

iCR Format Converter features

- Best in class file format up, down and cross conversion
- Unique software tools for interlaced to progressive conversion for up, down and cross conversion for SD, HD and custom resolutions.
- Highest quality resizing
- Reaspecting 4:3, 16:9, 14:9, custom
- Fully featured Transcode system
- Transcode growing files for low latency multi-format transcoding
- Speed-ups and Slowdowns of video and audio to always maintain sync
- Constant Cadence 3:2 pull-down Add/Remove as well as Frame Dropping/Doubling
- Static Logo insertion with transparency
- In-vision timecode insertion for generation of proxy formats
- Add/Remove SD Analog Blanking (704 pixels)
- MXF Cutting and Splicing
- Integration and Automation:
 - GUI java plug-in API
 - Watch Folders
 - User Definable Scripts and notifications
 - Automatic post-ingest transcoding
 - Manual transcoding
 - SOA Web Services
 - Watch Folders

iCR Standards Converter features

- All the above iCR Format Converter features plus the following:
- Motion compensated SD Standards Conversion with AmberFin advanced deinterlace
- Motion compensated HD Standards Conversion with AmberFin advanced deinterlace

The iCR Converter family: iCR Format Converter, iCR Standards Converter

Good image quality helps Broadcasters and content providers make money. Consumers prefer good looking pictures, so image quality translates to audience share. Good quality pictures also compress more gracefully, reducing data overheads and costs.

So, there is a growing requirement for high quality format conversion and standards conversion.

Modern media workflows, including content delivery and distribution, are increasingly file based, not video based and include a wide range of input and output file formats. Traditional hardware video baseband format converters and standards converters are not designed for this kind of file based working. They lack modern tools like rewrapping and Transcoding. They are also typically simple input/output devices, with no timeline control or clip annotation.

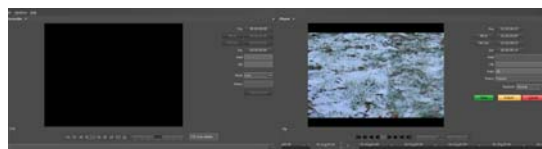
That's why AmberFin have introduced two new products to it's award winning iCR software product range, the iCR Format Converter and the iCR Standards Converter, designed to provide the most efficient and cost effective means of meeting the operational and business needs of a media organization – all without compromising the quality of the pictures and sound being delivered to their customers.

The **iCR Format Converter** delivers best in class quality software file format conversion for:

- Up conversion
- Down conversion
- Cross conversion

The iCR Format Converter is the ideal system for spatial conversion, for example uprez images such as 576i SD to 720p HD, as well as a huge range of other up, down and cross scaling tasks.

The **iCR Standards Converter** has all the spatial conversion features of the iCR Format Converter plus high quality motion compensated temporal SD and HD standards conversion.



Designed for open file based workflow

All iCR Converters include a fully featured Transcode and re wrap toolset, plus a host of other capabilities, such as clip markup, web services, SOAP and user programmable tools, making them ideal for contemporary file based workflow. Hardware format and standards converters perform only one limited range of tasks, sit idle between jobs and tie you into a single vendor's hardware roadmap. AmberFin systems deliver outstanding results but are available as software. This enables you to benefit from latest IT developments and integrate efficiently into your overall file based facility workflow – and with AmberFin systems, no time consuming tape layback followed by baseband conversion is necessary.

All that translates directly to improving your bottom line.

Transcoding and rewrapping included

Transcode and rewrapping toolsets include support of MXF OP1a, MXF XDCAM , MXF P2, MXF OP-Atom, MXF AS-02, MPEG-2 Transport Stream, MPEG-2 Program Stream, Elementary Streams, AVI, Windows Media Video (ASF), QuickTime MOV & optional JPEG2000 and Dolby D.

Closed Captioning Option

iCR Converters also handles upconversion and down conversion of closed captions. There is comprehensive support for VBI / VANC and ATSC as well as the ability to insert .scc files into a workflow. That means no need to go through an additional external captioning process.

Upgradeable and Future Proof

As your business needs grow, the iCR Converter family can be optioned and upgraded to other AmberFin products, adding new capabilities like video baseband ingest and automatic assisted quality control. All iCR Converters products are available with a comprehensive support and maintenance package, which keeps your investment protected and up to date.

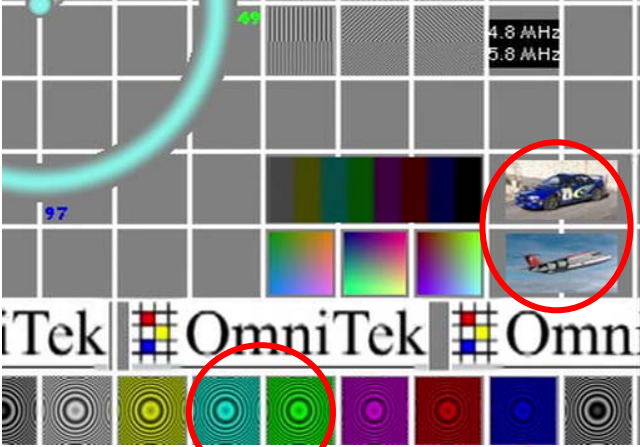


Everybody's watching

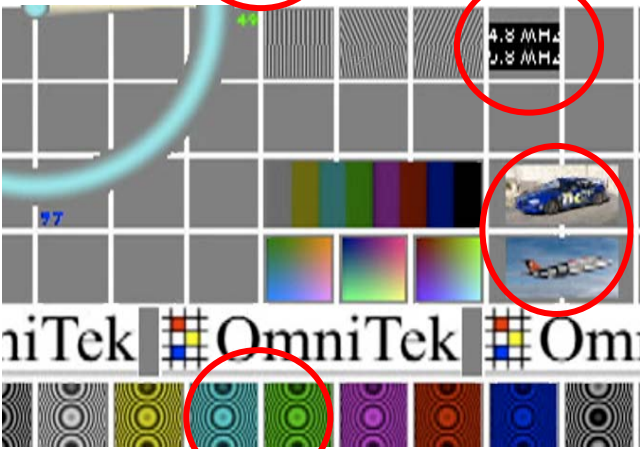
The iCR Format Converter in action

Print images can't fully convey the crisp, artifact-free images that the iCR Format Converter delivers. The images that follow, which were produced using a well respected industry test pattern, can only give a partial idea of the additional quality that AmberFin technology delivers on real content. What they do show are dramatic differences, that can be even more noticeable on real moving displays.

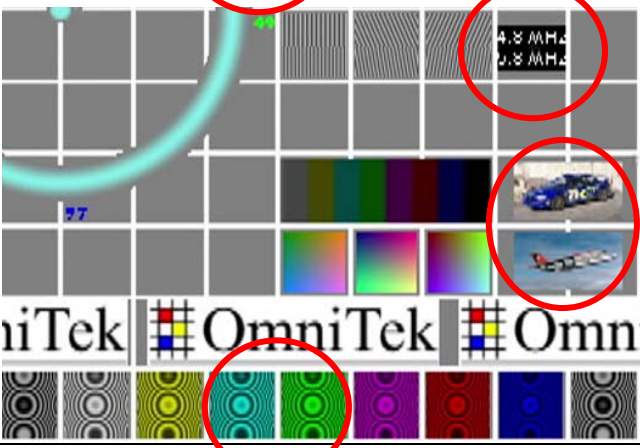
Compare the results obtained with alternative software and hardware approaches to a 576i SD to 720p HD up convert. There are dramatic differences shown on the lettering on the black boxes on the right, the small pictures of the car & airplane and the circular test signals at the bottom:



iCR Format Converter:
Text can be read.
No aliasing (jagged edges) on car and plane.
Test signal is a single circle (correct).



Alternative well known Transcode software:
Text is quite hard to read.
Car is blurred and plane is aliased.
Test signal is three circles (incorrect).



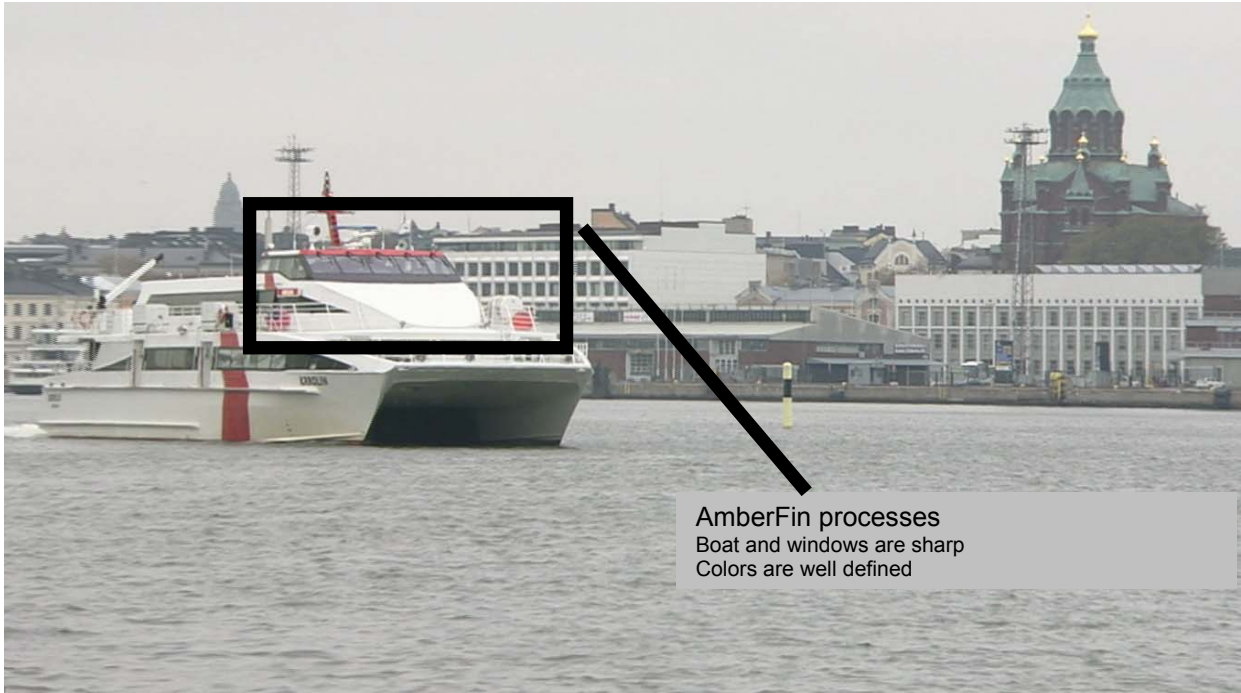
Alternative well known Transcode hardware:
Text is quite hard to read.
Car is blurred, aliasing on car and plane.
Test signal is three circles (incorrect).



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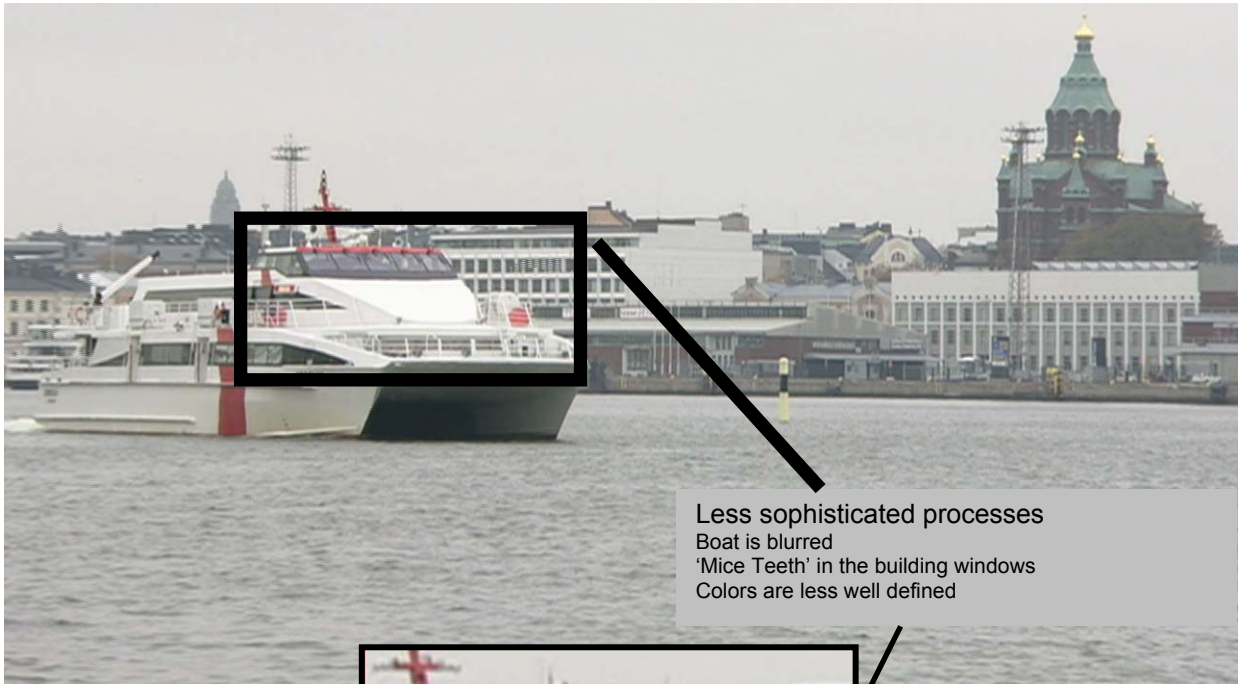
The iCR Standards Converter in action

AmberFin quality is also excellent for software SD and HD standards conversion. Compare the two images below. The first was made using the iCR Standards Converter including advanced Amberfin processes for an HD standards conversion:



AmberFin processes
Boat and windows are sharp
Colors are well defined

Now, compare the same image using less sophisticated processes:



Less sophisticated processes
Boat is blurred
'Mice Teeth' in the building windows
Colors are less well defined



Print images of course can't show motion. AmberFin systems handle motion superbly, whereas some software Transcode systems modes perform standards convert by simple frame replication, causing juddering on replay. Sequences processed by AmberFin are smooth and high quality.

Why quality matters

There are two key facts that drive the business case for quality:

- Given the choice, viewers prefer better looking pictures¹
- Clean, well converted pictures require up to 25% less bitrate for transmission and storage

Those facts apply equally to TV, Web and Mobile delivered content. Program sponsors prefer clean pictures. This is especially the case in sports sponsorship – there's no point placing corporate branding on posters, sports cars or shirts, if the message can't be read by the viewer.

Up converting requires scaling the image - i.e. reading a lower number of input pixels and writing a higher number of output pixels. Interpolation is needed. If the input video signal is interlaced, while the output is progressive, special processes are needed to avoid artifacts. Down conversion also requires more sophistication than simply dropping pixels.

Transcoding material created in one size format for delivery in another, poses one set of technical quality challenges. Transcoding interlaced material for progressive display poses another. Most modern display devices, including TV's, PC screens and mobile phones are progressive. Most legacy content however is interlaced.

AmberFin have addressed these challenges with unique high quality algorithms that produce outstanding results.

Conventional up converters typically use either motion adaptive or linear processes. Motion adaptive systems tend to intermittently lose definition, while linear systems typically show either ringing or softness.

AmberFin conversion includes Emmy™ award winning technology. Up and down converts use adaptive multi-tap polyphase interpolation filters. Rather than simple pixel repetition or decimation, AmberFin scalers calculates intermediate points using filters optimized for the needs of the particular conversion process. The filters have been optimized by AmberFin, for example for low-ring, producing 'best in class' results.



Double imaging on interlaced material is a typical problem with poor quality systems. Compare the standard processes on the left with AmberFin on the right. AmberFin produces clean results.

AmberFin superior image quality has been validated by independent research company User Analytics. The independent user research was undertaken to analyze viewer responses to video quality on a small (iPod Touch) and large screen (HD) device. Over two thirds (69%) of those questioned in the independent study preferred the quality of the video produced by AmberFin iCR, which also delivers content file sizes reduced by up to 25%, to that of a well known other system.

AmberFin quality offers the choice of either producing the highest possible quality deliverables, or of saving time and money by reducing data rates, while still producing good quality results.

Find out more

The iCR Format Converter and iCR Standards Converter are based on proven, award winning technology, already used by major media organizations worldwide. To find out more, contact your local AmberFin channel partner, or contact AmberFin direct at <http://www.amberfin.com/about/contact-us>



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iCR Format Converter supported spatial conversions (no interframe interpolation):

iCR Format Converter		Outputs							
Inputs		480p	480i	576p	576i	720p	1080i	1080p	Custom
	480p	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	480i	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
	576i	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes
	576p	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes
	720p	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes
	1080i	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes
	1080p	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes
	Custom (web or mobile)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-

iCR Standards Converter additional supported temporal conversions (interframe interpolation):

iCR Standards Converter		Outputs					
Inputs		1080i/25	1080i/29.97	720p/50	720p/59.94	576i/25	480i/30
	1080i/25	-	Cross/frame	Cross	Cross/frame	Down	Down/Frame
	1080i/29.97	Cross/frame	-	Cross/frame	Cross	Down/Frame	Down
	720p/50	Cross	Cross/frame	-	Cross/frame	Down	Down + Frame
	720p/59.94	Cross/frame	Cross	Cross/frame	-	Down/Frame	Down
	576i/25	Up	Up/frame	Up	Up/frame	-	Frame
	480i/30	Up/frame	Up	Up/frame	Up	Frame	-

Note the iCR Standards Converter can apply other spatial and temporal conversions. Contact AmberFin for details.



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iCR Format Converter/iCR Standards Converter supported Codecs and Wrappers:

Format		Transcode		
		in	out	
AVI (Matrox compatible)	DV / DVCPro	•	•	
	Uncompressed video	•	•	
	Uncompressed audio	•	•	
	User installed codecs (input side)	◉	x	
MXF OP1a	MPEG-2 I frame	•	•	
	MPEG-2 Long-GOP	•	•	
	HDV	•	x	
	DV / DVCPro 50/100/HD	•	•	
	Uncompressed audio	•	•	
	MP1L2 audio	•	•	
MXF XDCAM	XDCAM HD	•	•	
	D10 (IMX 30 / 40 / 50)	•	•	
	DVCAM	•	x	
MXF P2	DV / DVCPro 50/100/HD	•	•	
MXF OP-Atom	DNxHD	•	•	
MXF AS02	JPEG 2000	•	•	
	MPEG-2 I frame	•	•	
	MPEG-2 Long-GOP	•	•	
	D10 (IMX 30 / 40 / 50)	•	•	
	DV / DVCPro 50/100/HD	•	•	
	HD Noncompressed 10 bit	•	•	
	Uncompressed audio	•	•	
	Dolby D (AC-3, 5.1)	•	•	
MPEG2 Transport Stream	MPEG-2 I frame	•	•	
	MPEG-2 Long-GOP	•	•	
	D10 (IMX 30 / 40 / 50)	•	•	
	HDV	•	x	
	H.264 / AAC	◉	special	
	Uncompressed audio	•	•	
	MP1L2 audio	•	•	
MPEG2 Program Stream	Dolby D (AC-3, 5.1)	•	•	
	MPEG-2 I frame	•	•	
	MPEG-2 Long-GOP	•	•	
	D10 (IMX 30 / 40 / 50)	•	•	
	MPEG1 video	x	•	
	Uncompressed audio	•	•	
Elementary Streams	MP1L2 audio	•	•	
	Dolby D (AC-3, 5.1)	•	•	
	WAV / BWAV	•	•	
	AIFF	•	x	
	DV-DIF	DV / DVCPro 50/100/HD	x	◉
	System stream	MPEG1 video + MP1L2 audio	x	•
	Quicktime (.mov)	MPEG-2 I-Frame	•	x
		MPEG-2 Long-GOP	•	x
		XDCAM HD	•	•
		D10 (IMX 30 / 40 / 50)	•	•
DV / DVCPro 50/100/HD		•	•	
Native QT 7 A/V codecs on Windows		•	•	
Pro-Res		•	x	
User installed QT 7 A/V codecs (e.g. ON2 flash)		•	•	
Uncompressed 10bit / 8 bit		•	•	
Sorensen video 3		•	•	
ASP		•	•	
H.264		•	•	
AAC		•	•	
AMR		•	•	

Key: • – full support ◉ - partial support, x - unsupported in current version. Some functionality such as Dolby D is sold as an option. Full details from AmberFin or one of its channel partners. <http://www.amberfin.com>