TOMTEC

Excellence in Digital Healthcare

DECEMBER 2020

TOMTEC

TOMTEC Imaging Systems GmbH is a global leader in medical imaging software solutions. Specializing in ultrasound, TOMTEC offers state-of-the-art solutions for our clinical customers and industry partners.

TOMTEC was founded in 1990 and our Headquarters are located in Munich, Germany. Our products encompass a wide range of 2D and 3D/4D technologies for visualization, automated image analysis, quantification, reporting and image management.

TOMTEC proudly offers solutions for adult and pediatric cardiology, obstetrics, gynecology, radiology and vascular diagnostics. We partner with industry experts to deliver education and best practice sharing via **TOMTEC ACADEMY**.

At TOMTEC, we are passionate about providing world-class support and service for all of our customers.

TOMTEC stands for "Excellence in Digital Healthcare". Our mission and core value is a commitment to continuous improvement, delivery of excellent image and analysis quality, ease-of-use, reproducibility through automation, world-class service, support and education.

TOMTEC focuses on emerging, future technologies like Cloud-based Software Solutions, Artificial Intelligence and Virtual Reality to support healthcare providers in delivering best possible patient care.

The company maintains close working relationships with many leading universities and research institutes around the world.

TOMTEC ARENA

TOMTEC ARENA INCREASE EFFICIENCY & DIAGNOSTIC QUALITY

WORKFLOW INTEGRATION
MULTI-MODALITY
VENDOR NEUTRAL
AUTOMATION
CLINICAL USE

Solution for all your needs in Cardiovascular Imaging

DIAGNOSTIC IMAGING

Efficient multi-modality image review with access to clinical tools

CLINICAL AREAS

Outpatient clinics to detect functional or structural disorders:

- Heart Failure
- Coronary Artery Disease
- Congenital Heart Disease
- Valvular Disease

CLINICAL NEEDS

- Multimodality image review (US/Cath...)
- Automated measurement import from all imaging devices
- Offline measurements (Echo, Vascular, XA)
- Review of prior studies

RISK MANAGEMENT

Monitor subclinical markers for left ventricular dysfunction

CLINICAL AREAS

- Cardio-Oncology
- Diabetes
- Pulmonary Hypertension (early stage)
- Coronary Artery Disease
- Valvular Heart Disease

CLINICAL NEEDS

- Subclinical marker for LV Dysfunction
- Consistent results
- High reproducibility
- Solutions tailored to individual needs

CLINICAL AREAS

- MV Repair/Replacement
- ASD/VSD Closure

CLINICAL NEEDS

- Clinical guidance to determine time of intervention for asymptomatic vs. symptomatic patients
- Comprehensive pre-surgical assessment for device selection and communication with surgeons
- Verify cardiac CT findings
- Complete ASD/VSD assessment (Size / Shape / Location)

Increase diagnostic confidence

STRUCTURAL HEART DISEASE

Track clinical markers to assess patient outcome

CLINICAL AREAS

- Heart Failure
- AV Optimization
- Pulmonary Hypertension

CLINICAL NEEDS

- Consistent results independent from vendor
- Clinical marker to monitor response to treatment
  - Changes in EF
  - Changes in End-Diastolic Volume
  - Changes in GLS
- High reproducibility through automation

THERAPY MONITORING

DIAGNOSTIC IMAGING

Efficient study review

TOMTEC's solutions have been designed with the needs of a busy cardiovascular laboratory in mind. With the ability to quickly retrieve and navigate through studies, clinicians are now able to efficiently interpret patient data, while having access to all relevant clinical tools. Our software enables clinicians to review images from all diagnostic modalities, including previous studies to cross examine clinically warranted findings. All measurements that are performed on the cart are imported and populated to worksheets or reports.

In addition, the user has the ability to perform any echo, vascular or cath lab measurements offline. Both the tools for clinical practice and advanced analysis are vendor neutral and seamlessly integrated into your workflow.

DIAGNOSTIC QUALITY

Monitoring of high risk patients

Patients that are currently treated for conditions such as HTN, CAD, diabetes or undergoing chemotherapy are at risk to develop heart failure. The ability to closely monitor subclinical markers is essential to detect even subtle changes in cardiac function. This allows clinicians to properly manage patients in order to minimize the risk of developing heart failure. Accurate measurements that are not impacted by user variability are needed. Automated strain imaging solutions provide highly reproducible data which can be used as subclinical markers to monitor cardiac function before visual changes are observed. TOMTEC has a portfolio of automated 2D and 3D strain imaging solutions to support clinicians in managing these patients.

RISK MANAGEMENT

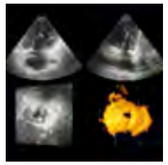
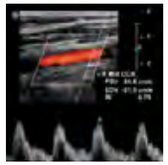


IMAGE-COM[1]
2D and 3D multi-modality image viewer with automated measurements and access to advanced quantification

CARDIAC MEASUREMENTS[1]
Complete echocardio-graphic measurement package with labeled M-Mode, Doppler and 2D measurements



VASCULAR MEASUREMENTS[1]
Vascular measurement package with labeled measurements for all major vessels

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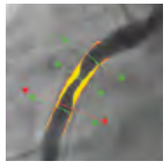
Measurement package with a comprehensive range of 2D, M-Mode and Doppler pediatric measurements



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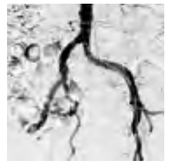
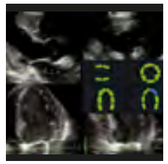


DIGITAL SUBTRACTION ANGIOGRAPHY (DSA)[1]
Enhanced display of peripheral vessels with automatic image summation over time and compensation of motion artifacts



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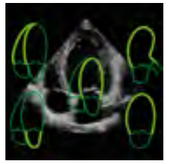

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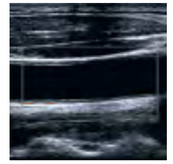
Biplane LA volume quantification by just selecting two clips



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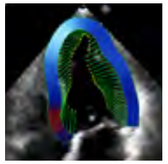
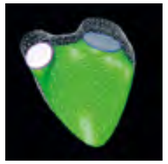
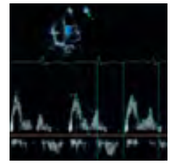


2D STRAIN[1,4]
Global and regional assessement of myocardial mechanics

4D LV-ANALYSIS[1]
3D Quantification of left ventricular volume and function



4D RV-FUNCTION[1]
Quantification of right ventricular volumes, function



CARDIAC MEASUREMENTS[1]
Complete echocardio-graphic measurement package with labeled M-Mode, Doppler and 2D measurements

THERAPY MONITORING

Assess therapy outcome

Close monitoring based on precise data of heart failure patients is essential. Monitoring specific data allows providers to better manage and thus potentially slow down the progression to later stages of CHF.

Response to treatment and the prognosis of these conditions are directly related to the stage of the disease and the time treatment is initiated. Echocardiography is the procedure of choice in the assessment and workup for patients suffering from CHF and/or RV-Failure. The ability to closely monitor changes in volume allows clinicians to assess the trend of how a specific condition progresses and alter treatment plans as required. TOMTEC has products that allow users to monitor changes in volume, based on automated solutions for 2D and 3D echocardiography.

INCREASE EFFICIENCY

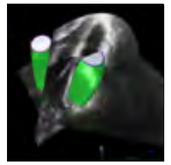
Increase diagnostic confidence

With new transcatheter therapies and minimally invasive valve repair procedures the need for advanced imaging prior to the intervention has increased.

TOMTEC's software solutions for the analysis of the mitral valve apparatus and also the aortic valve, give surgeons and interventional cardiologists a clear understanding of even the most complex anatomy. The most accurate and current information increases diagnostic confidence to successfully perform both transcatheter and surgical interventions.

STRUCTURAL HEART DISEASE

4D LV-ANALYSIS[1]
3D Quantification of left ventricular volume and function



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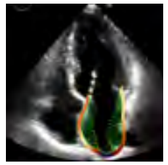

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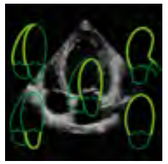

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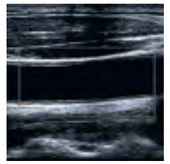
Biplane LA volume quantification by just selecting two clips



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Solution to analyze intima-media thickness of the carotid artery

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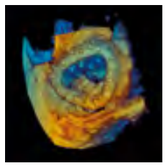
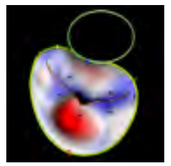


4D CARDIO-VIEW[1,2]
Generic three dimensi-onal software solution. Distance, area, curve and angle measurements for pathologies like ASD, VSD size and location



4D MV-ASSESSMENT[1]
Comprehensive assess-ment and quantification of mitral valve anatomy and function based on an automated contour detection of MV annulus and leaflets

4D LV-ANALYSIS[1]
3D Quantification of left ventricular volume and function

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3 STRESS ECHO is called ECHO-COM.
4 2D STRAIN is called 2D CARDIAC PERFORMANCE ANALYSIS.

TOMTEC ARENA

CLINICAL APPLICATION PORTFOLIO TOMTEC ARENA TTA2 LOT40

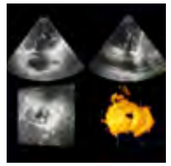
Improve efficiency and diagnostic quality!

ROUTINE

BASIC

Your Daily Use
Routine reading and reporting, manual measurements and worksheet

CARDIO VASCULAR ULTRASOUND



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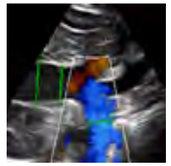
Complete echocardiographic measurement package with labeled M-Mode, Doppler and 2D measurements



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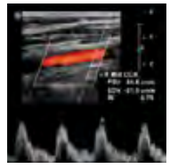

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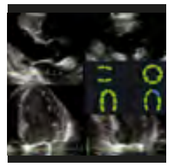

STRESS ECHO[1,3]
Solution to review and analyze exercise and pharmaceutical stress echo studies

CATHLAB

IMAGE-COM[1]
Advanced cathlab viewer with Biplane imaging support, display of ECG and acquisition angles

DIGITAL SUBTRACTION ANGIOGRAPHY (DSA)[1]
Enhanced display of peripheral vessels with automatic image summation over time and compensation of motion artifacts

ESSENTIALS

Automated, Reproducible, Fast
Speed-up your workflow, improve diagnostic quality and reproducibility

CARDIO VASCULAR ULTRASOUND

AutoStrain LV/RV/LA[1]
The application provides measurement tools for Strain analysis. It is powered by Auto View Recognition, Auto Contour Placement and speckle tracking.

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"Two click" Biplane left ventricular volume quantification with automated contour proposals for EF assessment

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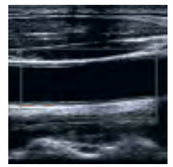
3D OPTION IMAGE-COM[1]
Display of 3D/4D cardiac ultrasound side-by-side with 2D images



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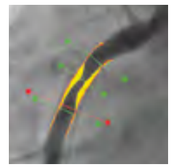

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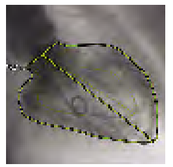
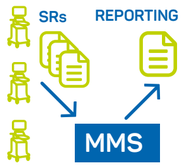


Cath-QLVA[1]
Quantification of left ventricular volumes and function

MEASUREMENT MAPPING SERVICE

Standardization of diverse DICOM SR formats of various ultrasound vendors

FOR ROUTINE AND ADVANCED APPLICATIONS



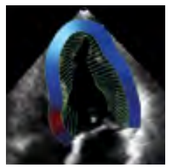
MEASUREMENT MAPPING SERVICE[1]
Standardization of different DICOM SR formats, tremendously reducing mapping efforts to information and reporting systems

ADVANCED

PREMIUM

Advanced Research and Clinical Tools
Tools for expert users in both, research and clinical environments

CARDIO VASCULAR ULTRASOUND



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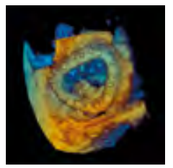

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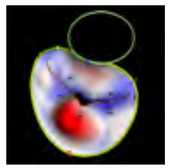

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ECHO

TOMTEC ARENA

IMAGE-COM

The cardiovascular solution for routine and advanced workflows at hand

IMAGE-COM

Comprehensive image-review and measurements

IMAGE-COM[1] is an established DICOM viewer for ultrasound (US) and X-Ray Angiography (XA) examinations. Prior studies can easily be compared with current examinations and simultanously displayed with US, XA and IVUS, IVOCT/OCT and NM examinations.

IMAGE-COM provides a comprehensive feature set for review of still images and image sequences.

IMAGE-COM offers a vast number of offline measurements.

The IMAGE-COM measurement modules provide measurement capabilities for echocardiography and vascular examinations, and for X-Ray angiographic images.

IMAGE-COM has been developed to speed up your workflow in the daily routine.

CLINICAL BENEFITS

- A study can be reviewed with various functions like different screen tiles, zoom, flip, rotate etc.
- More efficient use of your ultrasound machines by image acquisition with modality and measuring in IMAGE-COM.
- Better traceability and transparency of the measurements through a link between each measurement and the corresponding image.

MAIN FEATURES

Imaging review

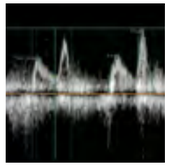
- Multi modality viewer
- Vendor neutral 3D/4D MPR viewer
- All TOMTEC applications can be launched from IMAGE-COM
- Side-by-side comparison (US, XA, NM, IVUS, IVOCT)
- Complete review of secondary studies and quick acess to prior finalized reports
- AVI, BMP, JPEG or DCM export
- "DSA" digital subtraction angiography
- Filter on thumbnails preview (2D, 3D, SR, PDF, Bookmark)
- Dual monitor setup capability (combined with Reporting)

Ultrasound (US) and X-Ray Angiography (XA)

- Automated US measurements value import
- XA viewer with biplane imaging support, display of ECG, acquisition angles
- Smart link between measurement and image
- Images and worksheet on different monitors
- Workflow support through measurement tools
- Worksheet management
  - up to five values for each parameter
  - avg, first, last, min, max selection
- XA analysis for Coronary Stenosis Quantification and Left Ventricle Analysis (auto/manual)
- Measurement export in different formats (auto/manual)
- Cardiovascular measurement packages for 2D echo, M-Mode and Doppler studies
- Control for completeness of measurement data

VALUABLE EXTENSIONS

CARDIOVASCULAR ULTRASOUND



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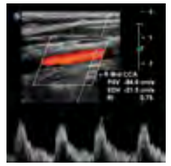

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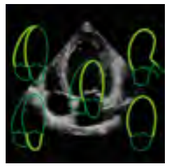

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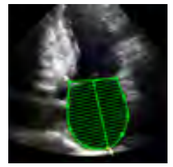

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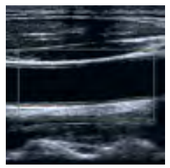

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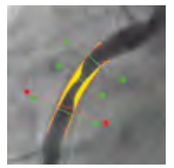
DIGITAL SUBTRACTION ANGIOGRAPHY (DSA)[1]
Enhanced display of peripheral vessels with automatic image summation over time and compensation of motion artifacts



Cath-QCA[1]
Clinical solution for quantitative coronary analysis based on an automated contour detection of coronary angiograms

Cath-QLVA[1]
Quantification of left ventricular volumes and function

1 Is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

TOMTEC ARENA

IMAGE-COM OPTIONS MEASUREMENTS

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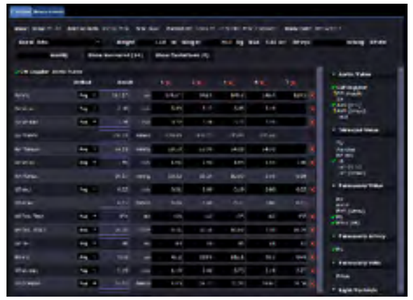
IMAGE-COM OPTIONS*

MEASUREMENTS

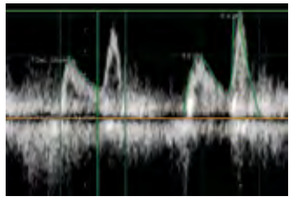
IMAGE-COM Measurements offer a huge number of offline measurements. DICOM SRs from US carts are automatically imported into a comprehensive worksheet for easy comparison, re-measuring and export. Findings can easily be transferred to report or EMR/HIS and are available for later data mining and further analysis.

Export of multiple findings can be selected individually according to average, lowest, highest, first or last. Conformity to common guidelines: ASE, IAC, ACC and ESC.



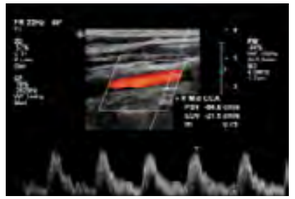
Import from modality, re-measure, manage and export all your findings

CARDIAC MEASUREMENTS



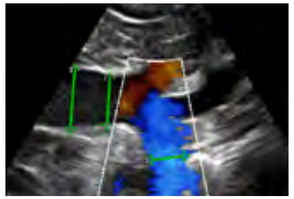
Complete echocardiographic measurement package with labeled M-Mode, Doppler and 2D measurements.

VASCULAR MEASUREMENTS



Comprehensive vascular measurement package with labeled measurements for all major vessels

PEDIATRIC MEASUREMENTS



Measurement package with a comprehensive range of 2D, M-Mode and Doppler pediatric measurements

- Re-measurement of complete studies
- All measurements, including measurements imported from US systems, are summarized in the Worksheet
- Link between measurement and image: one click to get from the measurement to the image
- Up to five values for each measurement parameter with individual selection of the final value according to average, first, last, minimum or maximum
- Manual or automated measurement export in several formats: DICOM Structured Report: TID5100, TID5200, TID5220, TID3202, TID3213; EPICXML; XML
- Generic measurements can be assigned to a specific measurement value in a later stage (first measure, then label)
- Generic measurements such as distance, area, time, acceleration/ deceleration, VTI, velocity

Extensive solution for cardiovascular offline measurements and multi-purpose processing of findings

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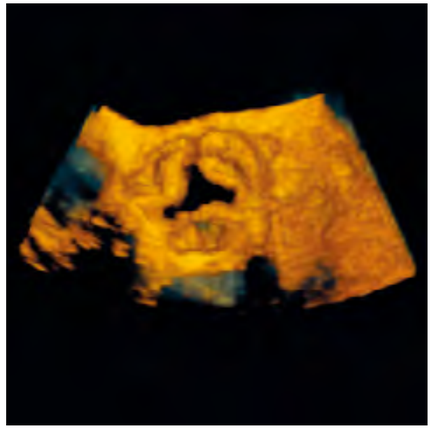
3D OPTION IMAGE-COM

TOMTEC

3D OPTION IMAGE-COM

Display 3D/4D cardiac ultrasound datasets side-by-side with 2D images. It can read and process proprietary 3D data formats of most vendors. The display and navigation of multiplanar reconstructions (MPRs) and volume rendering (VR) helps to analyze complex morphologies in 3D. With the unique navigation tool D*art, 3D views can be cropped easily with just two mouse-clicks.



2D/3D clinical study evaluation – it has never been so easy!

3D imaging navigation and rendering

- 3D imaging navigation and rendering
- Real-time 3D volume rendering
- D*art navigation tool with `auto cropping`
- Navigation options via reference images (LOI: Lines of intersection), center point navigation and image navigation (sweep, rotate, pan, orbit)
- Auto-sweep through dataset

Visualization of vendor-independent 3D echo-data

- Color-coded 3D display for optimal depth display
- Setting of threshold and transparency
- Switch from rendering to cross plan views

Empower the IMAGE-COM review and measurement workflow

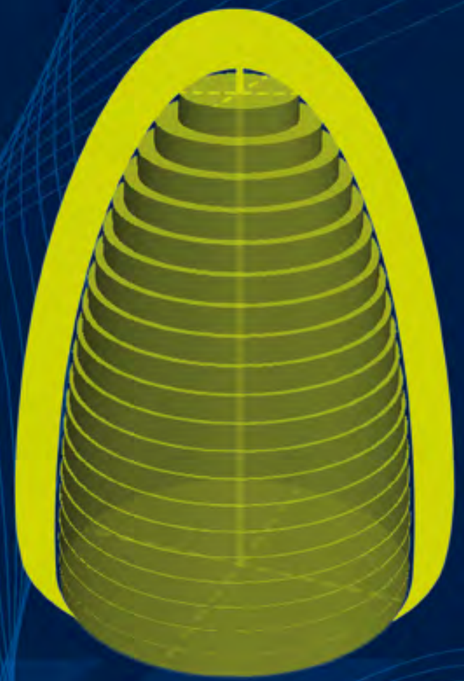
- Empower the IMAGE-COM review and measurement workflow
- Measurements on a 2D or MPR view
- Exporting of AVI/BMP, screenshots and measurements
- Side-by-side comparison 2D and 3D

3D echo data vendor-independent review

* 3D OPTION IMAGE-COM is part of TOMTEC-ARENA. TOMTEC-ARENA and D*art are trademarks of TOMTEC Imaging Systems GmbH.

TOMTEC ARENA

AutoLV



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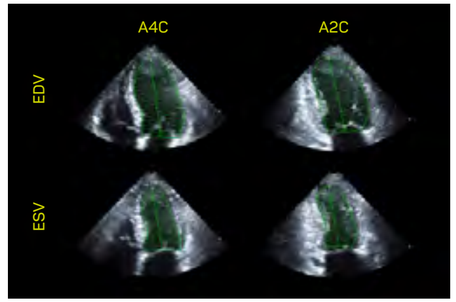
AutoLV

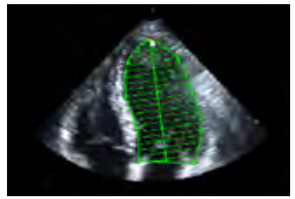
AutoLV* is an automated measurement of Simpson's biplane method.

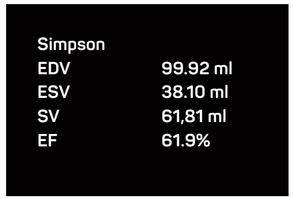
By selecting apical 2- and 4-chamber views, AutoLV automatically proposes initial contouring of the left ventricle in end-diastole and end-systole.

Left ventricular volumes and Ejection Fraction results are visualized for immediate assessment of left ventricular function.



Analysis of the left ventricle with three clicks – integrated in your clinical workflow





Standard LV volume measurements with minimal user interaction

- Automated contouring in end-diastole and end-systole
- Verification of automated results by manual contour editing possible
- Volumes and EF are displayed immediately

Precise results within seconds

- Guideline conform measurements
- Automated biplane Simpson's method
- High reproducibility due to automation without user interaction
- Approved algorithm by multicenter study

Remain in your regular clinical workflow

- Stay in your regular review application
- No additional software has to be opened
- Directly access your results in the worksheet and report

Biplane left ventricular volume quantification with only three clicks

* AutoLV is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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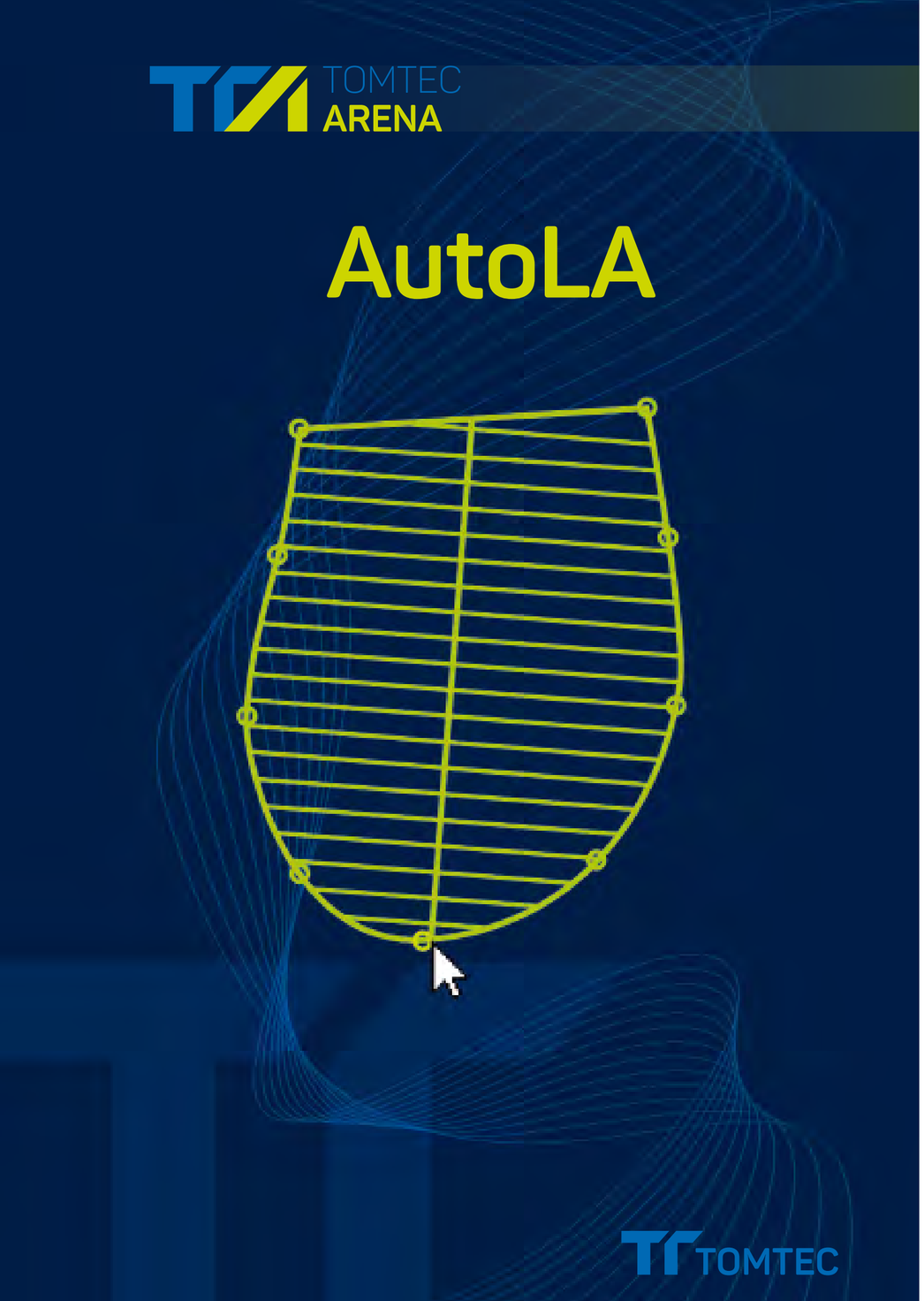
AutoLA



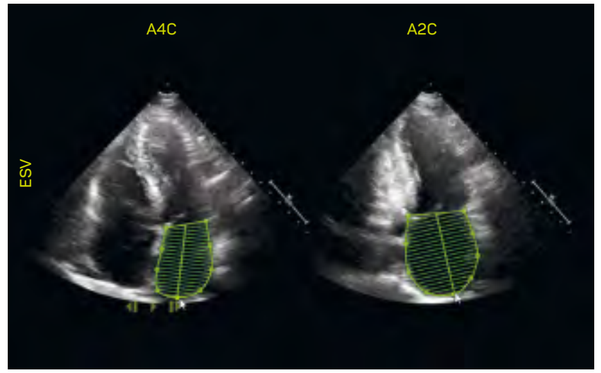
TOMTEC

AutoLA

Left Atrial volume is one of several parameters to identify diastolic dysfunction and a marker for LA pressure elevation.

AutoLA* is a fast and intuitive automation of Simpson's biplane method.

By selecting apical 4- and 2-chamber views, AutoLA automatically finds end-systole and proposes tracings of the left atrial blood tissue interface.



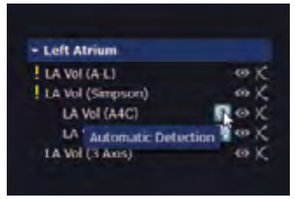
LA volume measurement with three clicks — integrated in your clinical workflow

Standard LA volume measurements with minimal user interaction

- Automated contouring of maximal volume in end-systole
- Verification of automated results by manual contour editing possible
- Volume is displayed immediately

Ensures diagnostic quality results

- Guideline-conform measurement
- Automated biplane disk summation
- High reproducibility due to automation without user interaction



Remain in your regular clinical workflow

- Stay in your regular review application
- No additional software has to be opened
- Directly access your results in the worksheet and report

Biplane LA volume quantification with only three clicks

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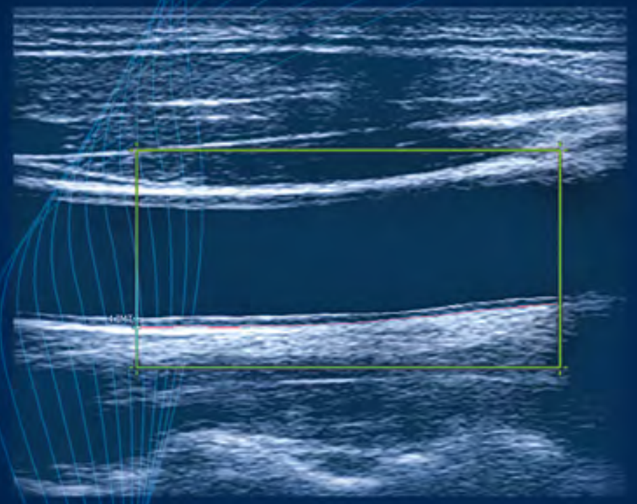
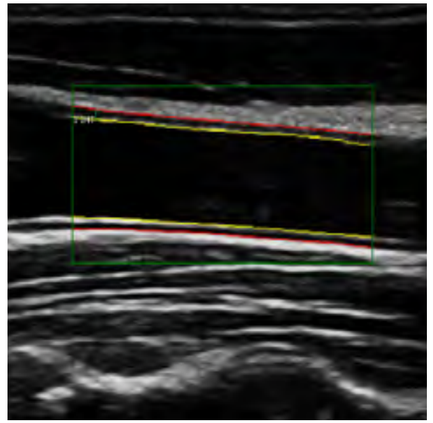
AutoIMT



TOMTEC

AutoIMT

AutoIMT* is an automated TOMTEC solution for the quantification of the intima media thickness. By defining a region of interest on a vascular long axis view AutoIMT automatically calculates the maximal and mean intima media thickness as well as the standard deviation and the quality index.



Automated IMT quantification – integrated in your clinical workflow

- Automated contour detection of lumen-intima and media-adventitia vessel walls
- Calculation of max and mean value of IMT
- Calculation of standard deviation and IMT quality index

IMT quantification with high precision and reproducibility

- Automated contouring
- Immediate calculation of max and mean IMT as well as the SD and QI.
- Contour overlay for visual result verification possible
- ACCF/AHA guideline conform

Integrated in IMAGE-COM Workflow

- Easy measurement in familiar software environment
- No additional software has to be opened
- Results in the worksheet and report

Complete and automated intima media thickness quantification

* AutoIMT is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

TOMTEC ARENA

STRESS ECHO

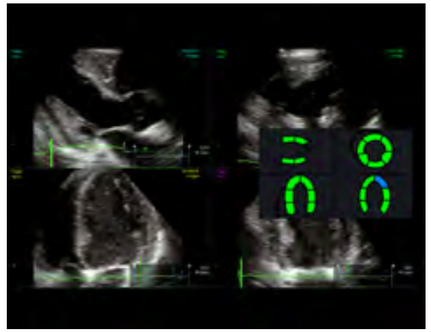
TOMTEC

STRESS ECHO

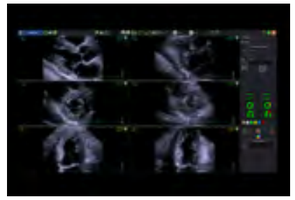
STRESS ECHO* is optimized to provide a streamlined workflow for routine stress echo analysis.

The software immediately arranges the automatically synchronized loops for rapid viewing.

Additional shuffle functions are available for the comparison of arbitrary loops. An easy Wall Motion Scoring with quick assignment tools makes your analysis more comfortable.



Your vendor independent offline solution for pharmacological and exercise stress echo analysis



Sorting and scoring of stress echo studies

- Reduced mouse clicks by functions like auto-layout, sorting and synchronisation
- Quick browse through all selected clips in the review by using the dog-ear

Analysis and reporting of stress echo loops

- Easy colour-coded Wall Motion Scoring with quick assignment tools
- 16- and 17-segment scoring layouts
- Export of Wall Motion Scoring values to reporting

Customization

- User setting options for an optimal customization to your personal preferences
- Different scoring options like 4, 5 or 7 points model
- Different workflow options – with or without pre-selection of clips

The intuitive workflow solution to review and analyze your 2D stress echo studies

* STRESS ECHO is called ECHO-COM and is part of TOMTEC ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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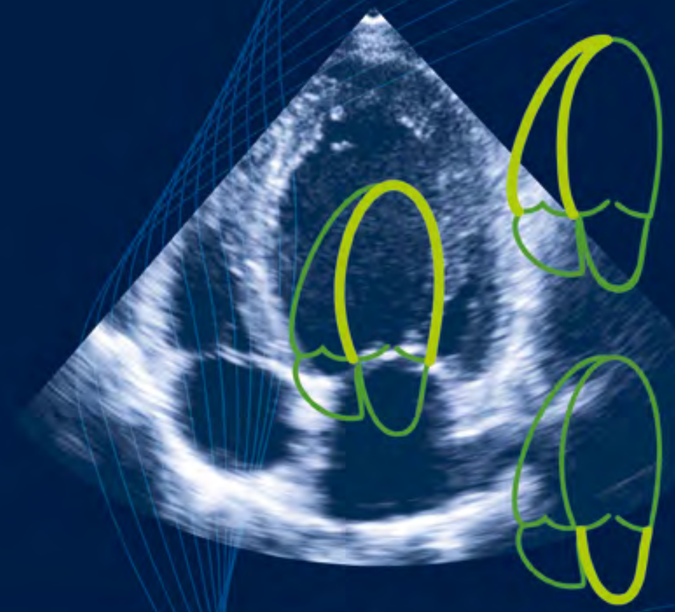
AutoStrain LV/RV/LA



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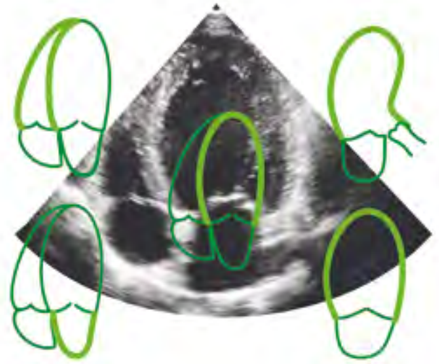
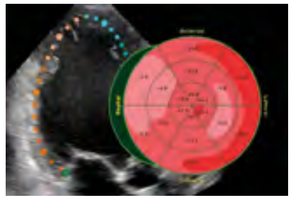
AutoStrain LV/RV/LA

The AutoStrain* application provides measurement tools for Strain analysis of the left ventricle (LV), the right ventricle (RV) or the left atrium (LA) to assess cardiac function.

Just by selecting the loops and starting the application, the user gets immediate results based on automated proposals for view labels and endocardial border definitions based on Speckle tracking. This allows the user to focus directly on the interpretation of measurments.

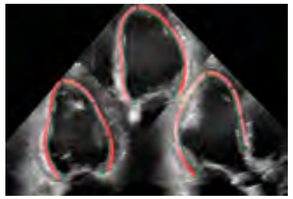


Cardiac function assessment of LV and beyond – Strain Analysis dedicated to LA and RV



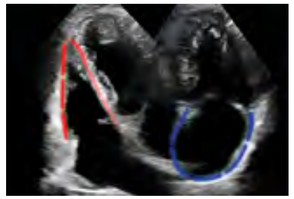
Cardiac motion analysis based on 2D clips

- Auto View Recognition: AutoSTRAIN recognizes A4C, A2C and A3C view and assigns labels
- Auto Contour Placement: Automated contour definition and speckle tracking for user review
- Cardiac cycle can be defined manually in case of missing or bad ECG signal
- Support of TTE and TEE data



Flexible and standardized LV function assessment

- Robust, reproducible one-button GLS measurements for each view and average
- Waveform analysis for each view or all segments together
- Possibility to exclude segments with bad visibility



Deformation imaging of RV and LA

- Direct measurement of LA reservoir, conduit and contraction strain
- LA reference time point at end-diastole or right before atrial contraction
- Global RV and free wall strain measurement
- Supported strain analysis tool to perform LV, RV or LA function assessment

Simple, fast workflow for robust and reproducible GLS measurements

* AutoStrain LV/RV/LA is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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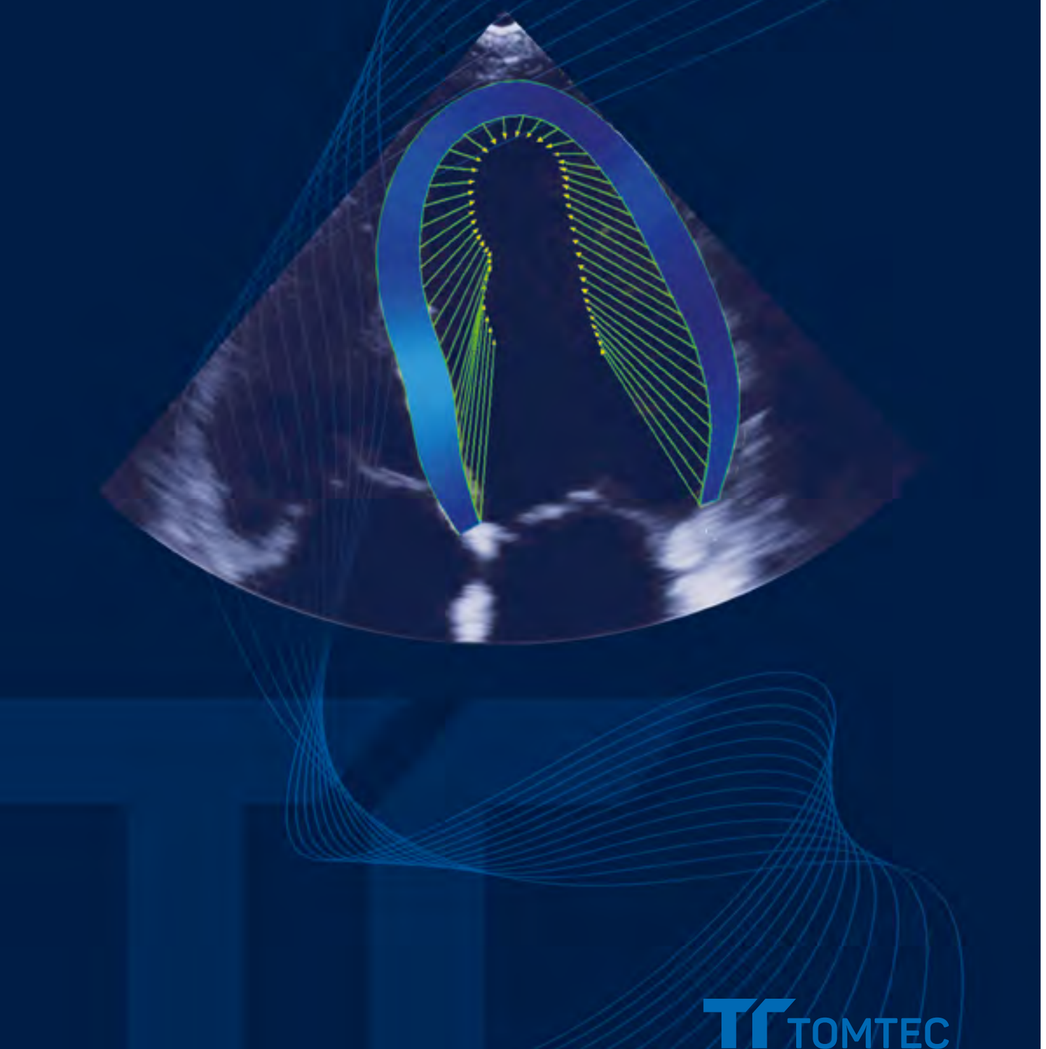
2D STRAIN



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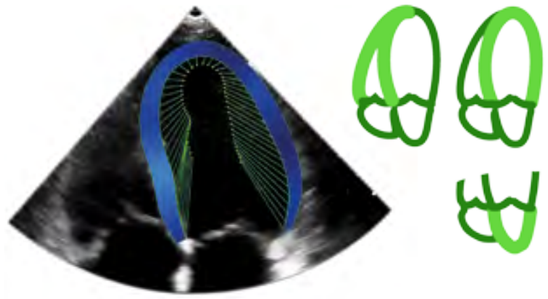
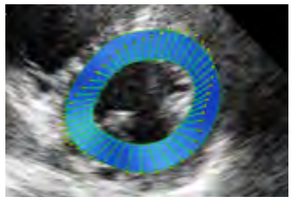
2D STRAIN

2D STRAIN* is a vendor independent, offline solution for the quantification of cardiac deformation. Detailed analysis of myocardial velocity, displacement, strain and strain rate is performed based on 2D speckle tracking in the long or short axis views of the left ventricle, in the right ventricle or in the left atrium. Basic parameter assessment as well as advanced quantifications, together with comprehensive result export options, make 2D STRAIN suitable for research and routine use.

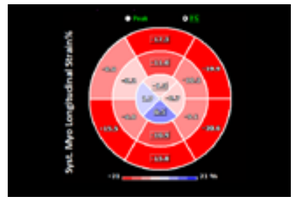


Versatile analysis of left ventricle, right ventricle or left atrium



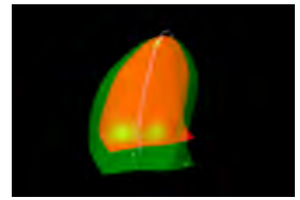
One application for a variety of indications

- Regional myocardial function analysis
- Assess diastolic function
- Early detection of heart function impairment in cardiomyopathies
- Monitor subclinical changes or therapy over time



Versatile analysis options

- Analysis of LV, RV and Left Atrium
- Bull's eye analysis based on long axis or short axis views
- Same analysis independent from ultrasound system



Advanced cardiac motion assessment

- Semi-automatic initial contour proposal
- Extensive export options for further post-processing
- Regional analysis of velocity, displacement, strain and strain rate
- Advanced motion visualization

Vendor independent speckle tracking analysis to quantify cardiac wall motion in 2D ultrasound data

* 2D STRAIN is called 2D CARDIAC PERFORMANCE ANALYSIS and is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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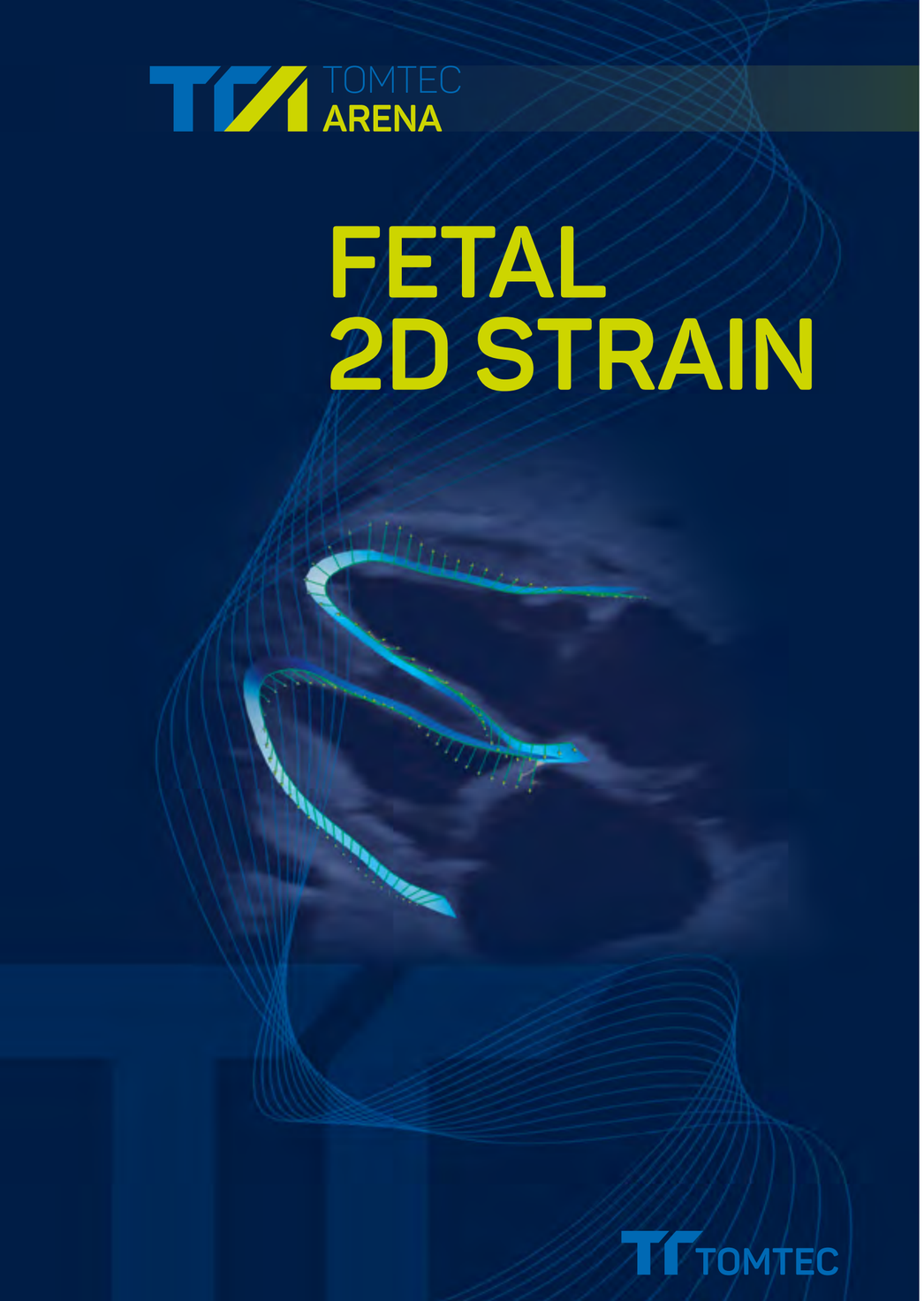
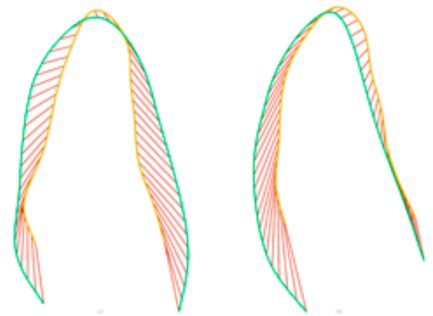
FETAL 2D STRAIN



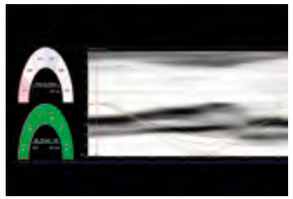
TOMTEC

FETAL 2D STRAIN

FETAL 2D STRAIN* is a vendor independent, offline solution for the quantification of cardiac deformation of the fetal heart. Detailed analysis of myocardial velocity, displacement, strain and strain rate is performed based on 2D speckle tracking in the long axis views of the left ventricle and right ventricle. Basic parameter assessment as well as advanced quantifications, together with comprehensive result export options, make FETAL 2D STRAIN suitable for research and routine use.

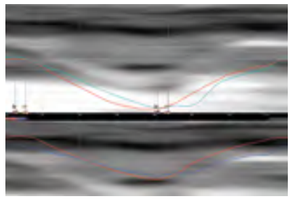


Vendor independent speckle tracking analysis to quantify cardiac wall motion in 2D ultrasound data



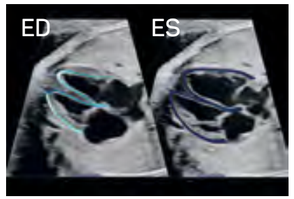
One application for a variety of indications

- Regional myocardial function analysis
- Assess diastolic function
- Early detection of heart function impairment in cardiomyopathies and congenital pathologies
- Monitor subclinical changes or therapy over time



Versatile analysis options

- Analysis of LV, RV on the same 4CH clip
- Possibility to set different ES and ED for LV and RV for severe dyssynchrony cases
- Same analysis independent from ultrasound system



Advanced cardiac motion assessment

- Semi-automatic initial contour proposal
- Extensive export options for further post-processing
- Regional analysis of velocity, displacement, strain and strain rate
- Advanced motion visualization

Versatile analysis of the fetal heart

* FETAL 2D STRAIN is called FETAL 2D CARDIAC PERFORMANCE ANALYSIS and is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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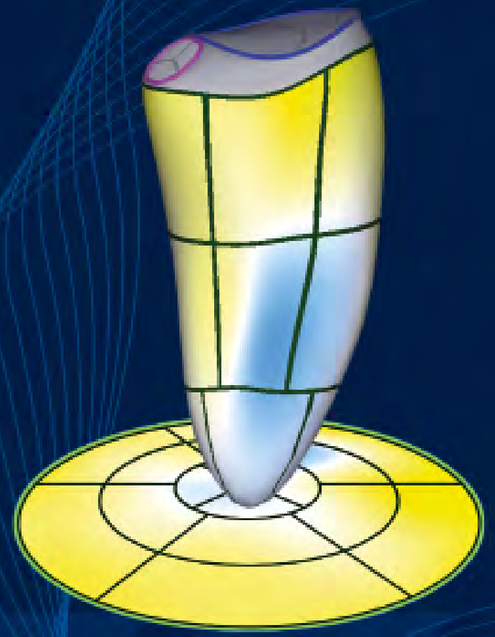
4D LV-ANALYSIS



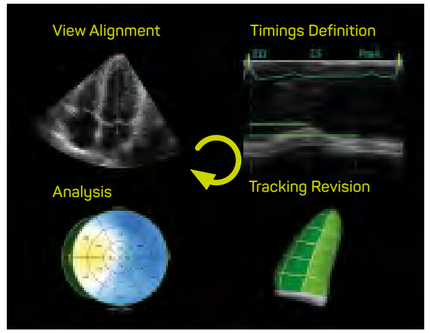
TOMTEC

4D LV-ANALYSIS

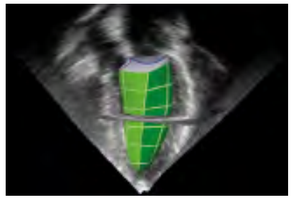
4D LV-ANALYSIS* is a vendor independent offline solution for LV assessment based on 3D speckle tracking. It provides an automated workflow for quantitative and reproducible analysis of left ventricular function and global strain values.

Regional strain analysis is mapped onto the LV model and shown in a bull's eye plot for clear visualization.

All results can be stored and exported for routine, advanced and research applications.

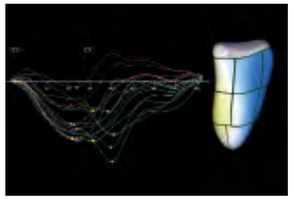


Quick and reproducible analysis of LV function that includes volumes, EF and strain



Fast and easy analysis of global and regional deformation

- Automated adjustment of view planes
- Easy editing of Beutel* surface in end-diastole and end-systole
- Volumes and GLS are displayed in tracking review



Ready for clinical use

- Supports 3D data from ultrasound systems of multiple vendors (TEE and TTE)
- Fast, easy to use and accurate quantification (no geometrical assumptions)
- Reproducible results through automated workflow

Global and regional clinical parameters

- Accurate and reproducible volumes, EF and LV-mass
- Global/regional longitudinal and circumferential strain
- Twist and torsion
- Displacement

3D Quantification of left ventricular global and regional function

* 4D LV-ANALYSIS is part of TOMTEC-ARENA. TOMTEC-ARENA and Beutel are trademarks of TOMTEC Imaging Systems GmbH.

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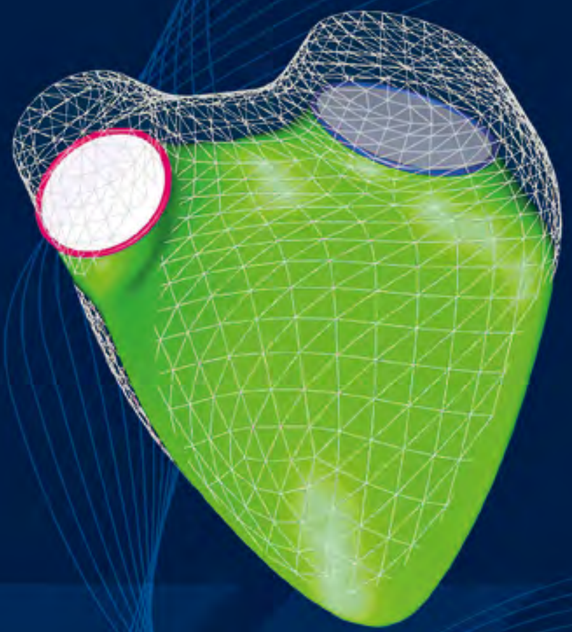
4D RV-FUNCTION



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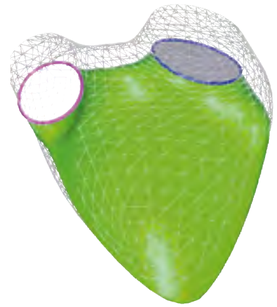
4D RV-FUNCTION

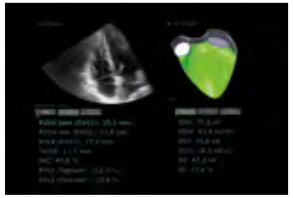
The right ventricular quantification tool for clinical routine work, pulmonary hypertension and right sided heart failure.

4D RV-FUNCTION* allows complete evaluation of the right ventricle and combines 3D and 2D values including EDV, EDVi, ESV, ESVi, EF and SV, RVLS, TA PSE and FAC.

4D RV-FUNCTION helps to overcome the RV complexity by calculating standard values based on a 3D surface model. A detailed and easy to follow workflow allows users to adapt the proposed contour quick and easy.

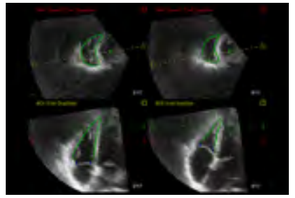


Overcome the challenges of right ventricle geometry.



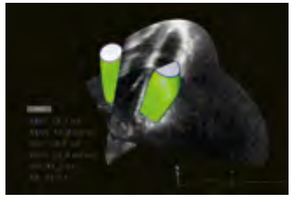
Automated 2D measurements with every 3D analysis

- 3D measurement results: RV EDV, EDVi, ESV, ESVi, EF, SV
- Guideline conform 2D measurement results: TAPSE, Distances, FAC



The two minutes tool for your right ventricle analysis

- Automated contour proposal – no laborious contour drawing
- Quick and reproducible results



Visualize the complex RV shape in 3D

- Calculating right ventricular data based on a complex 3D surface model
- Validated model of the right ventricle
- Display your model in combination with 2D planes for a better control

Comprehensive right ventricular analysis, the right way

* 4D RV-FUNCTION is part of TOMTEC-ARENA. TOMTEC-ARENA is a trademark of TOMTEC Imaging Systems GmbH.

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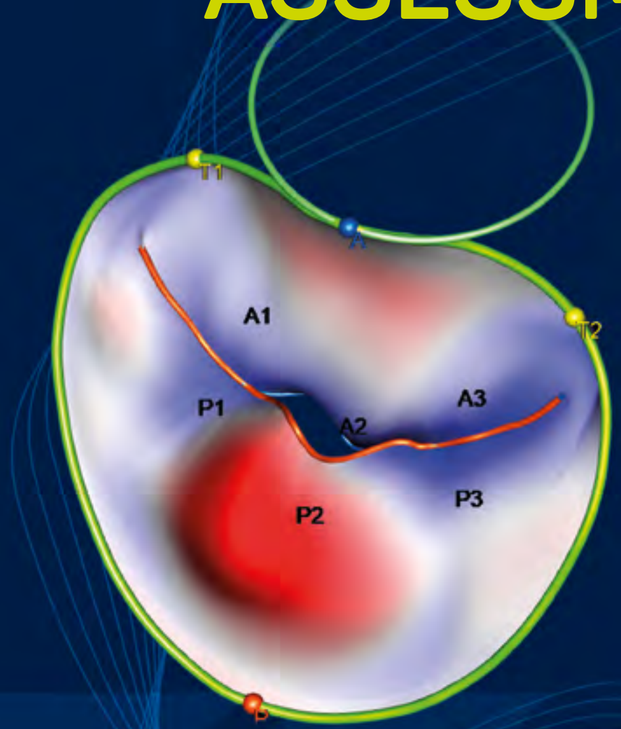
4D MV-ASSESSMENT



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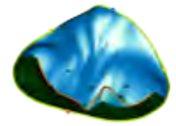
4D MV-ASSESSMENT

4D MV-ASSESSMENT* helps to analyze the complex anatomy of the mitral valve in 3D as well as its dynamic mechanics in systole. The mitral valve anatomy and topology are visualized with a comprehensive static and dynamic model.

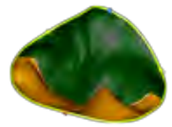
Geometric measurements such as annular dimensions, leaflet morphology and coaptation descriptions can be used from the initial discovery of MV disease/pathology, support in device planning up to the monitoring of pre- and postoperative cases. Additionally, advanced navigation options and flexible manual measurements in 2D and 3D allow for individual planning of new devices.

Automated alignment and initialization proposals facilitate the workflow. Advanced edit options allow for definition and quantification of Open Coaptation Regions.

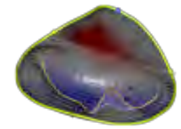
Anterior leaflet area



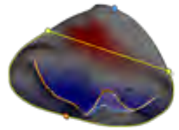
Posterior leaflet area



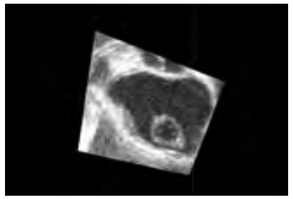
D-shaped annulus area



D-shaped annulus perimeter

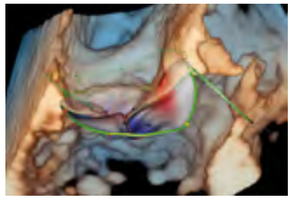


Visualization and quantification of the mitral valve in 4D



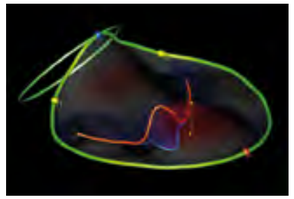
Supports decision making and monitoring

- Pre-/postoperative monitoring
- Generic manual measurements allow for individual assessment in special cases
- Highlight findings with landmarks



Facilitate communication within the heart team

- Schematic visualization of MV model together with 3D volume rendering
- Visualization from surgical or ventricular view direction
- Evaluation of flail/prolapse topology



Mitral valve analysis based on 4D echo data

- Streamlined workflow with semi-automated annulus detection
- Manual review and the possibility to edit the automated model proposal
- Comprehensive automatic measurements for annulus, leaflets and coaptation

Increase your diagnostic confidence for mitral valve therapy

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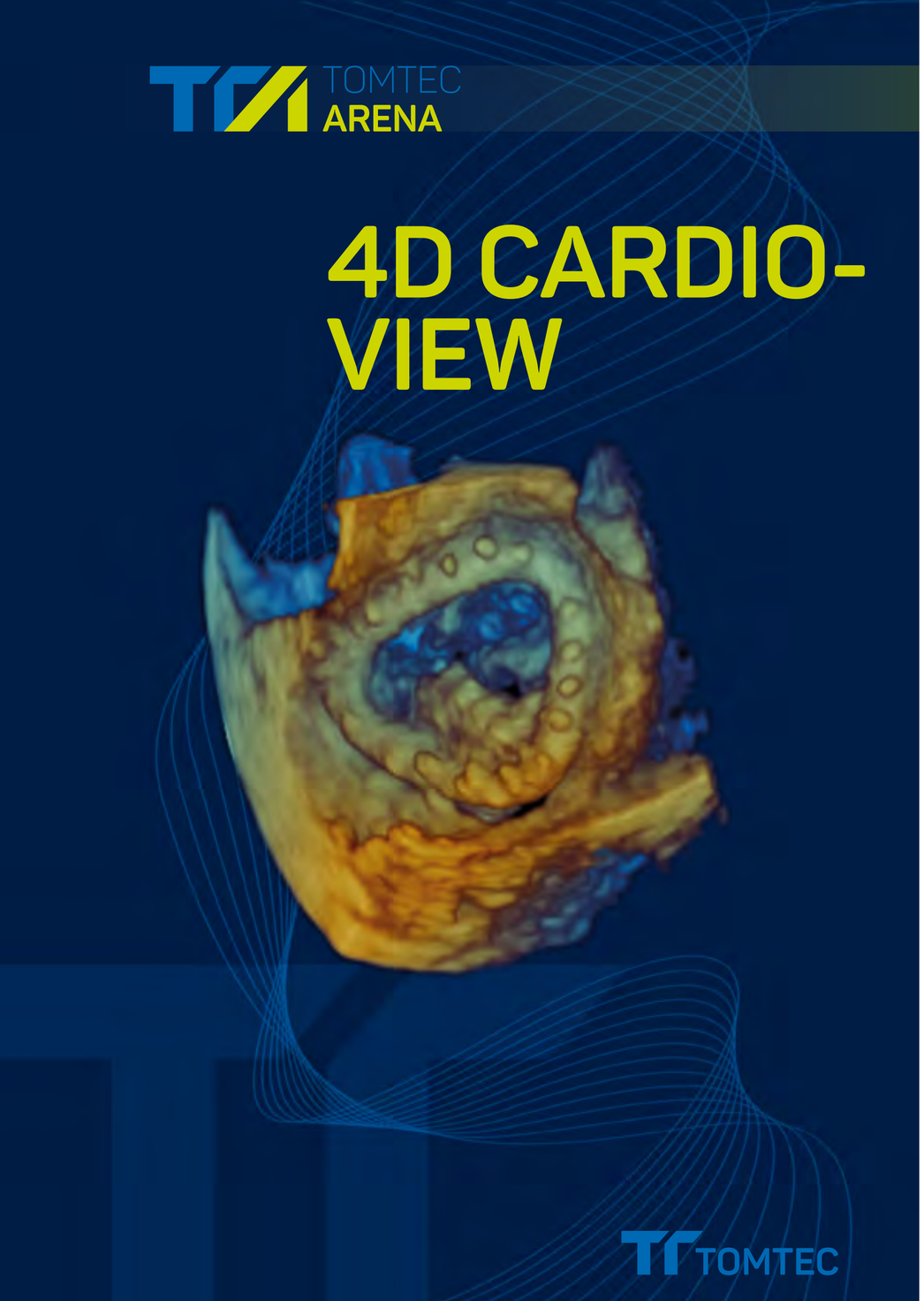
4D CARDIO-VIEW



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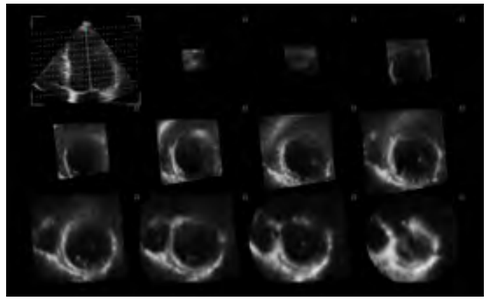
4D CARDIO-VIEW

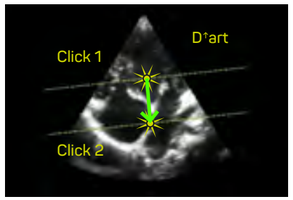
4D CARDIO-VIEW* is a vendor independent offline solution to review and analyze 3D echo data.

It offers easy and fast navigation to get the perfect 3D view with just two clicks by using the unique D°art tool. Features like the multi-slice (multiple 2D slices), basic measurements and workflow based volume measurements make 4D CARDIO-VIEW an all-purpose solution for any cardiac structure.

All measurements and views can be stored as bookmarks for easy retrieval at any time.

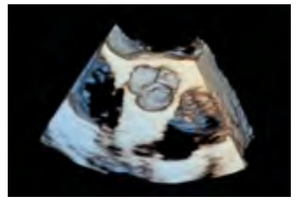


Spend time on your patient, not on navigation. Use the D°art!



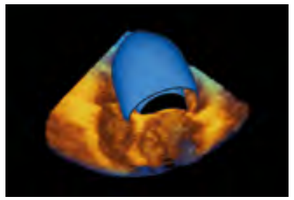
No laborious navigation – Get your perfect view of complex structures in a few seconds

- Unique D°art navigation displays any 3D view with only two clicks
- D°art multiple slice offers multiple 2D slices of a region of interest
- Smart region navigation reduces mouse miles substantially
- Landmark navigation shows your points of interest in one view
- Restore your views and measurements from bookmarks anytime



Improved visualization of multivendor 3D data

- Enhanced image rendering
- Adapted presets for different vendors
- Store your own render preset adjusted to your preference



One generic tool for any cardiac structure

- Improved workflow for easier LV and generic volume measurements including LV myocardial mass
- Distance, area, curve and angle measurements for TAVR planning and pathologies like ASD, VSD size and location
- Measurements in volume rendered and 2D views

Your vendor independent all-purpose solution to review and analyze 3D echo data

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IMAGE-COM OPTIONS CATH

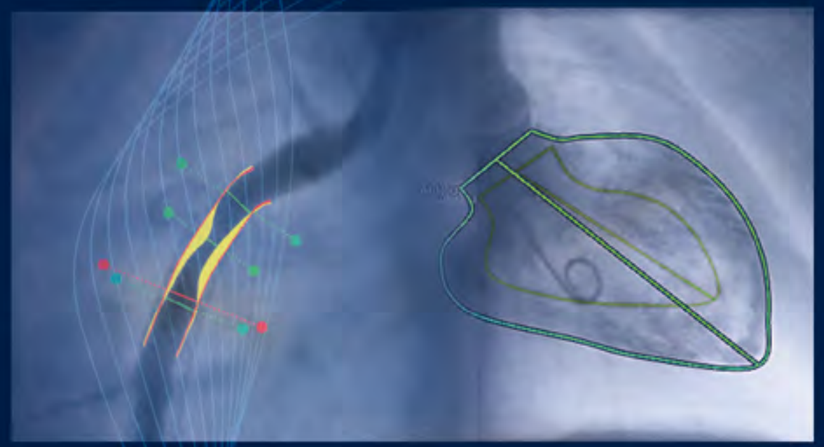

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IMAGE-COM OPTIONS*

CATHLAB

Coronary angiography is routinely used for diagnosis and treatment of patients who have or are at risk of coronary artery disease. In clinical practice visual estimation has limitations such as high variability associated with operator experience and only general estimation of the vessel dimensions. Quantitative Coronary Analysis being highly accurate and reproducible can refine the visual estimate and provide important measurements of the coronary anatomy.

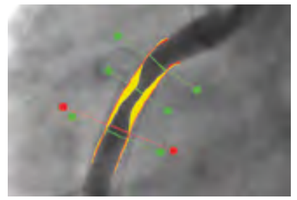
Integrated cath solution for QCA and QLVA

DSA

DSA is a clinical analysis package to visualize digital subtraction angiograms. It provides enhanced display of XA vessel images using automated image masking and DSA summation over time (vascular trace).

- DSA with default or user selected reference frame
- Compensation of motion artifacts using automated pixel shift

CATH-QCA



Clinical solution for quantitative coronary analysis based on an automated contour detection of coronary angiograms

- Two-clicks – one border proposal
- Total control – verification of final results by user
- Stenosis quantification on calibrated and uncalibrated images
- Calculation of stenosis diameter and area, obstruction and reference diameters and obstruction length
- Graphical display: Diameter curves, Stenosis Overlays

CATH-QLVA

Cath-QLVA is a clinical analysis package to quantify left ventricular volumes and function.

- Left ventricular volumes like EDV, ESV
- Ejection Fraction (EF), Stroke Volume (SV) and Cardiac Output (CO)
- Various Single Plane and Biplane calculation methods like Area-Length and Simpson method of disk for all results
- Review, editing and verification of final results

Cath tools embedded into your daily cath routine

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TOMTEC IMAGING SYSTEMS GMBH
Freisinger Strasse 9
85716 Unterschleissheim
Deutschland/Germany
o +49 89 32175 500
e info@tomtec.de
w www.tomtec.de

TOMTEC CORPORATION
525 W Monroe Street,
Suite 2360, Chicago
IL 60661, USA
o + 1 866 735 3740
e info@tomtecusa.com
w www.tomtecusa.com

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