

WHERE FILM GOES ELECTRONIC

A VISIT WITH BRITISH TRANSFER WIZARDS CINTEL

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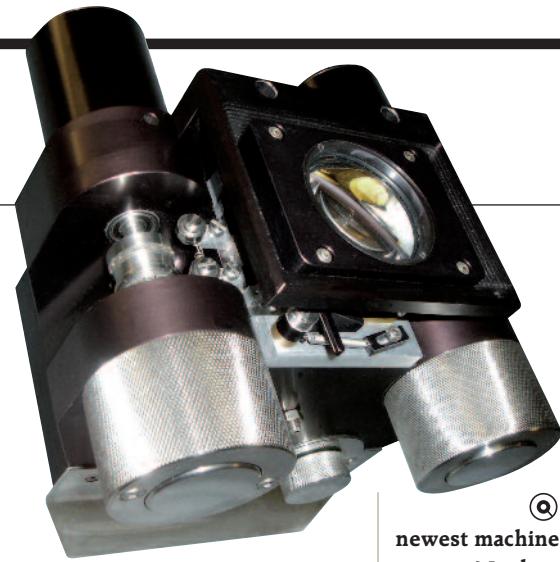
Liverpool Street station, London. The suburban train will rumble through the outskirts of London for half an hour before I arrive in Ware. Here, in rural Hertfordshire, day-trippers sometimes enjoy a pause on their way from London to Cambridge. However, film experts know the place for another reason: Ware is the home of Cintel, manufacturer of legendary film scanners. Cintel delivered the first Flying Spot Telecine to British broadcaster BBC back in 1950. Equipment from Cintel has been desired worldwide from that moment on, particularly since the company incorporates constant technical improvements. Simon Clark, who joined Cintel as an apprentice in 1984, is waiting for me at the railway station. Who better to tell me the story of the company and its products?

📍 **The Cintel Millennium HD is the only 4K data-cine with 8 mm, 16 mm, 35 mm, 65 mm and 70 mm capability?**

Simon Clark: Yes, it is. We just sold one machine to Pro8mm in Burbank, USA. We actually did a modification to the gate format, so they can use their Max 8 format. The scanner is working beautifully with scan capacity to three high definition standards: 1080i, 1080p and 720p along with putting out the most amazing quality standard definition 525/625 (NTSC & PAL) that you have ever seen. The Millennium can grab single frames at 1920 x 1080 pixels, which gives filmmakers and archivists exciting creative options to create high quality stills even from their Super 8 and 16 mm film.



Simon Clark, Cintel's Business Development Manager, at the diTo, the fastest 2K/4K 16 mm and 35 mm pin registered film scanner.



Super 8 gate for the Cintel Millennium HD.

Cintel's Simon Clark with the Millennium HD which works with 8 mm, Super 8, Max8 (Pro8mm's format), 16 mm, Super 16, 35 mm, Super 35, 65 mm and 70 mm.

have a 16 mm/8 mm magnetic sound head.

Q How about your newest machine, the diTTo film scanner? Is there also a Super 8 gate for this machine?

At the moment, there is only a 16 mm/Super 16 and 35 mm/Super 35 gate. We had maybe one or two enquiries for a Super 8 gate but because it's a high resolution machine for 2K and 4K there is not enough demand for Super 8 yet. We work with pin registration and that is not easy to achieve with Super 8. It's not easy on 16 mm actually, but it's quite tricky on Super 8... But we did sell four or five Super 8 gates for our Millennium HD machines. One is in Tokyo, one was sold with a Millennium HD to AVP in Munich (Germany). To use Super 8, you have only to change the rollers and the sprockets. Everything else is very flexible on that machine.

Q How often do you sell 16 mm gates with your machines?

Mainly Super 16 is very important for us. For every Millennium machine we sell a Super 16 gate. Probably half of the diTTo machines we sell as Super 16 as well as 35 mm.

Q How about the film frame rate?

This machine does SD and HD in real time. For 2K resolution it slows down to 15 frames per second. For 3K and 4K data it is up to 3.75 fps. That is more a restriction of the interface to the outside world than from the machine itself.

Q You are still using tubes inside the Millennium HD?

At the heart of our Millennium HD lies a new cathode ray tube light source, Hi-White, which significantly improves the performance to give images which are sharper and less noisy than those using the traditional CRT package.

Q What about the lifetime of the tubes?

It really depends on the usage. A Millennium machine needs a new tube after three years. I know UR-SA customers have used their tubes up to ten years. At that point, of course, you do not get good quality in your pictures anymore. If you use the machine daily, three years is a good time for a tube. What can shorten their life: a lot of scan effects like zooms and pans. A straightforward scan is not a problem. Depending on the machine, a new tube costs between 6,000 and

15,000 GBP. But this is for 6,000 to 15,000 hours of usage, so this is 1 GBP an hour. If you compare this to the heads of a VCR it's not much.

Q What is the price of a Super 8 gate?

We charge about 25,000 BP for a gate. It is nearly the same investment as for a 16 mm gate. That is why we have one rental gate to offer because to buy a Super 8 gate is not cheap.

There is even a small demand for 9.5 mm. We are thinking about creating a 9.5 mm film gate – if we can sell three or four of them.

Q One of the problems with Super 8 images is occasionally unstable image. Do you have a weapon against this vexation?

Have a look at our imageMill STEADY. It provides optimum quality image stabilisation in real time, at SD, HD and data resolutions. This little box uses full bandwidth, 14-Bit processing. A "live wipe" facility enables the operator to split the screen to see the before and after effects of stabilisation. We sell these units, for example, to Warner Brothers. They are re-mastering old animations on an old Spirit Telecine.

We can do image stabilisation and noise reduction on the same box but not at the same time. So I switch over to the GRACE application. Now I can do my noise or grain reduction. The price for the box starts at 25,000 GBP for one standard, if you have SD, HD and data it's 45,000 GBP. It is a quite nice tool, not too expensive.

Q How about sound?

We have an optical reader – we can read 16 mm and 35 mm. At the request of AVP (Munich) we are doing 16 mm magnetic. Probably when we are developing that 16 mm magnetic we will also make it adjustable for 8 mm. I expect that probably early next year we will



The amount of storage space needed at each resolution

(DPX 10 bit log file sizes)

	Frame	Second	Minute	Hour
SD	1.6 MB	38.4 MB	2.25 GB	135 GB
1K	3.2 MB	76.8 MB	4.5 GB	270 GB
HD	8.2 MB	197 MB	11.53 GB	692 GB
2K	12.5 MB	300 MB	17.6 GB	1.03 TB
4K	50 MB	1.2 GB	70.3 GB	4.1 TB

MB = Megabyte, GB = Gigabyte, TB = Terrabyte



Cintel History

1927 Foundation of the Baird Television Company

1940 The name Cinema-Television Limited, later shortened to Cintel, first appears

1950 The first flying spot Telecine is installed at the BBC's Lime Grove studios, London, UK

1958 Cinema-Television Limited becomes Rank Cintel Limited

1975 The Mk III telecine is launched. Benefits include 525 and 625 line operation and 16 mm or 35 mm film on the same continuous motion transport

1978 Introduction of TOPSY, the world's first remote control programming system for a Telecine

1985 Development commences on a High Definition version of the Mk III Telecine

1987 The Digiscan 4:2:2 is launched, with digital outputs from the Mk III

1989 The all-digital URSA makes its first appearance

1993 URSA Gold is launched with 4:4:4 bandwidth. The MK III HD High Definition Telecine goes into service at Universal Studios in Hollywood

1996 Rank Cintel becomes Cintel International Limited

1997 URSA Diamond joins the URSA family, quickly becoming the industry standard

2001 Cintel launches OSCAR, a revolutionary optical dust and scratch removal system, later renamed OLIVER

2002 Cintel launches DSX, the world's 4K "data-cine"

2004 Cintel launches dataMill, a fast data scanner. Cintel also launches GRACE, an external film grain reducer based on the multi-standard imageMill platform

2005 Cintel Asia Pacific opened in Hong Kong. diTTo, a high quality and high speed data scanner was launched

2006 Cintel launches STEADY, a real-time, multi-standard image stabilizer tool for the imageMill platform

2007 diTTo 16 mm gate was added. Kodak Color Science integration for diTTo

2008 X-Speed Digital Servo System for Millennium and dataMill

- simultaneous SD or HD files output with 2K/4K scans
- built-in monitoring and analysis tools: waveform monitor, histogram display and vectorscope display built-in to the GUI

2009 4K+ sensor, super fast shuttle and increased scanning speed due in 2009

What other products does Cintel sell?

The C-Reality film scanner is extremely versatile, and can be used in a range of applications – including short form commercial post production, long form feature film and DVD mastering, television episodics and documentaries, HDTV film mastering, film effects and creative color matching, as well as in the specialist fields of film

archive and restoration. Designed for longevity, C-Reality can scan film at all resolutions and in all formats. In fact, C-Reality was the first data-cine to make 4K a practical and straightforward operation, with speeds ten times those of film resolution scanners.

C-Reality film scanners are used in many facilities world-wide and our customer base includes established names in the world's major

film production regions including Hollywood, London, Paris, Madrid and Mumbai.

This film scanner can be enhanced with dust and scratch removal technology. The unique OLIVER system for dust and scratch removal reduces the effects of dirt, scratches and other surface damage on film, regardless of film type, format or resolution. Available as an option for all C-Reality data-cines, dirt and scratches are quickly and easily removed from the film image during the scanning process to provide transfers and masters which are scrupulously clean. The OLIVER system works seamlessly with the scanner without compromising its operation in any way. It does not use chemicals and has no on-going running costs.

Do you have a grain reduction system too?

Yes, GRACE is our grain reduction system, developed specifically for C-Reality and DSX film scanners. Designed to operate at the scanner front end, Grace works in all resolutions, and is film gauge and image format independent. Fully programmable and using 14bit RGB processing, GRACE provides grain reduction without the need for recursive filtering and additional frame stores which cause associated delays and artifacts. As GRACE is frame by frame independent, film grain reduction is seamless over scene boundaries, and moving images do not smear or ghost.

For our diTTo machine which is working with RGB Light Emitting Diode (LED) illumination, we offer the D/SCO Dust/Scratch Concealment Option that fixes approximately 95% of all surface damage 'live' during the scanning process. This fix is an optical process which replaces the lost light with the actual film image – it is not an electronic 'paint' process. D/SCO is based on the technology used in Cintel's

renowned OLIVER 'solid state wet-gate' system but has the advantages of working on all film stocks including black and white. Any remaining surface damage can be flagged to a downstream process by a 'defect map' stored with each frame of image data. It is essentially a digital wet-gate.

The DPX file format can carry this information either in the Alpha channel or in the second element and can be used by downstream software systems such as 'PF Clean' from the Pixel Farm, The Foundry's 'Forge', MTT's 'Correct' and 'Revival' from daVinci. Cintel has incorporated Kodak intellectual property associated with the use of the 'Defect Map' by end user customers so that no additional costs are involved and no annual license fee required.

Nowadays, there is a lively competition in the market for transfer systems. There are even some newcomers in this market.

The MWA machines from Germany and the new Debie machines from France – they are doing the right thing, making 8 mm and 16 mm scans more affordable. Our Millennium HD machine is not cheap – it will cost you around 300,000 GBP (US-\$ 600,000) to do SD/HD, Super 8, 16 mm and 35 mm. We have always sold these machines to high-end post production and broadcasting customers. They are longing for this higher quality.

Of course there is a market for a slightly less high quality scanner like the MWA machine or the Debie machine. They are really using a niche in the market. It would have been nice if we had done it but we haven't. But even Super 8 users are looking for the best quality today. They are often working more professionally than before. So there is a need for the best quality. We can see this from our customer AVP in Germany: They bought the Millennium HD even for Super 8 –



Cintel is no longer located at Cintel House. The smaller staff has moved into the neighboring building.

It says Watton House, but Cintel lives inside – the British company's office and manufacturing building.

IBC Amsterdam 2008

Cintel will be exhibiting diTTo, dataMill, imageMill GRACE and STEADY at IBC2008. The show will be held from the 12th to the 16th of September at the RAI Centre in Amsterdam. Cintel's stand number is 7.B18.

Cintel scans

You can get Super 8 scans on a Cintel Millennium HD from:

Pro8mm, Burbank, USA,
www.pro8mm.com

Ko-on, Tokyo, Japan,
www.koon.co.jp

AVP, Munich, Germany,
www.avp-tv.de

You can get 16 mm scans on Cintel products from:

www.cintel.co.uk/page/Clients
All companies listed have a 16 mm gate.

and they do know why. They will have the new machine by August or September – then they can do High Definition as well.

You do not produce your machines in your own facilities. But what about the parts? Do all the parts come still from Great Britain?

We put the parts together here – most of the parts do come from local companies in this area. Of course we do the testing here, too. This changed from my start in this company, 1984, when we manufactured everything. In those days we made at least 100 Telecine a year. In the mid-90s we searched for local companies to build the parts. The demand for Telecines was going down; the demand for film scanners is going up.

How many people work for Cintel nowadays?

There were 450 when I joined the company in 1984. Now there are about forty of us. And we have an office in Hong Kong, one in Los Angeles and a service unit based in New York.

I have seen that a lot of film-to-video transfer companies still use

your URSA machines. Do you still built them?

We don't build them anymore but we still support them. We still have electronics for them, we still sell spare parts. We still have engineers who know these machines very well.

What do you think about the Super 8 image? Is there enough resolution in for HD, for 2K and for 4K?

2K – I think 16 mm is worth doing. Well, Super 8 – I don't think so. To be honest, I have never seen and done it in 2K. It would be nice to try. Certainly, when we get our Super 8 gate back I will probably do some investigation. I have seen HD from Super 8 – that is okay. That is worth doing. But it is another great step from HD to 2K. You got another 10% horizontal resolution and you get twice as much vertical resolution.

What do you do with the ratio? Super 8 is 4:3 but HD is 16:9.

In general, we find customers tend to prefer to keep the whole image which means black bars left and right. However, it always depends

upon the presentation and final delivery. If Super 8 footage is being cut into S16 mm, for example, then the aspect ratio will be maintained and some top/bottom parts of the original Super 8 image may be lost.

What do you think about the future of chemical film?

There is a brilliant future, absolutely. Every time there seems to be a new digital camera, somebody comes up with a sad story. I always tell people, I was once told by a very big name in the industry that I won't name that a new video camera is coming up, it is as good as film, it's fantastic and film will be out soon – and I am not talking about the new RED camera. I am talking about Digital Betacam in 1995. And film is still here.

Cintel did a digital slide system for picking up and storing slides and I was told by somebody that this is the way forward for Cintel and we won't make film scanners any longer. And that was in 1985. And we are still selling Millennium and diTTo machines, our competitors are still selling their film scanning machines. Of course – the video cameras are getting better.



Idyllic Ware: Cintel sits half an hour away from London in a small, contemplative spot.

But at the same time Kodak and Fuji are making much better stocks. The new Vision3 stocks from Kodak are fantastic, really good. It will take a long time until video will get that sort of latitude, that sort of response.

But it is not only the performance; another thing is that the film workflow works. Everywhere around the world people know how to do a film, how to process it to get the best results out of it. It is the only global standard. It seems that some of the digital cameras need to re-design the work flow. It is not easy for people to try to make that work.

Q In Germany Super 16 is very important for the television industry. A lot of series and movies are produced on Super 16. How about Great Britain?

Well, Super 16 had a bit of a hard time recently with the BBC saying that their high definition channel would not accept Super 16. BBC HD is a free-to-air high definition channel available on satellite and cable. It features a wide range of programmes from across the other BBC channels. At the moment BBC HD broadcasts for four hours a day between 8pm and midnight, with extended coverage for live events such as Wimbledon and Glaston-

bury. That discussion about insufficient quality stopped. A lot of major television dramas are still done on Super 16. I think it is still very important.

Q Which is the most important market for you?

Within the last few months we sold a Millennium machine to Germany, one to the USA, we just sold one into Russia and one to Sweden. I would say, probably, over the last six months the most important market is Eastern Europe. We sold diTTo machines into Slovakia, Slovenia, three Millennium machines to Russia. A lot of Eastern companies had Mark III machines for about 25 years – now they see we are still in the market. So we have been their first choice again.

Q The most important thing concerning your products is always the right film look, isn't it?

Indeed, it is. Millennium HD gives colorists superb control and flexibility over the images they create, to produce images that have a warmth and richness of color – the classic film look. Because Millennium HD uses flying spot technology, it is able to capture the delicate texture of film to provide images which have depth and warmth.

Some years ago I made a TV documentary about piano manufacturers who always told me that

they have a problem selling new instruments because their pianos have a very long life. As I know, there are hundreds of Mk III and URSA machines all over the world – is it somehow the same with your company? Is it difficult to sell new transfer machines because the old ones do live so long?

Indeed, that is nearly the same as with the pianos. The only difference is that our older machines are not able to provide a High Definition output. Once you get to that need, people have to change. So we do help our customers to get a new one. For example we trade in all our old machines. If it is an old Mk III machine we may take some parts from it for our spare parts stock. URSA machines – we can normally refurbish them, we put a new tube in them and we sell them with a Cintel warrantee.

Q What about Cintel's plans for the future?

As I told you, we have quite a roadmap for the Millennium machine: magnetic sound for 16 mm and Super 8, a 9.5 mm gate, perhaps a 17.5 mm gate. For the diTTo machine the next step is to integrate a 2K or 4K scan with an SD or HD scan at the same time, so that you have everything done in one scan. So you have a 2K or 4K master file and a SD or HD file you can use offline. ■

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