



DEHNsure

Lightning protection
innovation for thatched roofs

Photo: Zebula Country Estate and Spa

Lightning – a major risk to thatched roofs

Thatched roofs are a visually pleasing option for African game lodges and other buildings, but they require significant maintenance, including protective measures against the possibility of a fire outbreak.

South Africa is a high lightning zone across vast parts of the country, with some 24 million lightning strikes per year, and direct lightning strikes can cause fires in these highly flammable roofs. Lightning strikes can also cause power surges, damaging electrical

equipment and appliances in the same way as a power surge from an electrical utility source.

Because they are so potentially flammable compared to other types of roof, the insurance requirements on buildings with thatched roofs can be onerous. Therefore, an insurance company requires the owner of a thatched roof building to take steps to reduce life and fire risk, through the installation of an earthing and lightning protection system.

DID YOU KNOW?

45%

of thatched roofs with conventional lightning masts still experience lightning damages

>20%

the increase of lightning strikes in parts of South Africa over the last years

91%

of electrical and electronic systems are not being protected against lightning and power surges

Insurance companies estimate that the costs of lightning damages to thatched roofs are in the order of hundreds of millions of rands. However, insurance companies warn that although an insured home/business owner would be able to recover most of these damages, there are many other negative impacts often overlooked, such as:

- Memorabilia, including personal and sentimental belongings, are irreplaceable.
- Damage to electrical and electronic equipment (servers, connectivity etc.) often leads to down-time in a business.
- Down-time in the business can also be caused in the aftermath of a fire or power surge resulting from a direct lightning strike.
- Reputational damage for the period during which the business is unable to offer services to existing and potential clients.
- After successful claims, insurance premiums increase and more lightning protection, at the owner's expense, is required by the insurance company.

“As you are aware, for many years now we have struggled with lightning damage on the Estate which has led us to investigate lightning protection options other than conventional lightning masts. After some investigation we came across DEHN's HVI solution, which not only addressed the question of effectiveness but is also far more aesthetically pleasing than conventional masts.”

Hennie Nel
General Manager, Operations
Zebula Body Corporate

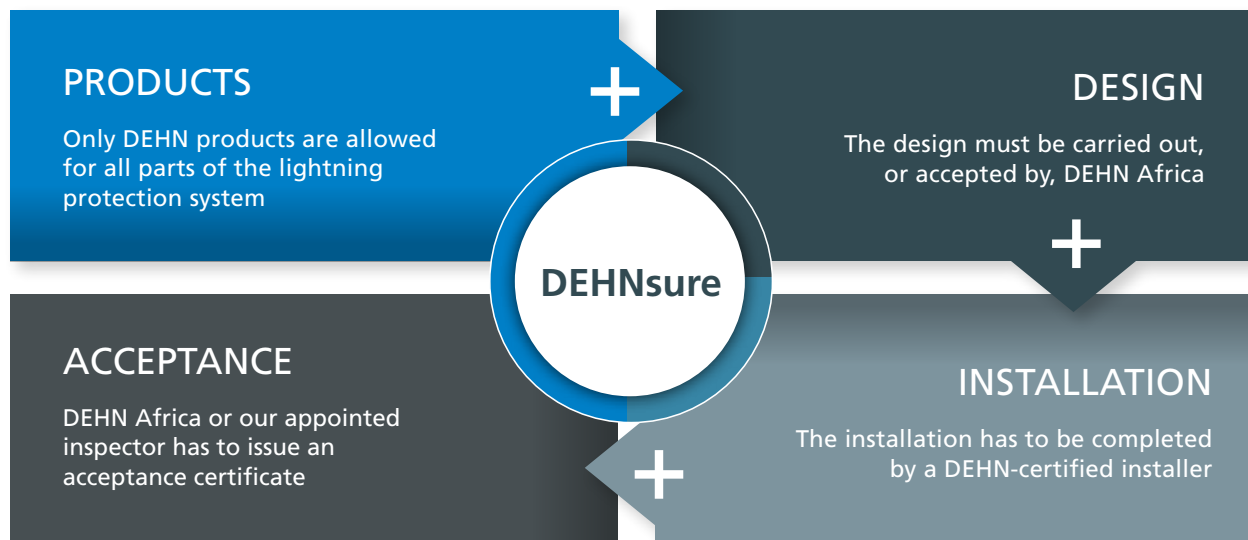
What if

lightning protection masts could be aesthetically pleasing



Be DEHNSure during a lightning strike

The DEHNSure concept has received strong support from many insurance underwriters due to the technical expertise offered by DEHN Africa, which is underpinned by over 100 years of lightning protection experience, as well as our confidence in our innovative HVI lightning protection system, and the fact that we allow only trained and accredited installers to install our products.



and **Effective?**

Introducing
DEHNSure



DEHN HVI

Isolated lightning protection system

Nearby lightning strikes cause transient voltage impulses, otherwise known as surges, on the supply lines of the building. These voltage impulses can reach several thousand volts. Failure of these systems would bring business operations to a standstill, since all work processes depend on these systems. Surge arresters, together with proper bonding methods, are required to protect these electrical and electronic systems.

1

Information technology system protection

The first step is to consider all conductive lines leaving or entering the building, as these are more prone to lightning induced damages and as such require correctly rated surge arresters. For example, an IP66 rated outdoor **DEHNpatch** could be fitted on any Ethernet lines such as Wi-Fi Antennas and a **DEHNgate** on any coaxial connections such as satellite TV.

2

Power supply system protection

When applying the same concept as above, then power lines, lighting circuits and even connections for PV systems are located in the main distribution board. For this purpose, the **DEHNshield** comes in different versions to protect both the installation and the terminal devices, even in the case of direct lightning strikes. These terminal devices include TVs, home theatre systems and fridges, as well as alarm and video surveillance systems.

3

Equipotential bonding

It is not only the conductive parts of the structure and the equipment installed therein that should be connected to the equipotential bonding bar, but also the earthing conductors of the power supply system and information technology equipment. For this reason, the equipotential bonding bar has a variety of connection sizes and a UV rated cover to ensure the integrity of the connections.



Direct lightning strikes are a common cause of fires and structural damages in thatched roofs. This can be prevented by installing an isolated lightning protection system (LPS) which intercepts the lightning in a safe and effective manner above the thatched roof. Direct strikes also cause an earth potential rise which can be life threatening, therefore the integrity of the earthing system is critical.



4

Lightning mast

The **DEHN HVI** lightning mast is mounted directly on top of the ridge capping, making it both more effective and more aesthetically pleasing compared to conventional free-standing masts.

The mechanical support of the lightning mast is critical to ensure stability during lightning and extreme weather conditions. The supporting tube is fastened by means of specially designed mounting brackets, enabling the insulated conductors to run easily down the rafters/beams.

5

Insulated conductor (HVI)

The **DEHN HVI** conductor is a high-voltage-insulated lightning carrying conductor covered with an insulating material and coated with a semi-conductive layer. This prevents uncontrolled flashovers, which results in the lightning current being contained inside the cable. This durable cable offers a high degree of flexibility during installation and requires no maintenance.

6

Earthing system

In order to safely disperse the lightning current into the ground, whilst minimising any potentially dangerous overvoltages, a single integrated earthing system is required. The earthing system is the heart of a lightning protection system and as such needs to be tested annually, but these tests can be extremely onerous, which is why an inspection box makes testing so much easier.



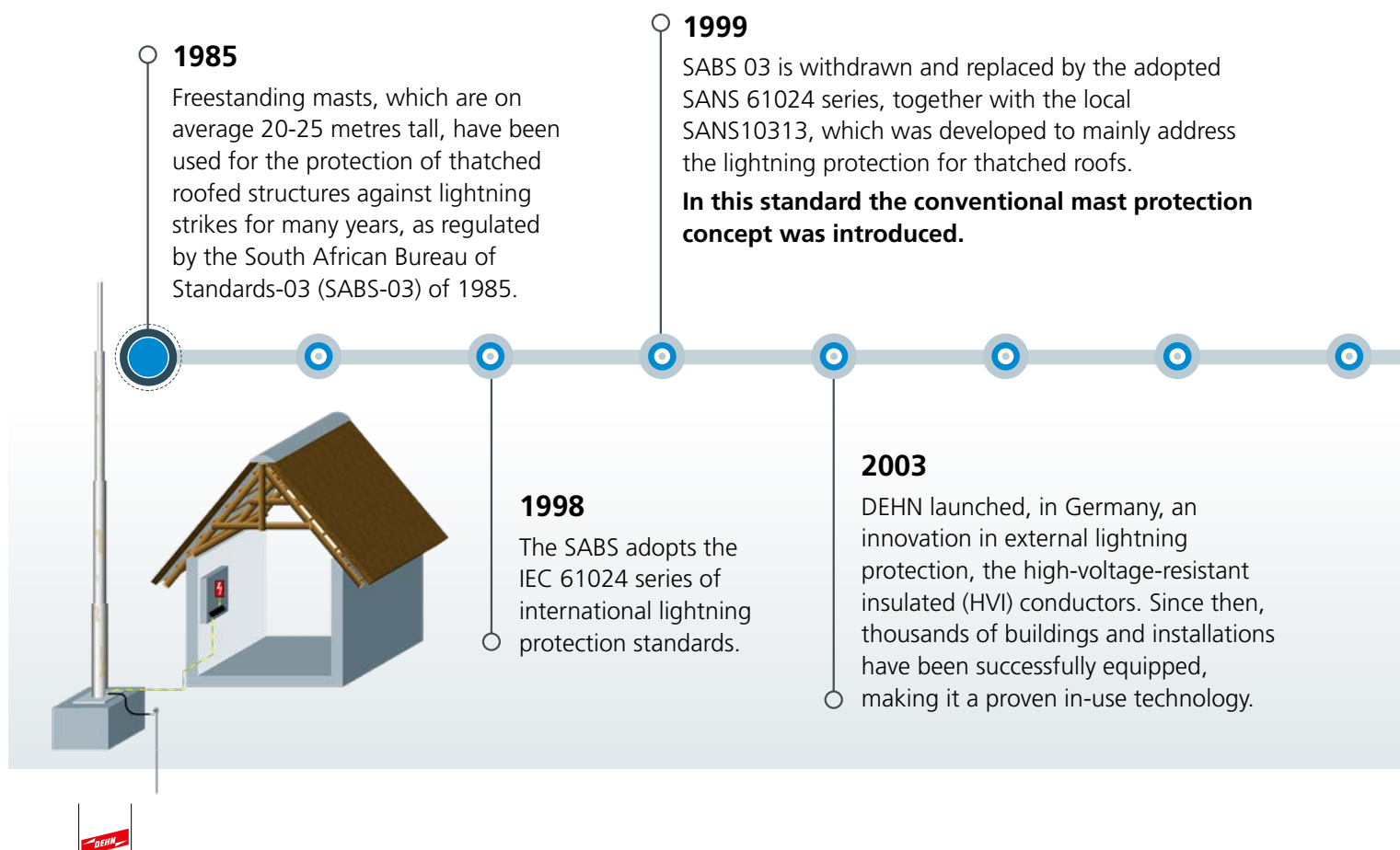
Evolution of lightning protection methodologies

DEHN's high-voltage-resistant insulated (HVI) lightning protection system combines aesthetics and functionality in a different way of protecting thatched roofs. DEHN's HVI technology, which has been in the global market for over 15 years, takes away the need for a separate conventional free-standing mast. It has also been proven to be very cost-effective both from an installation and maintenance point of view.

DEHN's HVI technology has been available locally for some five years or so and offers an innovative way to protect thatched roofs from lightning strikes.

HVI masts comply to the latest SANS 62561 product standards.

Conventional free-standing masts





2013

First installations of HVI in South Africa: customers since then include large firms in the banking, energy, IT and tourism industries, to name but few.

2019

SANS 10313: Edition 4.0 is being developed, soon to be published, which includes:

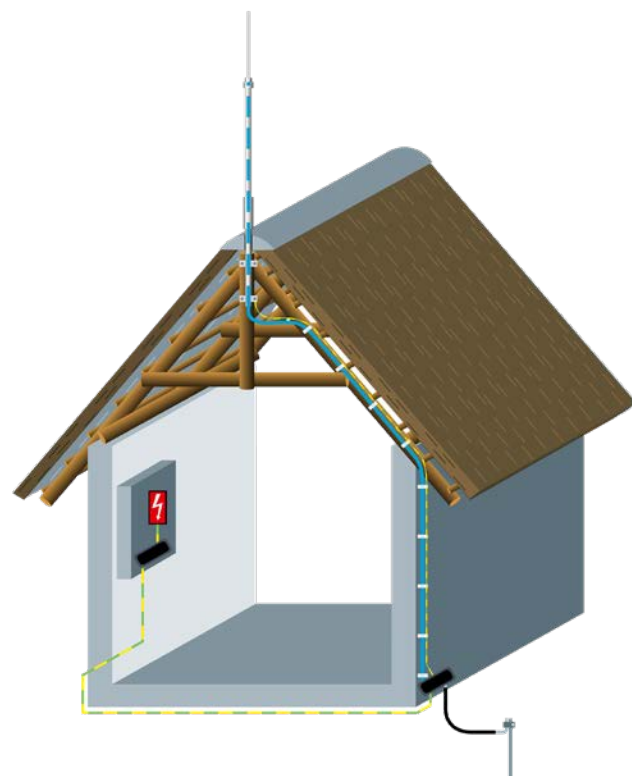
- High-voltage insulated conductors as a lightning protection solution for thatched roofs.
- A uniform installation safety report (ISR), which has been adopted by large insurance houses and ELPA.

LATEST TECHNOLOGY

2018

Adoption of IEC 62561: Part 8 – an international product testing standard specifically developed for insulated conductors, soon to be adopted by the SABS as well.

DEHN's HVI conductors have been tested in accordance with this code.



Benefits of HVI technology masts

It has been proven to be very **cost-effective** both from an installation and maintenance point of view.

- **Parts are easy to replace.**
- **Practical access** to the roof is not necessary to begin the installation process.
- The HVI masts are **more wind-resistant**.
- They have a proven **better safety record** than the traditional free-standing masts.
- They are far more **aesthetically pleasing**.
- They are **fast to install** (less than a day).
- They can be taken down and **redployed**.
- Optional **Electronic Equipment Insurance** available.



**Surge Protection
Lightning Protection
Earthing
Engineering Services
DEHN protects.**

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