Questioned Documents

A range of systems for the examination of documents including passports, ID cards, banknotes and visas etc.

foster+freeman

Forensic Science Equipment

foster+freeman

Improving the Quality of Forensic Evidence

Foster + Freeman are innovators in the design and manufacture of systems for the examination of questioned documents, latent fingerprints, trace evidence and shoe prints.

Founded in 1978 the company's reputation has been built upon the development of leading edge forensic technology.

Foster + Freeman products are used by all major police forces and forensic science laboratories worldwide as well as government agencies, commercial and private organisations such as homeland security, immigration authorities, security printers, lottery companies, university departments and national libraries.

With offices in the UK and the USA, and a global network of agents and distributors, Foster + Freeman are able to provide customers with a high level of technical support, installation and training.

Since the introduction of the ESDA in 1978 Foster + Freeman have been recognised as world leaders in the field of questioned document examination. Foster + Freeman systems can be found in airports, border crossings, immigration controls, banks and forensic laboratories worldwide.

Industry leading systems built around pioneering new technology

Used in over 150 countries

Instantly recognisable quality of design and contruction

Worldwide product support

Questioned Document Examination Systems

VSC 6000/HS

the premier system for the examination for questioned documents

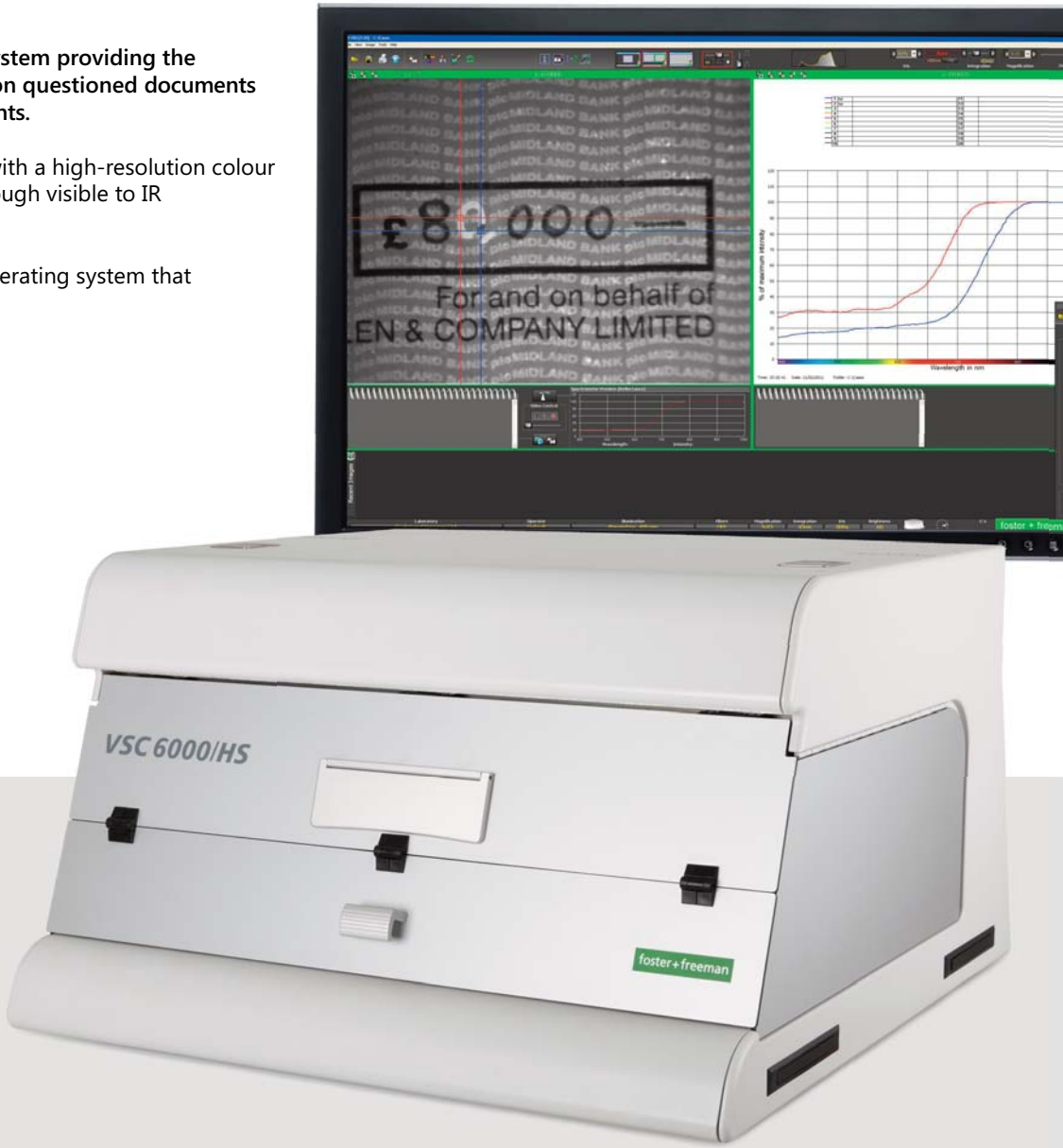
The NEW VSC6000/HS desktop video spectral comparator is a comprehensive digital imaging system providing the questioned document examiner with an extensive range of facilities for detecting irregularities on questioned documents including altered and counterfeit passports, ID cards, visas, banknotes and other security documents.

Amongst the world's most advanced document examination systems, the VSC6000/HS is equipped with a high-resolution colour camera and zoom lens, a range of viewing filters, and multiple sources of illumination from UV through visible to IR wavelengths.

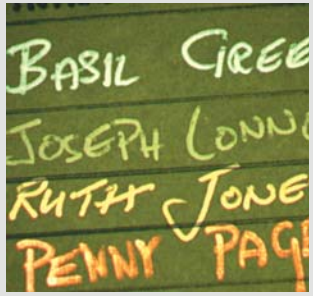
Instrument functions are selected and controlled using a simple graphical user interface with an operating system that includes casework management, image archiving facilities and passport and banknote databases.

Comprehensive facilities for examining:

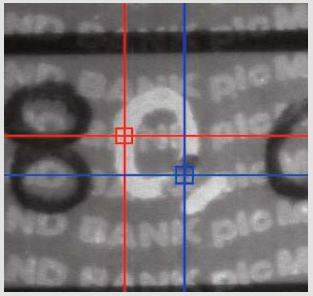
- **UV activated fluorescent features under short, medium and long wave UV**
- **Tampering and photo-substitution under high magnification**
- **Anti-Stokes security features using intense IR lighting**
- **Retro-reflective features with coaxial lighting**
- **OVDs using sequential multi-angled lighting**
- **Suspected alterations using differential infrared absorption and fluorescence**
- **Use of different inks on a single document using hyperspectral imaging**



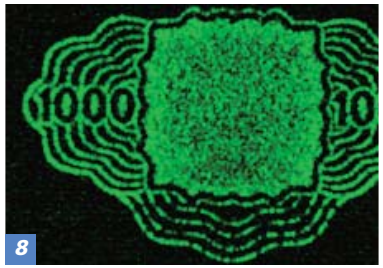
Auto Examine
Run multiple preset examinations with results displayed within a thumbnail gallery.

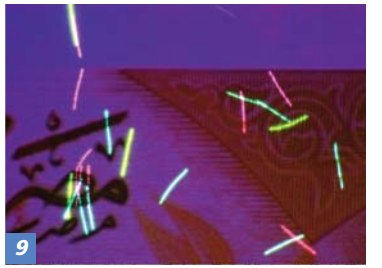


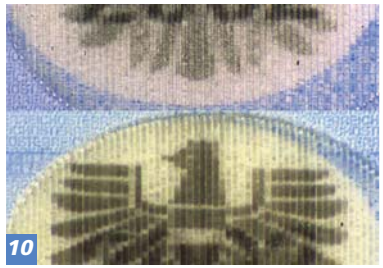
Pseudo Colour Mapping
False colour overlays enhance small variations in the response of inks under IR illumination.

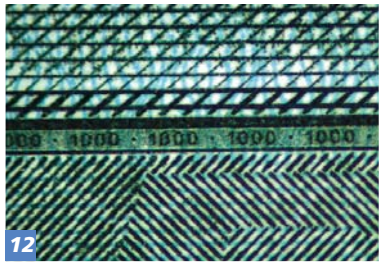


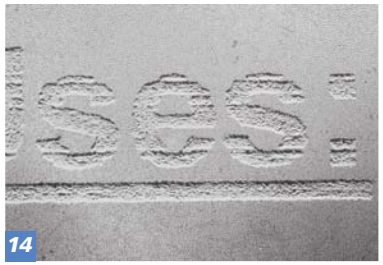
Hyperspectral Imaging
Optimise the spectral differences between different inks using this advanced technique.











Using high-resolution imaging, multi-wavelength illumination and specialised software, the VSC6000/HS will enable the examiner to visualise commonly used as well as advanced security features including holograms, micro-printing, UV visible inks, latent images and biometric data.

for full technical specifications see page 10

Banknotes, Currency & Cheques

1. Alterations revealed by IR fluorescence
2. Area measurment and comparison
3. Watermark viewed under transmitted light
4. OVD hologram
5. Optically variable ink
6. Microprinting under high magnification
7. UV features on Euro banknote
8. Anti-Stokes fluorescence
9. Random fluorescent fibres
10. Multiple Laser Images (MLI)
11. UV feature on Eurocheque
12. Microtext
13. Latent images
14. Magnetic ink
15. See-through register

VSC400

a compact high resolution imaging system for questioned documents

The VSC 400 is a mid-range system designed for the verification of passports, visas and ID cards and for the general examination of suspect or questioned documents. It offers many of the features of the VSC6000/HS in a more compact format.

Examinations are made in the visible and infrared regions of the spectrum under UV, visible and near infrared illumination, ideal for the identification of altered or counterfeit documents.

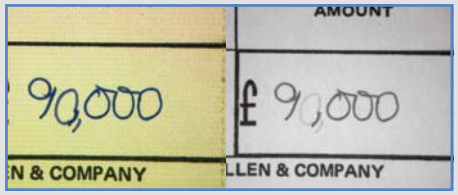
Comprehensive facilities for examining

- **UV activated fluorescent features under short, medium and long wave UV**
- **Tampering and photo-substitution under high magnification**
- **Anti-Stokes security features using intense IR lighting**
- **Retro-reflective features with coaxial lighting**
- **OVDs using sequential multi-angled lighting**
- **Suspected alterations exploiting differential infrared absorption and luminescence properties of inks**

High resolution imaging
The ability to scrutinise fine detail using high resolution imaging enables the detection of physical alterations made to documents.

Invisible Personal Information (IPI)
Software decoders reveal invisible personal information embedded in a passport photograph.

Optically Variable Devices (OVD)
Using the VSC400's pre-programmed multi-angled lighting it is possible to view movement and colour-change effects of OVDs, a common security feature on banknotes and ID cards.



Infrared absorption
Under infrared illumination inks can appear to 'drop-out' when viewed at different wavelengths.

Governments and corporations produce high security documents that include numerous features designed to prevent tampering, alteration and counterfeiting while at the same time allowing easy recognition of the genuine article.
The most commonly examined examples of security documents include passports, ID cards and travel documents, banknotes and personal cheques.

Passports, Travel & Security Documents

A. Fluorescent feature on UK passport
B. IR fluorescence under intense visibl light
C. Retroreflective laminte on ID card
D. Oblique lighting reveals raised stamp
E. Invisible Personal Information (IPI)
F. Biometric or E-passport
G. Machine Readable Zone (MRZ)
H. Surface texture and intaglio printing
I. Needle perforation
J. Rainbow printing
K. Random fluorescent fibres
L. Latent image
M. Birefringent feature
N. Image stored on eChip
O. 2D and 3D barcodes

for full technical specifications see page 10

VSC 40/HD Range

a modular document examination system built to your specifications

Designed for checking a wide range of security features found on passports, driving licences, banknotes, identity cards, breeder documents and the general examination of suspect documents, the VSC 40/HD is a compact but powerful QDE system.

The VSC 40/HD's modular design make it a uniquely versatile system that can be tailored to fit the individual requirements of each customer. Choose from a selection of light sources, security decoders and readers, document reference databases, and accessories to configure a machine that meets your demands.

- **7 pre-selected or user defined configurations**
- **Compact and versatile with no compromise on performance**
- **Multi-LED illumination for DOVDs, holograms and Kinegrams.**
- **PC or keypad operation**

A system to meet your requirements

Designed as a modular system, the VSC40 may be configured to meet your specific requirements.

An operational system is constructed from the VSC40 base unit, a choice of essential components and your selection of optional items including light sources, decoders, reference databases and accessories.

VSC 40 BASE UNIT standard for all systems

- **VSC housing**
- **CCD Colour/Monochrome IR sensitive camera with zoom lens**
- **Basic Light Sources including:**

Incident IR and visible, Transmitted IR and visible, Twin side light source , High intensity transmitted spot light, UV light source, Co-axial light source

ESSENTIAL COMPONENTS select one of two

PC System
- Desktop PC & Monitor or Laptop
- Windows O/S and VSC software

Non-PC System
- Monitor
- Video upscaler
- Keypad

for full technical specifications see page 10

OPTIONAL ITEMS to extend your systems capabilities

LIGHT SOURCES
- Incident Shortwave UV
- Incident Medium wave UV
- Transmitted Longwave UV
- Anti-Stokes
- LED

ACCESSORIES
- Polarised viewer
- Un-interuptable power supply
- Power adaptor
- Carry case
- Accessories & spares kit

DECODERS & READERS
- Embedded information decoder
- ICAO readers

REFERENCE DATABASES
- Security Documents
- Banknotes

VSC-QC1

a rapid, semi-automatic system with 12 authenticity checks

The VSC-QC1 enables 12 authenticity checks to be carried out on a questioned document with touch screen ease and speed.

Seven images, generated under various LED light sources, are captured automatically when the document is placed in the viewer. These are displayed enabling the operator to examine various aspects of print quality and check for the presence or absence of a range of security features. Magnification and image panning enable closer scrutiny of image detail.

Five other examinations may be performed which are initiated using the touch screen, these include displaying an e-chip image beside the passport photo, reading, checking and displaying MRZ data, displaying invisible personal information embedded in photos and reading 1D and 2D barcodes. An external but integral light is also available for examining OVDs.

LED light sources include:

- White light for general examination
- IR light for revealing drop-out inks
- UV light for exciting fluorescent features
- Visible side lighting for examining indentations
- IR side lighting to highlight intaglio print
- Coaxial light for revealing retro-reflective features
- Transmitted light for authenticating watermarks.

By installing reference databases, data and images of the passport under examination may be compared with those of an authentic document.

Wireless networking, simple data export and the inclusion of software 'hooks' that facilitate communication between the VCSC-QC1 and other software make the VSC-QC1 an ideal solution for large-scale deployment within organisations with an established IT/network infrastructure.

FEATURES

- **5MP camera and zoom**
- **Integral 10" touch screen display**
- **Contactless RFID reader for accessing e-passport data**
- **Seamless security document database integration**
- **Automatic OCR to access MRZ**
- **Invisible personal information decoders**
- **1D and 2D barcode readers**

VSC Software Suite

customisable software interface for all VSC systems

VSC Suite is a software package that maximises the effectiveness of each model in the VSC range providing access to all of the available VSC functions through a simple intuitive graphic user interface.

Key software features include:

- **Complete control of VSC system hardware**
- **Image processing, comparison and analysis**
- **Seamless integration with Security Document and Banknote databases**
- **Comprehensive casework management and audit trails**
- **Automated preset examination routines**
- **Interactive tutorial**
- **Hyperspectral imaging module (VSC6000/HS only)**
- **Image annotation and note taking facility**

Optional Security Document & Banknote databases

All VSC systems, including the VSC-QC1, can be enhanced through the addition of Security Document and Banknote reference databases.

Security Documents Reference Database
A reference database showing the security features in Passports, ID cards and Driving Licences from 197 countries, comprising images and data.

- Contains information on the security features of over 1,100 security documents
- Information and full-colour images of over 10,000 pages of security documents
- Archive edition and annual updates subscription available

Banknote Reference Database
A reference database showing the security features found on banknotes from over 180 countries, comprising images and data.

- Contains information and full-colour images of over 70,000 banknotes
- Archive edition and annual updates subscription available

VSC hardware specifications

	VSC-QC1	VSC 40 base unit	VSC40/HD	VSC400	VSC6000/HS
Camera	5MP USB 2	CCD Colour/Mono IR	2MP CMOS Colour IR	3.2MP firewire	5MP firewire
Field of View	125x88mm	133x100mm	146x83mm	160x118mm	210x160mm
Magnification (optical)	No	X43 ± 5% on 22" monitor	X50 ± 5% on 24" monitor	X58 ± 5% on 24" monitor	X170 ± 6% on 30" monitor
Magnification (digital)	X12 on 10" monitor	X86 ± 5% on 22" monitor	X100 ± 5% on 24" monitor	X116 ± 5% on 24" monitor	X280 ± 6% on 30" monitor
Illumination: Incident IR & Visible	LED	4x12.8W	4x12.8W	4x12.8W	4x20W
Illumination: Transmitted IR & Visible	LED	4x12.8W	4x12.8W	4x12.8W	4x12W
Illumination: Transmitted (Spot)	LED	1x20W	1x20W	1x20W	1x20W
Illumination: Oblique	LED	2x20W	2x20W	2x20W	2x20W
Illumination: Spot (Fluorescence)	No	1x20W	1x100W	1x100W	1x250W
Illumination: Bandpass spot	No	Optional	Optional	No	1x100W
Illumination: UV 365nm	LED	2x9W	2x9W	2x9W	4x9W
Illumination: UV 313nm	No	Optional	2x6W	2x6W	2x8W
Illumination: UV254nm	No	Optional	2x6W	2x6W	2x8W
Illumination: UV 365nm Trans	No	Optional	2x9W	2x9W	2x9W
Illumination: Anti-stokes	No	Optional	850-1100nm	850-1100nm	850-1100nm
Illumination: OVD	No	Optional	13x multi-angle LED	13x multi-angle LED	14x multi-angle LED
Illumination: Co-axial	3xLED	1xLED	3xLED	3xLED	11xLED
Illumination: Polarised Light	No	No	No	No	2xLED
Illumination: External LED	1x LED	No	No	No	No
Camera Filters	No	Optional	13	12	15
Excitation wavebands	3	9	9	10	81
Microspectrometer	Not Available	Not Available	Not Available	Not Available	400-1000nm range
Magnetic Ink Reader	Not Available	Not Available	Not Available	Not Available	Optional

DVM Microscope

a digital Video Microscope for taggant examinations

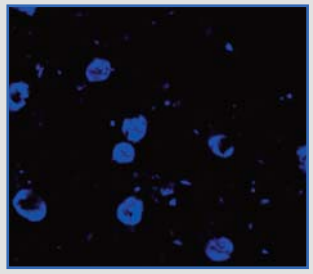
Microscopic, traceable, and virtually indestructible; taggants are fast becoming an integral part of the high security document printing process.

Using the Foster + Freeman DVM it is possible to detect and examine the latest generation of micro-taggants incorporated into inks and coatings on passports, ID cards, cheques, bank giros, travel tickets and other security documents.

Comprising a high specification microscope, CCD colour camera, two high intensity LED light sources (White and UV), darkfield ringlight and a transmitted white light XY stage, the DVM microscope can be used as a PC driven standalone instrument or integrated with a Foster+Freeman VSC system.

- **Locate & visualise taggants** in security documents and commonly counterfeited items
- **Examine in microscopic detail** taggants smaller than 20 microns
- **Integrate with VSC Systems** to provide document examination facilities
- **x35 to x7000 magnification** dependent upon choice of objective
- **Three modes of illumination** co-axial, darkfield ringlight, and rotating side light.

OVDot Square



OVDot UV

OVDot Hexagon

A selection of UV and visible security taggants viewed at x350 magnification

Foram

a range of Raman spectrometers for the examination of documents

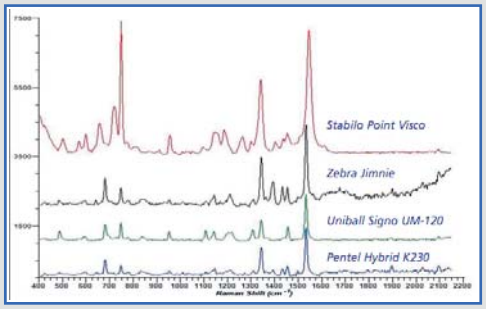
Raman spectra exhibit features that are specific to molecular structure and provide valuable "signatures" for comparing and differentiating materials, making it an ideal feature for examining ink, toners and other materials attached to documents.

The Foram range consists of three Raman spectrometers offering the choice of 532, 685, and 785nm laser wavelengths. Each Foram system has a large, A4 document size, XY translation stage with fine spacial adjustment to allow the operator to align the laser probe onto samples as small as 5 microns. Sample selection is assisted by the use of an integral video microscope with on-screen magnification of up to x450 on a 22" monitor.

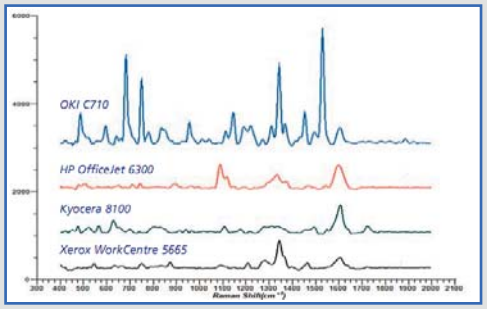
A comprehensive and easy to use software package provides multi-spectral displays for visual comparison, automatic spectral comparison using peak-to-peak correlation, and a search and match facility against optional databases of Raman spectra.

- **Choice of 532, 685, and 785nm laser wavelengths**
- **Non-destructive and fast, in situ examinations**
- **Video imaging with XY translation stage and A4 sized document bed**
- **Spectral comparison and database search facilities**

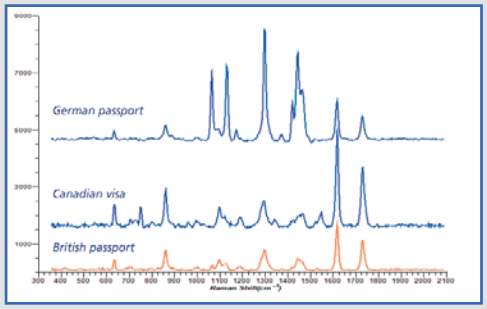
Document examination using Raman spectroscopy full application studies available to download from fosterfreeman.com



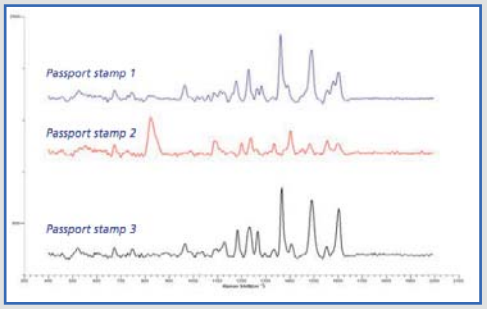
Gel pen ink discrimination



Printer toners



Passport laminates



Passport stamps

ESDA 2

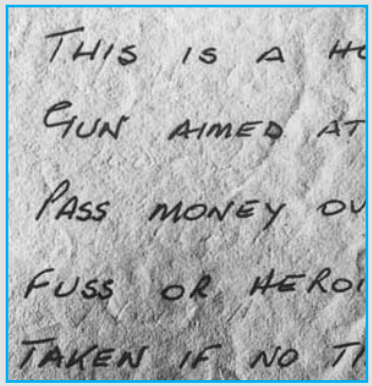
the leading electrostatic imaging system for detecting indented writing

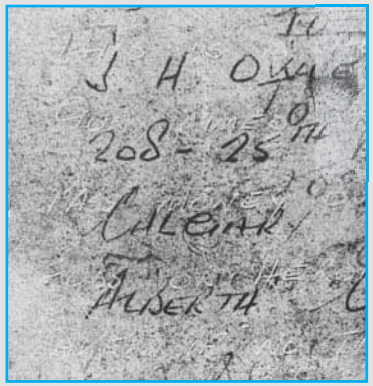
The ESDA process has become the industry standard method of revealing indentations or impressions of writing on paper.

Used by Police forces worldwide, the current ESDA range, the ESDA2 and compact ESDA-lite, remain the system of choice for the non-chemical, non-destructive method of detecting indented writing on paper.

ESDA 2 features:

- Creation of permanent records
- Repeatable without loss of information
- Effective on old documents
- A3-sized document bed
- Original cascade development method
- Improved toner pad development
- Aerosol hood for 'powder cloud' development
- Replaceable vacuum bed





Industry standard for over 30 years

In 1978 the ESDA went from being a research project to an essential piece of document examination equipment almost overnight when, following a raid on a London bank, police used the ESDA technique to examine a note handed by the robber to the bank teller demanding cash.

Hidden to the naked eye but revealed by the ESDA were the indentations of a telex message drafted to someone in Canada and pleading for money to be sent to an address in Surrey. The man was arrested and the story hit the headlines.

ESDA-lite

the portable electrostatic imaging system for detecting indented writing

Designed for travelling, the ESDA-lite is ideal for the private document examiner commissioned to work away from the laboratory and is supplied complete with accessories in a robust, padded carrying case that's suitable for air travel.

As with full-sized counterpart, the ESDA-lite is simple to operate and capable of producing life-size transparencies of indented writing without damage or contamination to the original document and without interference to other forensic tests, the documents may be processed repeatedly without loss of sensitivity.

ESDA-lite features:

- Complete portable system weighing less than 18kg
- Cascade and Toner Pad development techniques
- Universal power input for 'go-anywhere' operation

www.fosterfreeman.com/ESDAlite.html

eye-D

a compact portable device for checking security and travel documents at border control

Designed for checking standard security features of travel documents, the eye-D is a low cost system that can be deployed in large numbers to improve national and border security.

Compact, lightweight, and with a padded carrying case that unfolds to provide light shielding, the eye-D is designed for use in any location from either standard AC mains power or 12V DC from a vehicle.

Examinations with eye-D are made visually using various modes of illumination and with the aid of an integral magnifying lens. The authenticity of first level printed security features can be simply checked with UV, transmitted, oblique, and coaxial lights.

eye-D features:

- User friendly controls for quick efficient checks
- Highly portable, weighs less than 6kg
- Powered via AC or 12V DC vehicle power supply
- Choose from 3 system variants

www.fosterfreeman.com/eyeD.html

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