

Medical modality OEM solutions



A full range of custom design solutions and services
for medical modalities

BARCO

Visibly yours

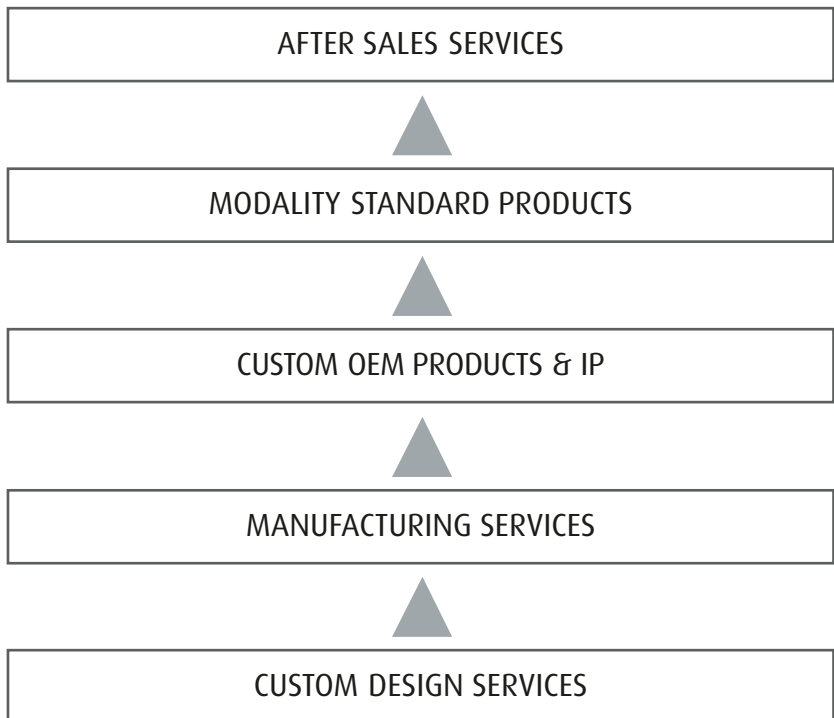
What can Barco do for you?

- Electric and electronic design
- Mechanical design
- Software/firmware development
- OEM product design
- Manufacturing services
- Maintenance support – End of life management

Your partner for custom modality design

A recognized technology leader with many years of experience in all areas of medical display technology, Barco has established a solid reputation in the medical imaging market with high-performance display technology and custom design solutions and services for a variety of medical modalities.

Building on its long standing experience and know-how, Barco, an ISO9001 certified company, builds up partnerships with medical manufacturers worldwide to design, prototype, manufacture, test, support and market a full range of custom imaging solutions and services for today's advanced medical modality applications. Barco's technical leadership is valued by a worldwide customer base of industry leading OEMs and medical professionals.



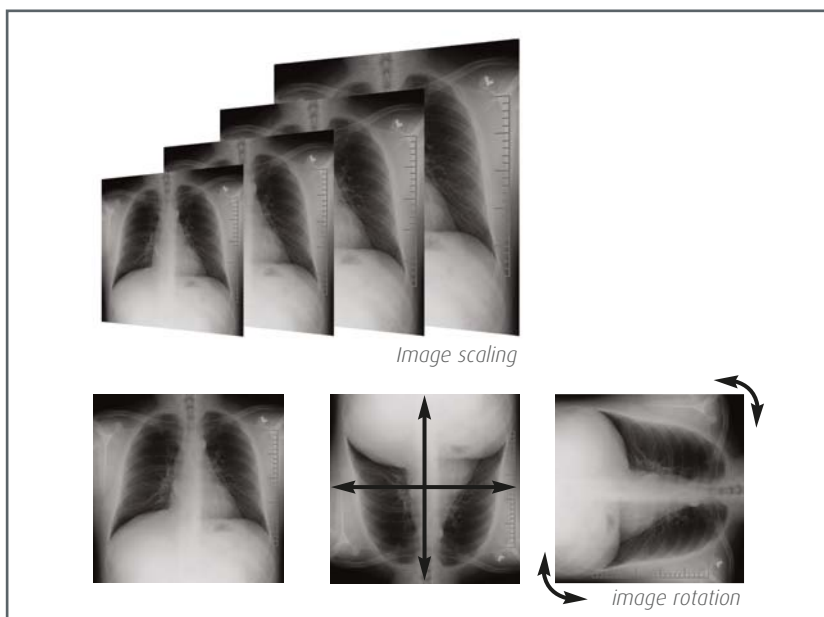
Market-leading competencies

Barco has a wide range of product design resources, capabilities and locations worldwide. Combined with an existing portfolio of OEM and standard Barco products, solutions can be developed starting from your product idea.

Barco is a flexible OEM partner, offering a full range of advanced services for a variety of high-end applications. Starting from your requirements we provide all services required to complement your own skills. This allows our OEM customers to market their products faster and at a lower cost.

1. Image processing

Barco is a preferred partner for the development of high-grade video processing solutions. For specific medical applications, such as X-Ray, ultrasound and endoscopy, Barco has developed motion adaptive algorithms, allowing conversions from interlaced to non-interlaced signals. Furthermore, our extensive range of video processing solutions includes high-quality scaling solutions, medical image compression, image improvements,... Whatever your application requires, our engineers will be happy to team up with you to develop an advanced video processing solution, tailored to your specific needs.



2. Interface design

Based on our long-standing experience in state-of-the-art medical imaging, our modality specialists can suggest, design and develop the most efficient interfacing solution for your application. As a result, we can offer an optimized solution, combining maximal performance and reliability with minimal cost of ownership.

3. Component design

For many years, Barco has specialized in FPGA and ASIC design, including vendor to vendor conversion techniques. Older, end of life designs can be converted to meet today's more demanding requirements. Deliverables can be source code, compiled code or a finished component (ASIC) product as well as associated testing and verification reports.

What can Barco do for you?

- De-interlacing
- Scan conversion
- Digitization
- Scaling
- Image rotation
- Image distribution
- Video encoding/decoding
- Frame rate conversion
- Video overlay
- Digital filtering
- Noise reduction
- Advanced DSP processing in FPGA or DSP processor
- Image capturing
- High speed memory interfacing (DDR,...)
- Compression (lossless, lossy,...)
- ...

What can Barco do for you?

- Analog (VGA-UXGA) and digital (DVI) video interfacing
- PC interfacing (PCI, PCI-X)
- Ethernet (electrical/optical fast, gigabit) interfacing
- FireWire, SCSI, USB, CAN bus interfacing
- ...

What can Barco do for you?

- ASIC design
- FPGA design
- Conversion services between ASIC/ GATE ARRAY / FPGA and PLD
- ...

What can Barco do for you?

- Programmable component design
- DSP design
- Analog and digital board design
- Stand-alone product and system design
- Integration of the board design in a system or rack
- ...

What can Barco do for you?

- Display drivers (Windows and Linux)
- C, C++, Java programming
- SDK and DLL development
- Windows and Linux device drivers
- Firmware development
- Embedded processors and software in FPGA technology
- Calibration software
- Quality Assurance software
- ...

What can Barco do for you?

- Custom design from specification to product
- Prototyping
- Qualification and testing (environmental, HALT, HASS)
- Agency certification and approvals (CE, UL, cUL, IEC, FCC,...)
- Documentation
- ...

4. Electric and electronic design

Our dedicated engineering teams are constantly anticipating technological developments and market circumstances and have gained a unique know-how in the field of traditional ASIC/FPGA design, advanced SOC/SOPC based system development, IP (intellectual property) design and integration, and board design. Continued, focused investments in research and development, combined with strategic partnerships with high-end technology partners allow us to present the latest and most advanced high-end products and solutions to the market.

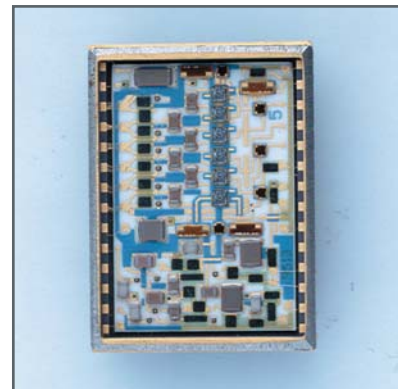


5. Software and firmware development

Barco has developed a complete suite of software tools to ensure optimized compatibility of software and hardware (for example in ultrasound and X-Ray applications). Thanks to this approach, our customers can benefit from a perfect balance and trade-off between their hardware based functionalities, embedded software, device drivers, libraries and user applications. Furthermore, we can serve our customers with a full range of SDK and SLL development tools, device drivers and calibration and QA software.

6. Board, product and system design

Whether you need a board design, or you look for a partner for developing a standalone product or full system, Barco will study your product idea or specification and come back with a proposal and quotation.



7. Mechanical design

Our mechanical engineers offer OEMs the technical skills, the infrastructure and the readiness to produce components and sub-assemblies for medical OEM applications in very short periods of time. Every project is carried out with a maximum of flexibility and inventiveness. We can design custom-made plastics and sheet metal components within the framework of the 'one stop shopping' concept. This enables our customers to outsource high precision engineering and manufacturing activities in all confidence, while focusing on their core business.

Customers receive professional support in the application of new, rapidly evolving technologies that offer great advantages. We have developed great expertise in complete rapid prototyping services. Moreover, the use of robotics and automatic packaging technologies enables us to combine low cost with highest quality.

8. Manufacturing services

A customer-driven company, Barco manufactures high-end custom-made products. Within our core "QCD" philosophy, perfect Quality at an affordable Cost within an agreed Delivery date constitutes our everyday challenge.

We present a full-chain service, ranging from procurement of components to final assembled products. Depending on your needs, Barco can purchase, produce and distribute, in order to provide a complete answer to your outsourcing expectations. Our flexible production facilities can handle small- to mid-size series as well as prototype runs.

Furthermore, dedicated teams of qualified engineers guarantee permanent improvement of the products and processing at every production stage.

9. Maintenance support – End of life management

In today's modality business, end of life management is becoming more and more important, as many technology suppliers are accelerating the migration of their products to more advanced technologies. Therefore, Barco supports its customers with its extensive experience in providing long-term maintenance support and high-grade end of life management for their solutions.



What can Barco do for you?

- Ergonomic/industrial design
- Enclosure design
- Injection molding design
- Sheet metal design
- Structural calculations
- Thermal behavior analysis
- Surface treatment, painting
- Prototyping (stereolithography,...)
- Packaging design
- ...

What can Barco do for you?

- Multi-layer PCB manufacturing and assembly
- Standalone product manufacturing
- LCC manufacturing for larger volumes
- Product staging
- Testing
- Mechanical assembly
- Prototyping, small- and mid-size series
- Tropicalization
- ...

What can Barco do for you?

- Maintenance support
- Procurement of compatible solutions
- Obsolete component redesign
- End of life management
- ...



A partnership strategy

From the very beginning, Barco's strategy has been to develop strong relationships with carefully selected, technology-driven partners, to provide its customers with the most advanced and suitable technologies and services.



Realizations

Ultrasound Video Processor - UVP

The UVP is a complete video processing and switching board for ultrasound systems.

Main features:

- Analog and digital circuit design
- High speed DA/AD conversion
- Software in C and/or micro-controller hardware/firmware
- Communication hardware and software (RS-232)
- De-interlacing
- Time base correction
- Frame rate conversion
- Picture in picture
- Flicker-free video conversion
- Video encoding and decoding



Ultrasound Network Interface - UNI

Main features:

- Digital interface between ultrasound system and external PC
- Graphic overlay from PC on ultrasound signal
- Frame rate conversion on graphic overlay to avoid frame rate conversion artifacts



BARCO MED[®] 2MP2HX display controller

The BARCO MED[®] 2MP2HX is a PCI display controller for live X-ray image processing

Main features:

- 2MP resolution
- 1024 shades of gray
- Dual-head live video and graphics overlay
- Triple video frame buffer eliminates image artifacts
- Four independent Look-Up Tables to program display curves (e.g. DICOM)
- High refresh rate for flicker-free images
- Graphics overlay based on (color) keying
- Software library for custom software development and integration

Available IPs

- JPEG color decoder
- JPEG color encoder
- JPEG grayscale decoder
- JPEG codec
- Wavelet Transform Unit
- 3 color gamma correction
- 1 color gamma correction
- ...



MCD214 - Ultrasound display

The MCD214 is a 14" color CRT display for use with an ultrasound system.

Main features:

- VGA resolution
- High luminance and color stability
- Analog video + composite sync input
- Built-in microphone and speakers

MFCD 1313 Ultrasound display

The MFCD 1313 is a 13" color flat panel display for ultrasound or endoscopy.

Main features:

- VGA resolution
- High luminance and color stability
- Analog RGB video input (composite video or composite sync or separate sync)
- PAL/NTSC video input
- SVHS video input
- I-GUARD® embedded sensor for intervention-free self-test and calibration
- Response Time Improvement System (RTIS) for artifact-free moving images

Medical Video Converters

Barco's Medical Video Converters are standalone units that interface between a medical imaging application platform and a recording device or display.

- Medical Video Up Converter - MVC10U

The MVC10U doubles the field rate and provides clear, flicker-free images on a CRT display. The unit is compatible with image resolutions up to 1536K pixels/field.

Main features:

- Input resolution up to 1536K pixels/field
- RS232 control
- Automatic calibration
- Built-in SMPTE test pattern generator
- 8-bit sampling

- Medical Video Down Converter - MVC10D

The MVC10D converts high-resolution 1K x 1K images into PAL or NTSC format grayscale video for recording, projection or display on a standard video monitor

- Medical Video Down Converter - MVDI

The MVDI converts high-resolution SXGA images into PAL or NTSC format grayscale video for recording, projection or display on a standard video monitor



Barco medical imaging systems

Many years of experience in all areas of display technology gives Barco a unique advantage as it continues to expand its color and grayscale display technology for a variety of imaging applications. Barco has established a solid reputation in the medical imaging market with high-performance display technology for X-ray, digital radiography, PACS, digital mammography, ultrasound and magnetic resonance viewing applications.



Barco's expertise in providing high performance display systems is supported by a worldwide network of research, development and support services. A global sales organization, with regional support people who understand your language and requirements, complements Barco's partnership approach.

BarcoView (Belgium)
Th. Sevenslaan 106 - B-8500 Kortrijk,
Belgium
Phone: +32 56 233 244
Fax: +32 56 233 374
E-mail:
sales.medical.barcoview@barco.com

Barco Silex, nv (Belgium)
Scientific Park - Rue du Bosquet 7
B-1348 Louvain-la-Neuve, Belgium
Phone: +32 10 45 49 04
Fax: +32 10 45 46 36

BarcoView, LLC (USA)
3059 Premiere Parkway - Duluth,
Georgia, 30097-4905, USA
Phone: +1 678 475 8000
Fax: +1 678 475 8100
E-mail: medical.us@barco.com

Barco LTD. (Taiwan)
17th floor, Kuohwa Building
868-6, Chungcheng Road,
Chungho City, Taipei County, 235, Taiwan
Phone: +886 2 8221 6868
Fax: +886 2 8221 6969

Barco Systems Pty. Ltd. (Australia)
2 Rocklea Drive, Port Melbourne, Vic,
3207, Australia
Phone: +61 3 9646 5833
Fax: +61 3 9646 5887

Barco Ltd. (South Korea)
3F, Dansan-Nonhyun Building, 216-8
Nonhyun-dong
Kangnam-ku, Seoul 135-010, South Korea
Phone: +82 2 3445 8900
Fax: +82 2 3445 8737

**Barco nv, Representative Office Shanghai
(China)**
7F, Fen Yang Road 138
Shanghai PRC 200120, China
Phone: +86 21 5465 5501
Fax: +86 21 5465 5502

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Technical specifications are subject to change without prior notice

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