

# ARCHANGEL™ Ph.C™ offers you a completely new business opportunity: Real time video restoration



## Why your customers need Archangel Ph.C processing

### Broadcasters and content owners re-mastering for DVD

Many of the films, features and episodic series being re-mastered for sale on DVD need comprehensive restoration in order to meet the quality expectations of DVD buyers and exposure on modern large screen TVs and displays.

### Broadcasters re-mastering material for transmission

Much of the material being transmitted, especially on satellite and cable, consists of repeats and "classics" from the archives. Anything originated more than ten years ago will probably need restoration. As well as benefiting the viewer, Archangel Ph.C can also reduce the cost of transmission. The bit-rate needed for digital transmission can be reduced without affecting picture quality by eliminating unwanted motion, dirt and other artifacts.

### Independent producers using archive footage

Documentaries, Historical Series, Natural History, Travel, Biography, Classic Music all of these commonly incorporate archive footage. Restoration with Archangel Ph.C allows such material to be used without the sudden quality drop-off that could mar production values. In many cases it will enable otherwise unusable material to be shown.



### What is Ph.C?

Ph.C is the most sophisticated motion compensated video processing technology in the world. It was developed by Snell & Wilcox for use in its flag-ship Alchemist standards converters and has a proven ten-year track-record of precision and reliability.

### How you can benefit from Archangel Ph.C

**Extra business:** Archangel Ph.C will bring new customers to your business. And existing customers will bring you additional work.

**Extra revenue:** The hourly revenue stream from Archangel Ph.C will be approximately three times that of top-quality standards conversion. The rate-card multiple will be greater than this. Our calculation takes account of ancillary operating costs.

**Impressive ROI:** In average use, Archangel Ph.C will pay for itself within the first year of operation. After that the return on investment will go straight to your bottom line.

### What is Archangel Ph.C?

Archangel cleans up, fixes and stabilizes, in real time, any video material that has deteriorated or been damaged, either by age or other factors.

Costing far less than frame-by-frame restoration, it means that virtually anything can now be treated not just high-value footage.

Most material can be restored within two or three times its running length. And the end result is often better than when it was first shot.

### Archangel Ph.C solves an expensive problem at an affordable price

Until now this level of restoration quality could only be achieved by laborious and time-consuming frame-by-frame processing. This can be very expensive. (When Disney restored Snow White for example, it cost upwards of \$3million).

Consequently, there is a lot of material out there that remains un-restored because, although potentially useful, it is not valuable enough to warrant such expenditure.

### Archangel Ph.C works in a unique way

Archangel Ph.C provides a unique combination of unsteadiness stabilization and noise reduction processes, with Ph.C (phase correlation motion compensation) used throughout to guarantee the highest quality results.

The number of passes required depends on the nature of the material and the problems to be solved. Most cases will require no more than three passes.

The right combination of processes, settings and filters is decided by the operator using the sophisticated artifact detection and measurement systems built into Archangel Ph.C.



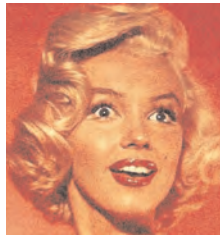
Archangel Ph.C includes the following processes:

**Image Stabilization:**

Unsteadiness can be caused by telecine, camera or print weave, hand-held camera work, long-lenses or moving vehicle shots.

**Flicker Removal:** Luminance flicker can be caused by poor film printing, unsuitable storage or shooting under fluorescent light.

**Noise Reduction:** Including electronic noise and film grain, spatial noise, video-based drop-outs, satellite salt-and-pepper noise, dirt and dust, two-inch Quadraplex VTR tape damage, picture enhancements and scratches of various shapes and sizes.



Before grain reduction



After grain reduction



Before scratch repair



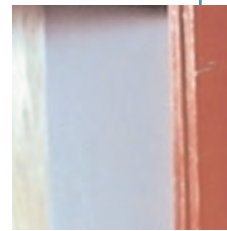
After scratch repair



Before dirt filter



After dirt filter



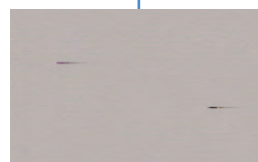
After drop out filter



Before two inch scratch repair



After two inch scratch repair



View of two inch scratches

**Archangel Motion Compensated Restoration System**

**Signal Processing Features**

- Unsteadiness
- Luminance Flicker
- Dirt
- Tramline Scratch
- Noise and Grain
- Video Dropout
- 2 inch Scratch
- Linear Filter
- Multiband spatial Filter
- Non-Linear Enhancer

**Inputs**

- 2 x Serial Digital, 525/625 line inputs (Archangel 1)
- 1 x Analog Reference Input (IQ Modular)
- 1 x AES/EBU unbalanced digital audio input (IQ Modular)

**Outputs**

- 2 x Serial Digital outputs (Archangel 2)
- 1 x RS422 source VTR control (Synergy Device Port)
- 1 x RS422 destination VTR control (Synergy Device Port)
- 2 x AES/EBU unbalanced digital audio output (IQ Modular)
- Rollnet

**Archangel 1**

- Case Type 6 RU rack mounting
- Cooling 2 x axial fan, front to rear airflow
- Power 300 W (110/240 V rms, 50/60 Hz)

**Archangel 2**

- Case Type 6 RU rack mounting
- Cooling 2 x axial fan, front to rear airflow
- Power 360 W (110/240 V rms, 50/60 Hz)

**Audio Delay and Reference**

- Case Type 1 RU rack mounting
- Cooling side ventilated cooling fan
- Power 90 W (110/240 V rms, 50/60 Hz)

**Tangent Devices Synergy Timeline Control System**

**Synergy Features**

- Timeline control of Archangel System
- Control of Source and Record VTRs for Editing

**Control Panel**

- Case Type desk mounted
- Size (w x d x h) 855 x 420 x 60 mm
- Power 36 W (110/240V rms, 50/60 Hz)

**Device Ports**

- Case Type 1 RU rack mounting
- Power 36 W (110/240V rms, 50/60 Hz)

**Network Hub**

- Case Type 1 RU rack mounting
- Power 60 W (110/240 V rms, 50/60 Hz)

**PC System**

- CPU ATX style Midi Tower
- Power 300 W (CPU) , 35 W (Monitor)
- (110/240 V rms, 50/60 Hz)

Snell & Wilcox Inc.  
3519 Pacific Ave.  
Burbank, CA 91505  
Tel: +1 818 556 2616  
Fax: +1 818 556 2626  
info@snellamerica.com

Snell & Wilcox Ltd.  
Southleigh Park House,  
Eastleigh Road, Havant,  
Hampshire PO9 2PE, UK  
Tel: +44 (0)23 9248 9000  
Fax: +44 (0)23 9245 1411  
info@snellwilcox.com

Snell & Wilcox (Hong Kong) Ltd.  
Room 603, Tai Tung Building,  
No.8 Fleming Road,  
Wanchai, Hong Kong  
Tel: +852 2356 1660  
swhk@snellwilcox.com.hk

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