fill time (T_0)** as well as the **venous half-life period (T_{50})** automatically. The resusts are displayed in a simple color scale for a fast evaluation.

Tourniquet

The predefined Tourniquet measurement allows to compress the superficial vein system using cuffs. By doing so, it becomes possible to determine whether the venous valve incompetence is located in the superficial or in the deep venous system.

Morbus Raynaud

The simple and fast measurement before and after suitable provocation maneuvers facilitates the differentiation between vasospastic effects and manifest blood flow disorders.

Shoulder Girdle Maneuver (TOS)

By applying different postural positions, the TOS diagnosis allows determining motion-dependent blood flow restrictions within the arms efficiently.

Temperature Probes

Measurement probes on both sensors sense and compare the patient's skin temperature during the measurement.

Micro- and Macrocirculation

Acral oscillography allows to measure the micro- and macrocirculation in fingers and toes to assess the wound healing success.

Comprehensive Software

AngE Phlebo comes with a sophisticated software featuring patient management, measurement analysis, HIS interfaces and many more.

---

*"The **AngE Phlebo** is the state-of-art, haemodynamically significant D-PPG system for venous diagnostics. This non-invasive functional investigation has always helped me accurately examine venous disorders, even with complex cases."*

Dr. Alfred Obermayer
Head of Institute of Functional Phlebologic Surgery,
Karl Landsteiner Society

See how it's applied

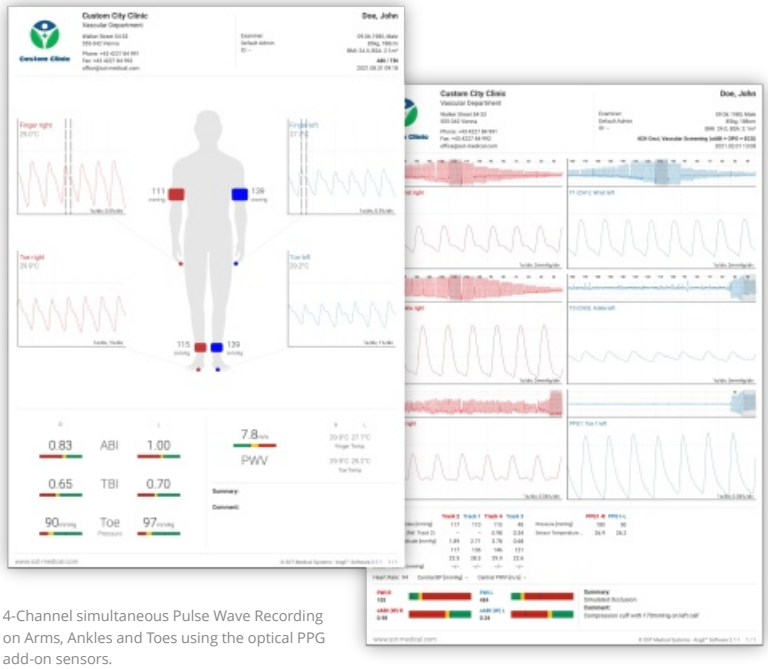
Simply scan with your smartphone camera and open the link to the video.

SOT Medical Systems

AngE™ ABI+

For early detection of Peripheral Arterial Disease (PAD)

- Oscillometric ABI, TBI, Toe Pressure, PWI™, Pulse Wave Velocity and more
- Easy 4-channel PAD assessment in 3 minutes
- TBI add-on with two optical PPG and temperature probes
- Patient Management and Report software compatible with macOS and Windows



4-Channel simultaneous Pulse Wave Recording on Arms, Ankles and Toes using the optical PPG add-on sensors.

4-Channel Oscillography

Simultaneous recording on all limbs.

Apply Pulse Volume Recording (PVR) on all limbs at the same time to quickly determine the slightest side differences.

The oscillometric ABI, Pulse Wave Velocity (PWV) and Pulse Wave Index (PWI™) will be automatically calculated during the test.

Use the build-in Exercise Stress-Test to detect variations pre and post provocation.

Why it's important to early diagnose Peripheral Arterial Disease (PAD):

~13%

are affected

PAD affects 12-14% of the world's population.*

20-50%

are asymptomatic

Up to every other PAD patient does not experience symptoms and is likely not diagnosed.*

50%

die within 4 years

Only 50% of PAD amputees survive more than four years.*

* Sources: WHO (2014), AHA (2007).

Time Saving

Simultaneous recording on all limbs within 3 minutes.

Accurate

Cuffs measure all vessels and collaterals at the same time (instead of one vessel at a time with Doppler probes).

Mobile trolley and tablet computer optional.

Simultaneous

Direct left and right comparison to detect slightest side differences in timing and amplitude.

See how it's applied

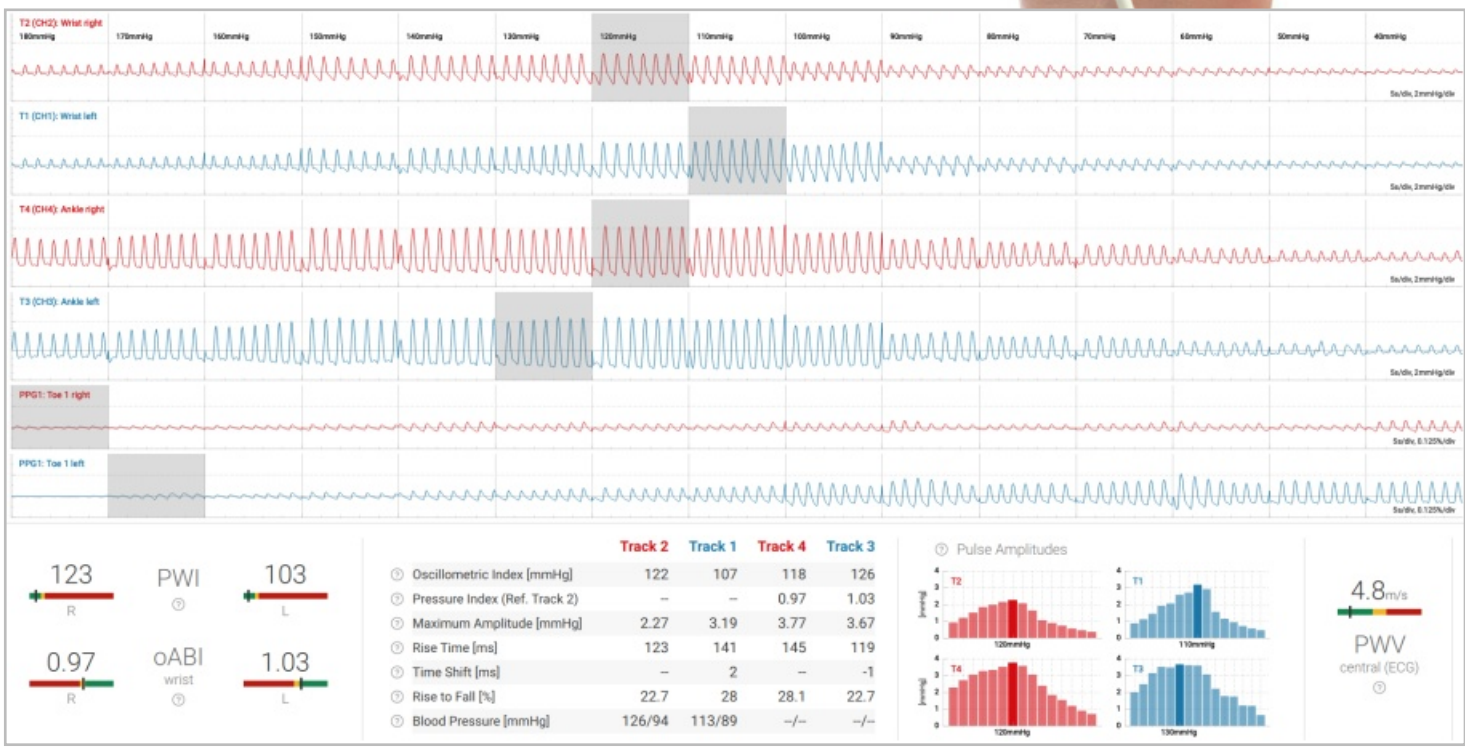
Simply scan with your smartphone camera and open the link to the video.

SOT Medical Systems

AngE™ DIABETIC

Comprehensive Vascular Screening

- Simultaneous Mesurement in under 3 Minutes
- Determine oABI, TBI, Toe Pressure, Pulse Wave Velocity, Heart Rate Variability and more
- PWI™ – Pulse Wave Index
- Assess the Micro- and Macrocirculation to estimate the Wound Healing success.
- Passive and active Stress Tests



6-Channel Simultaneous Pulse Wave Recording on Wrists, Ankles and Toes using the TOPP-Method (Tissue Optical Perfusion Pressure).

AngE Phlebo

AngE Pro 4

Comprehensive Screening

The innovative method provides a fast and secure diagnosis of the peripheral vessel status of diabetics.

It allows measuring on ankle and wrists as well as on fingers and toes, including forefoot- and toe pressure measurement.

AngE DIABETIC combines four measuring cuffs and two optical sensors to enable the measurement on **six measuring spots** simultaneously. This creates diverse possibilities to detect blood flow disorders within the terminal vessels as well as to assess the wound healing success of diabetic patients.

Simple 3-Minute Measurement

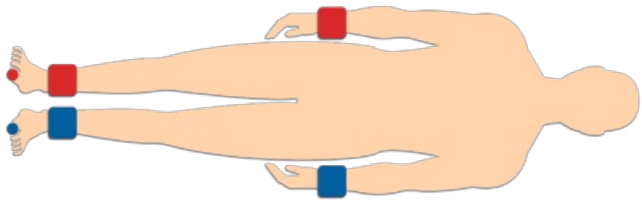
The measurement can be conducted easily by following only a few steps and without significant stress for the patient.

After applying the cuffs on ankles and wrists, as well as the optical sensors on the toes, the system applies a pressure of 180mmHg and decreases it by steps of 10mmHg.

By recording the optical sensors, the examiner can immediately determine the pressure step at which the patient's toes show the first pulsations. Different key indicators, like the o**ABI**, the **PWI**, the amplitude or the peak time of the pulse wave, are recorded simultaneously.

Comprehensive Report

The one-page report combines pulse wave and measurement parameters on a single page at the touch of a button.



"The high sensitivity of the optical sensors allow for a good documentation of the pulse waves, even with marginal blood flow. Given the virtually unfiltered display of pulse curves, dicrotic waves can be clearly identified for healthy and elastic arteries."

Dr. Alfred Obermayer

Head of Institute of Functional Phlebologic Surgery, Karl Landsteiner Society

See how it's applied

Simply scan with your smartphone camera and open the link to the video.

SOT Medical Systems

AngE™ COMPLETE

The All-in-One Vascular Diagnostics System

ECG Trigger

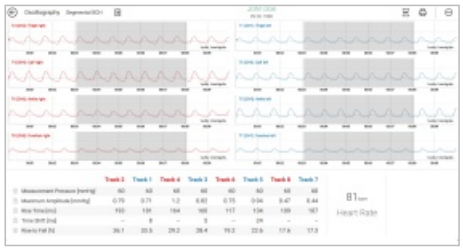
By recording the R-wave it allows the calculation of Heart Rate Variability and Pulse Wave Velocity.

D-PPG/LRR

Two optical sensors of the **AngE Phlebo** enable simple venous and arterial measurements.

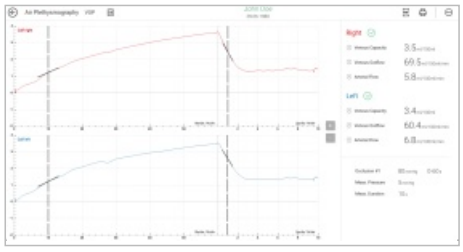
Phlebodynamometry

Invasive venous- and compartment pressure measurements with one or two channels of the **AngE PDM**.



8-Channel Segmental Oscillography

Each measuring track can be recorded segmentally and evaluated separately after the measurement. This allows the localization of occlusions as well as the fully automated calculation of different pulse wave parameters within 45 seconds only.



Venous Air Plethysmography

The Air VOP allows conducting plethysmographic measurements by using cuffs only and can therefore perform Reactive Hyperemia Tests. The often used mercury-filled strain gauges become unnecessary.

Venous Occlusion Plethysmography

Determine the Venous Capacity, Venous Outflow as well as Arterial Influx in a minimum of time by using cuffs only.

8-Channel Oscillography

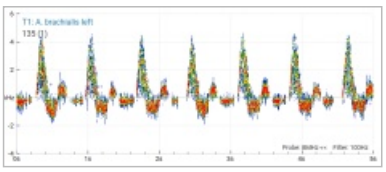
The **AngE Pro 8** allows recording pulsations simultaneously or segmentally on up to 8 measurement spots.

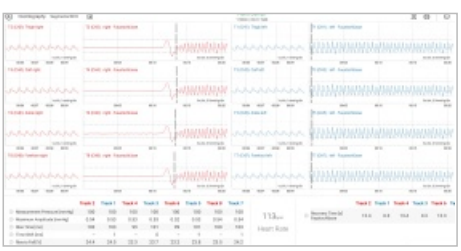
Bidirectional Doppler

Conduct Doppler pressure measure-ments with up to 16 tracks and concise documentation of the Doppler indices.

Up to 16 Doppler Tracks

The AngE combines ultrasonic probes with pneumatic cuffs to allow Doppler pressure measurements with up to 16 tracks.
The Doppler indices can be displayed at a glance on a dedicated overview report.





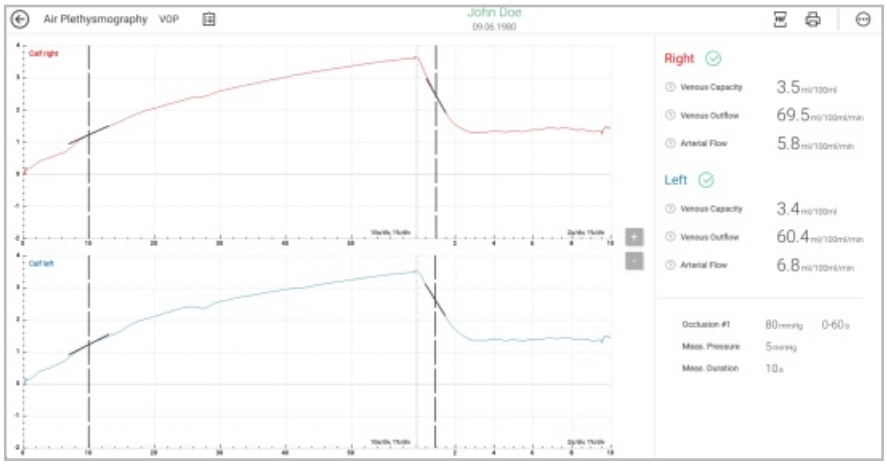
Multi-Channel Stress Tests

Through the simultaneous or segmental measurement on up to 8 cuffs, a multi-channel stress test can be performed in a minimum of time. This allows a better determination of the extent of the collateral bloodstream.

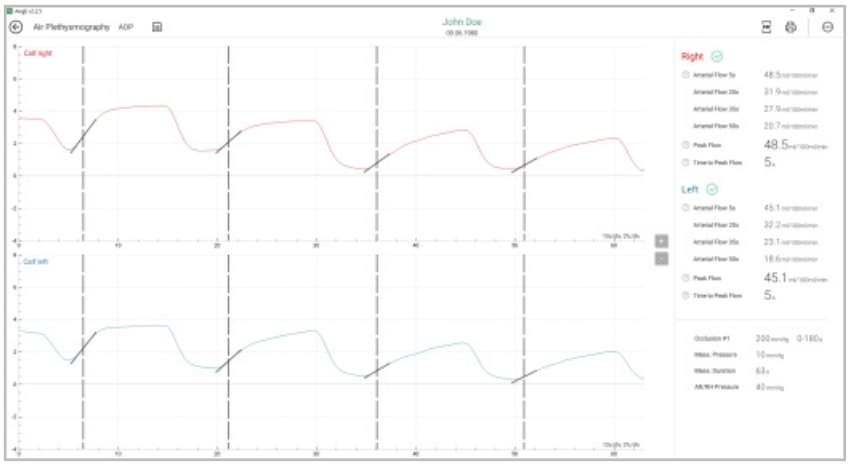
AngE™ VOP

Venous Occlusion Plethysmography

- Plethysmographic measurements using pressure cuffs only
- Cost saving: No mercury-filled strain gauges needed
- Reactive Hyperaemia Test and Dynamic Venous Air Plethysmography
- Measure Venous Capacity and Arterial Inflow, even above bandages
- Up to 6 minutes continuous measurement



VOP – Venuos Occlusion Plethysmography



AOP – Arterial Occlusion Plethysmography (Reactive Hyperaemia)

VOP – Venous Occlusion Plethysmography

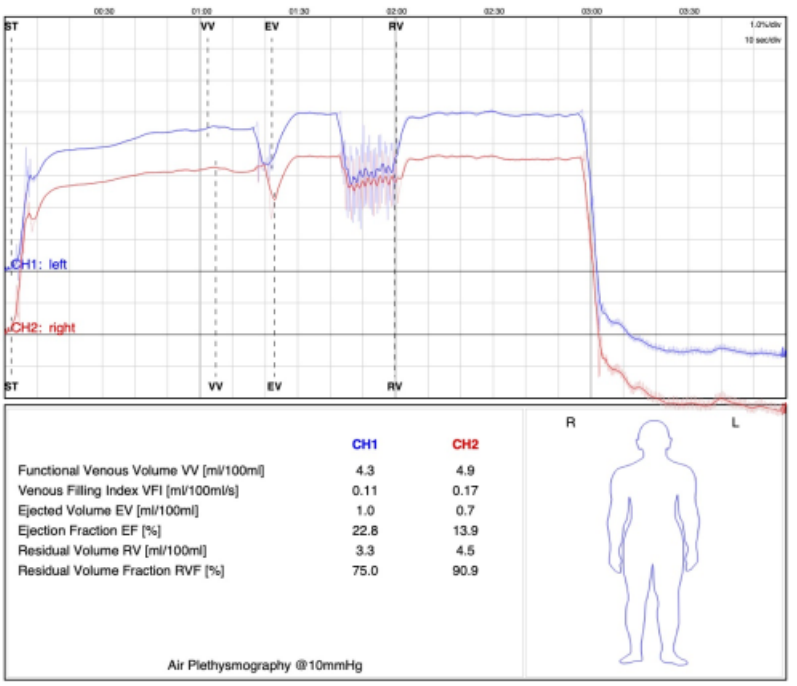
While performing a VOP test, cuffs are applied on thighs and calves. The legs of the patient are positioned over heart height. The thigh cuffs inflate up to 80mmHg in order to prevent the venous blood flow and not to affect the arterial blood inflow. At the same time, the calf cuffs act as highly sensitive sensors.

Based on the sampled measured values, the AngE VOP enables the examiner to evaluate the current status of the **venous capacity** and the **venous drainage**.

Reactive Hyperaemia Test (AOP)

The Reactive Hyperaemia Test is used as a passive stress test to clarify patients more precisely. Such as with the VOP, cuffs are applied on thighs and calves. During the measurement, the thigh cuffs block the blood flow up to three minutes supra-systolically, on the other hand the calf cuffs serve as sensors. After the blood stasis, the pressure is lightened abruptly.

The AngE VOP is able to determine the **peak-flow** and the **arterial inflow** from the measured values.



	CH1	CH2
Functional Venous Volume VV [ml/100ml]	4.3	4.9
Venous Filling Index VFI [ml/100ml/s]	0.11	0.17
Ejected Volume EV [ml/100ml]	1.0	0.7
Ejection Fraction EF [%]	22.8	13.9
Residual Volume RV [ml/100ml]	3.3	4.5
Residual Volume Fraction RVF [%]	75.0	90.9

Dynamic Air-Plethysmography

The venous Air-Plethysmography is a dynamic venous measurement that determines the maximum **venous capacity** as well as the **venous back flow**.

Furthermore, it is possible to determine the relation of the pumped out blood compared to the maximum venous capacity. During this procedure, cuffs are merely placed on the calves.

See how it's applied

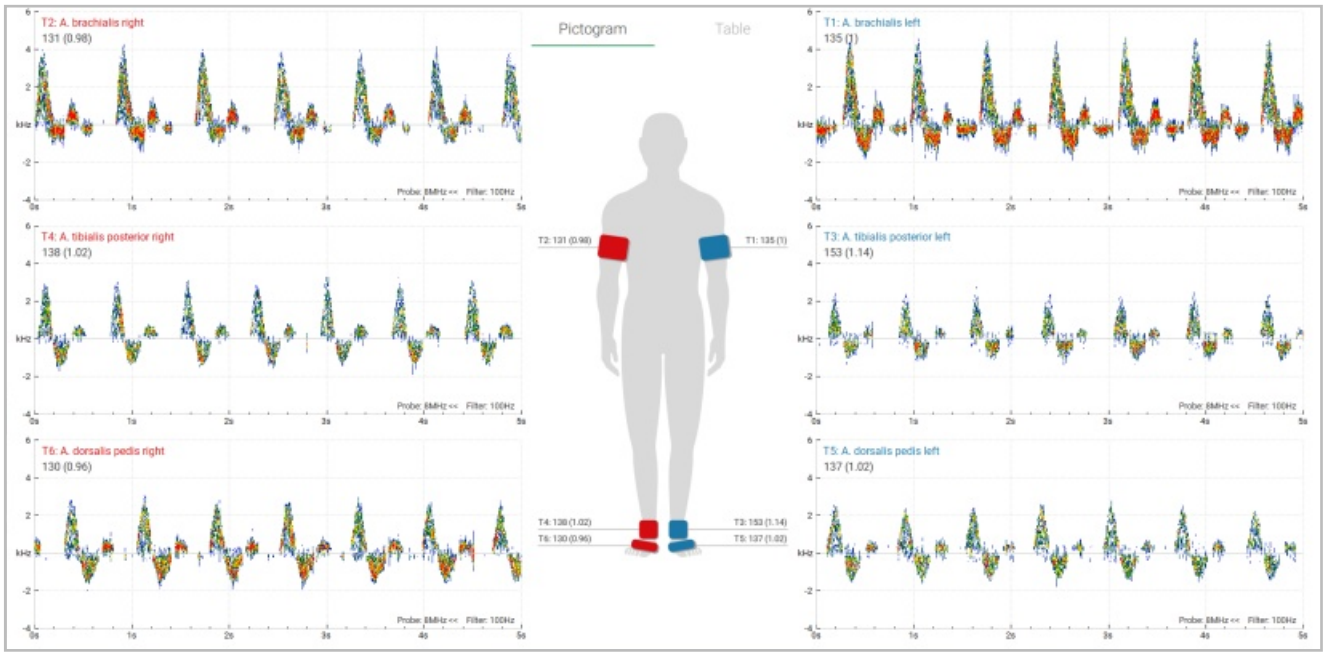
Simply scan with your smartphone camera and open the link to the video.

SOT Medical Systems

AngE™ Doppler

Bidirectional Doppler Pressure Measurements

- Record Doppler Indices on up to 16 tracks
- Bidirectional 4 and 8 Mhz Probes
- Automatic application of the dynamic pressure via oscillographic cuffs
- Arterial and Venous Measurements



See how it's applied

Simply scan with your smartphone camera and open the link to the video.

Comprehensive Report

The AngE combines ultrasonic probes with pneumatic cuffs to allow Doppler pressure measurements with up to 16 tracks. The Doppler indices can be displayed at a glance on a dedicated overview report.

The AngE Devices

The modular expert solution

The AngE vascular diagnostic products are combined in a modular system that can be adapted easily to your needs. The comprehensive software allows to combine and evaluate several measurement methods.

AngE Pro 8

The AngE Pro 8 provides simultaneous oscillographic measurements at up to eight positions. This allows determining the approximate localisation of an occlusion very quickly, at a measuring time of less than a minute. The specially developed pressure sensors lead to a detailed, nearly unfiltered recording of the pulse waves.

AngE Phlebo

Small and handy, the AngE Phlebo allows measurements in both, the arterial as well as the venous vessel system. The multifunctional sensor reduces clutter at the workspace. The direct power supply through the USB cable allows a maximum of mobility.

AngE Pro 4

The AngE Pro 4 differs from the AngE Pro 8 by the reduced number of channels and is built to provide fast and easy screening of the vascular system. The compact device is also ideal for monitoring the success during and after vascular interventions and as carry-on device in mobile settings.

AngE PDM

The AngE PDM allows the invasive venous pressure measurement as well as compartment pressure measurement with one or two channels and provides the examiner with an open measuring program for individual measurements.

AngE Software

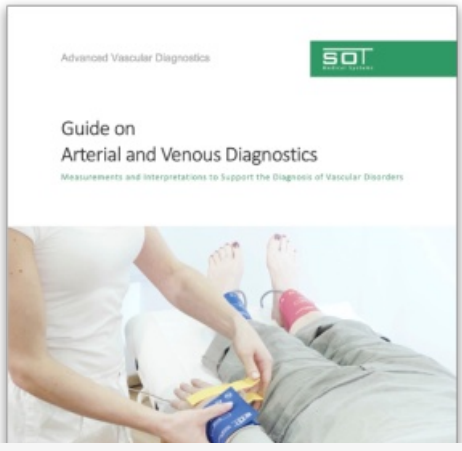
The AngE Software allows for a seamless interaction of all AngE modules while offering a central patient database. Independent of the measuring method, each measurement is assigned to the corresponding patient.

- DICOM, HL7, GDT - Interfaces
- Direct PDF export
- Comprehensive Single-Page Report
- macOS and Windows compatible

SOT Medical Systems

Advanced Vascular Diagnostics

Download your free copy of the Guide!



Vascular Academy

www.vascular-academy.com

- Workshops
- E-Learning
- Papers
- Videos

www.sot-medical.com

ISO 13485 M-166

Sonotechnik Austria Angio Experience GmbH
Alte Hollenburger Strasse 4, A-9161 Maria Rain
AUSTRIA

International: +43 4227 84 991
Germany: +49 8857 69 659

Fax: +43 4227 84 992
Email: office@sot-medical.com

Your Partner: