



LKS
1000
V3+

www.synergys-technologies.com



Bluetooth



Speaker
(optional)



Headphones
(optional)



**COMPRESSED AIR LEAK
DETECTION**



**STEAM TRAP
INSPECTION**



**CORONA, PARTIAL
DISCHARGE DETECTION**



**VACUUM LEAK
DETECTION**



**TIGHTNESS AND SEALING
INSPECTION**



LEAKSHOOTER® LKS1000-V3+

Ultrasonic compressed air, gas and vacuum leak detector with camera.

Compressed air is a costly form of energy and 20 to 40% of it is lost through leaks.

Systematically checking for and eliminating leaks can therefore bring considerable energy savings.

LEAKSHOOTER® LKS1000-V3+ is a unique and sensational detection device:

- It uses a camera and a dynamic on screen target to precisely find leak location (patent).
- It features a new concept of Steam Trap diagnostic: The STRAPSHOOTER®.

The STRAPSHOOTER® program is an Easy to use firmware which can automatically diagnose your Steam Trap condition state.

LEAKSHOOTER® LKS1000-V3+ is extremely sensitive, capable to find compressed air leaks (not bigger than the size of syringe needle) at a distance of 20m.

The LEAKSHOOTER® LKS1000-V3+ is used like a camera.

When it comes near a leak, a dynamic yellow target appears on the large colour screen. The target turns red and shrinks as it approaches the source of the leak. A bar graph at the bottom of the screen accompanies and facilitates the search.

When the device is facing the leak, a cross appears in the centre of the target. It is then possible to photograph and save the precise location of the leak.



**APPROXIMATE SEVERITY OF
LEAK & FLOW & COST**
(0-10) (m³/h) (€, \$, £)

VERY SMALL

SMALL

MEDIUM

BIG

VERY BIG



Each photo is numbered, dated and timed and shows the dB RMS level of the leak.

The photos can be uploaded directly onto a PC via a USB cable (supplied), ready to be attached to inspection reports.

It is still possible, whilst visually searching for a leak, to use the traditional method of leak detection, listening for the hissing sound of the leak using the professional headphones also supplied, which can be plugged directly into the device.

Various accessories are available for the LEAKSHOOTER® LKS1000-V2 enabling it to be used for other applications as well as leak detection.



Detection in hard to reach areas with sensor :
LKSFLEX – Flexible probe 400mm long
LKSFLEX1500 – Flexible probe 1500 mm long



For Steam trap control :
LKSPROBE
Mechanical US Sensor



Tightness and sealing control :
LKSDOME
Ultrasonic emitter with 13 emitters



Listening :
LKSHEAD – Bluetooth Headphones



Listening :
LKSSPEAKER
Bluetooth Speaker

NEW!

STRAPSHOOTER[®] program: Detect defective trap in seconds!

Steam Trap Surveys with traditional detector is often complex and is not accessible to everyone.

OPEN or CLOSED? That is the question.

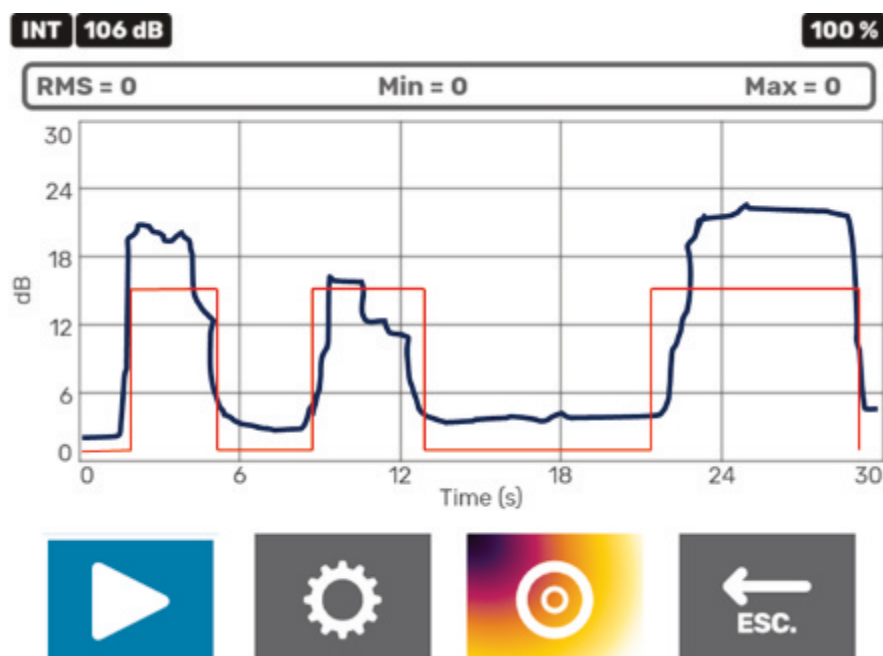
To make the diagnosis more easily even for non specialist, SYNERGYS TECHNOLOGIES has invented the STRAPSHOOTER[®], the first automatic Steam Trap analyzer.

LEAKSHOOTER[®] LKS1000-V3⁺ uses:

- Ultrasonic contact probe to analyze the Steam Trap working progress
- Embedded infrared pyrometer to measure the pipe T° IN & T° OUT
- STRAPSHOOTER[®] program to see, hear, analyze and report the Steam Trap condition state
- Embedded camera to take the Steam Trap picture for reporting

Can detect **OPEN?** , **CLOSED?** , **OK** steam trap conditions.

Example of a **REAL TIME** mode acquisition with an **OK** trap condition:



Example of a thermodynamic steam trap
thermal view



A photograph of industrial steam pipes. A large horizontal pipe in the foreground has a significant leak, with a thick plume of white steam or vapor rising from it. In the background, more pipes and a vertical tank are visible. A person in a blue shirt is standing near the leaking pipe, providing a sense of scale.

Live-steam losses caused by leaking steam traps represent a major economic factor!

How much does it cost?

STEAM LEAKAGE = A (kg/h)

OPERATION HOURS = B (h/year)

STEAM UNIT COST = C (± 20€/1.000 kg)

$$\text{COST} = (A \times B \times C) / 1.000 \text{ (€/year)}$$

Example for only one leak:

With continuous operation, B = 8.000h/year

Small leak

(4 kg/h)

= 640 €/year !

Standard leak

(7 kg/h)

= 1.120 €/year !

Medium leak

(15 kg/h)

= 2.400 €/year !

Big leak

(70 kg/h)

= 11.000 €/year !

Please note these values are approximate.

SPECIFICATIONS LKS1000-V3+

Sensitivity	Detects a leak of 0,1 mm at 3 bars at 20 m
Camera	Colour 640 x 480 pixels + LED lighting
Display	LCD colour 5.7" 640 x 480 pixels
Pictures	BMP, number, name, date and time
Dynamic target	White circle for leak detection Colored circle with cross for the leak severity
Measurements	dB RMS and MAX RMS
Memory	Up to 1000 pictures, can be uploaded to PC
Communication	USB cable supplied
US sensor	Open type - Bandwidth ± 2 kHz to - 6 dB - Central frequency 40 kHz ± 1 kHz - Adjustable frequency mixer from 30 to 50 kHz - Adjustable gain from 40 to 106 dB
Thermal Camera	Flir Lepton 80x60 pixels, 50mK sensitivity, -10°C to +400°C, adjustable emissivity ϵ
Headphones	Adjustable volume
Power supply	Nickel-metal hybride (NiMH)
Autonomy	6 hours
Temperature range	- 10°C to + 50°C
Dimensions	H : 310 mm - W : 165 mm - D : 65 mm
Weight	700 gr for the LKS1000 3,8 kg including ABS case
CE Standards	CEM 2004/108/CE : EN61000-6-4 & EN61000-6-2
Accessories	<ul style="list-style-type: none"> • Ultrasonic emitter Reference : LKSDOME • Flexible 400 mm US Sensor Reference : LKSFLEX • Flexible 1500 mm US Sensor Reference : LKSFLEX1500 • Mechanical US sensor (steam trap - bearing) Reference : LKSPROBE • Bluetooth headphones Reference : LKSHEAD • Bluetooth Speaker Reference : LKSSPEAKER



SYNERGYS TECHNOLOGIES has been established in 1996 in France, to offer innovative and professional solutions for preventive and predictive maintenance.

SYNERGYS TECHNOLOGIES is the inventor of the ultrasonic visualization concept with the LEAKSHOOTER®, the contour visualization concept with the T°SHOOTER® and of the MCP (Machine Condition Picture) concept with the VSHOOTER®.

We are present worldwide with professional and trained distributors.



SYNERGYS
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LEAKSHOOTER® a SYNERGYS
TECHNOLOGIES innovation

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