

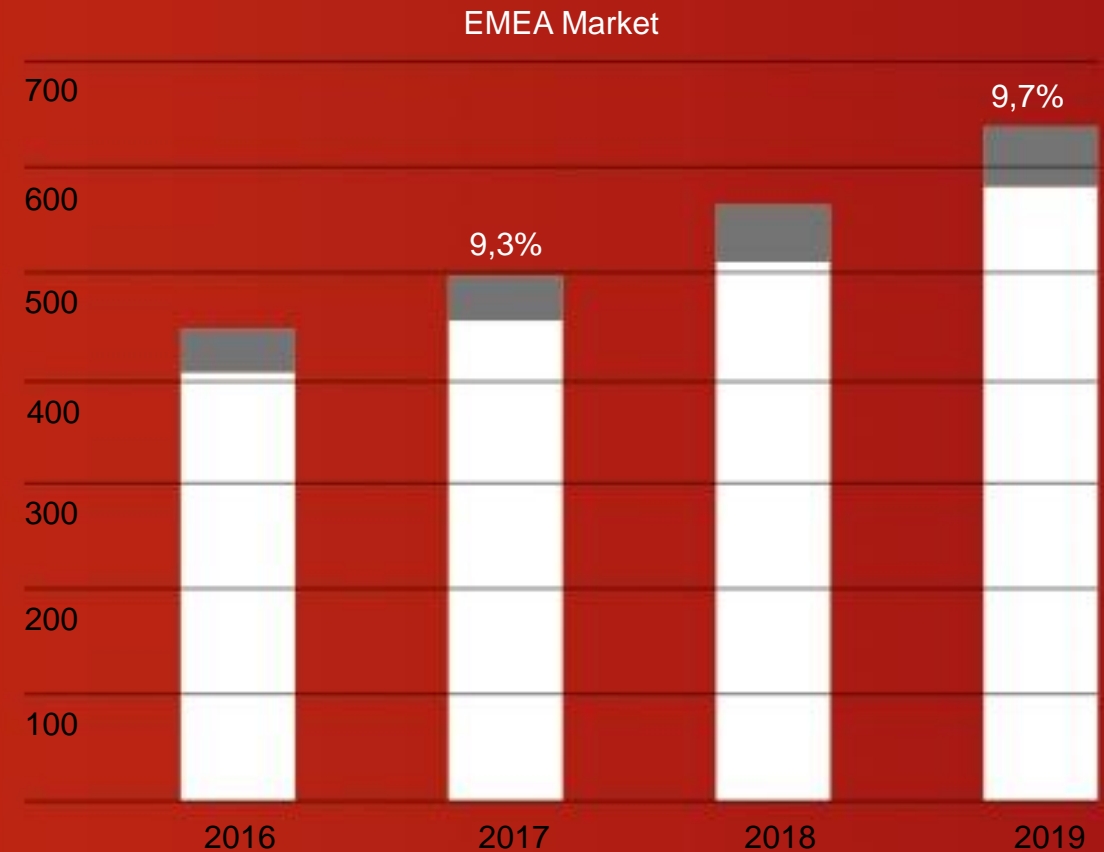
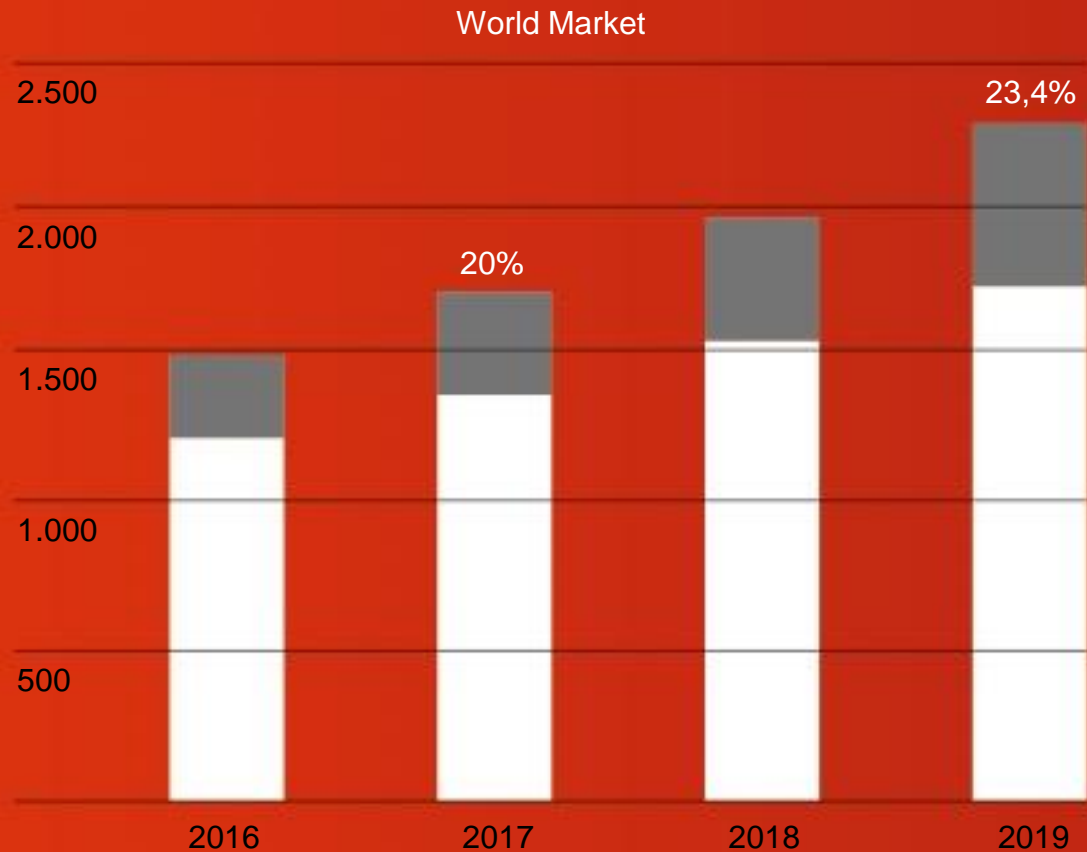


Wireless sensors and controls An installer's perspective (Europe)

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LED event 2017, 29/30 November 2017

OSRAM

Market of wired and wireless controls



Despite obvious benefits, wireless controls gain slowly in market share

□ Wired Control Panels ■ Wireless Control Panels

Source: IHS report 2015

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Wireless or wired solutions: Pros and Cons

The overall benefits of building controls

Convenience

Space

Cost

Flexibility

Building Operation

Control

Speed

Reliability

Security

Wireless



Wired



Wireless or wired solutions: Pros and Cons

The overall benefits of building controls

	Convenience	Space	Cost	Flexibility	Building Operation	Control	Speed	Reliability	Security
Wireless	+	+							
Hybrid			+	+	+	+	+	+	
Wired									+

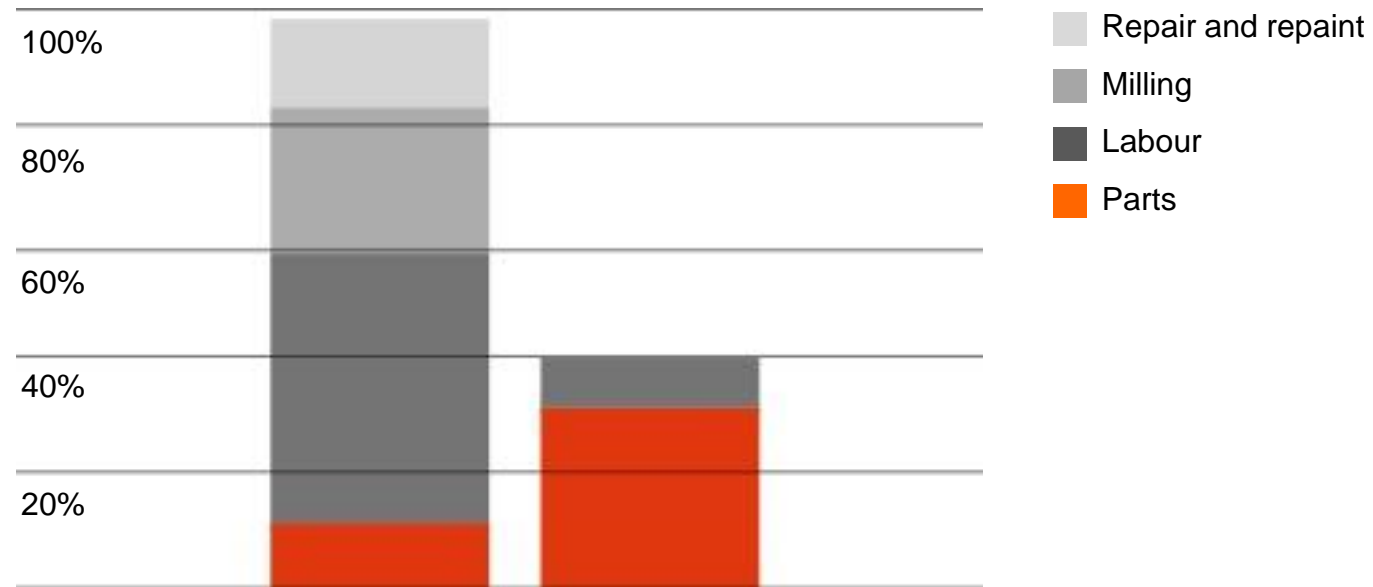
← Installer related →

Benefits of wireless controls

An installers perspective

Easier installation

- Faster installation (particularly in larger installations)
- No other services needed (milling, plastering, painting)



Benefits of wireless controls

An installers perspective

Easier installation

Risk evasion

- Allows for last minute changes in specification
- Eliminates possible wiring errors
- Risk of accidentally damaging other installations

Benefits of wireless controls

An installers perspective

Easier installation

Risk evasion

Higher flexibility

- Add or remove devices with limited effort
- Flexible placement of devices (e.g. mobile partitioning walls)
- Flexible placement of temporary switches and sensors
- Not limited to predefined connection points or locations

(Perceived) shortcomings of wireless controls

An installers perspective

Too many protocols

- No vendor interoperability / fear of lock-in
- Backward compatibility with legacy systems (DALI, BACNET)
- Forward compatibility with IoT systems (IPv6 ready)

(Perceived) shortcomings of wireless controls

An installers perspective

Too many protocols

Unwanted service calls

- Unscheduled replacement of batteries
- Loss of wireless signal due to changes in the environment
- Potential interference from other RF devices (mainly 2.4GHz)

(Perceived) shortcomings of wireless controls

An installers perspective

Too many protocols

Unwanted service calls

Commissioning complexity

→ Linking sensors and controls is complex

(Perceived) shortcomings of wireless controls

An installers perspective

Too many protocols

Unwanted service calls

Commissioning complexity

Potential security risks

→ Wireless is prone to security breaches (mostly consumer)

Communication in building management

Pick the winner



* Not all systems are at comparable level, for illustration purposes only

Wireless Communication in building management

Excluding proprietary systems



* Not all systems are at comparable level, for illustration purposes only

Confusion about standards hinder market adoption

Lessons from the electronics industry



VHS

Betamax

VHS ⚡ Betamax
~ 6 years



VIDEO CD

SD
Super Density Disc

MULTIMEDIA CD
MCD

Video CD ⚡ SD ⚡ MCD
~ 5 years



DVD
RW

DVD R/RW
~ 5 years



Blu-ray Disc

HD DVD

Blue-ray ⚡ HD DVD
~ 6 years

Confusion about standards hinder market adoption

Lessons from the electronics industry

Compromise

Co-existence



Still born

Fight to death

How about the lighting industry / building management / IoT?

Battery ~~lies~~ life

Time \neq

 battery capacity



average current consumption

Battery ~~lies~~ life

$$\text{Time} \neq \frac{\text{⚡ battery capacity}}{\text{📊 average current consumption}}$$

“Batteries are a headache: they run out unpredictably and often leak at the end of their service life.”

Installer (Netherlands)

“The lighting industry has solved the problem of lamp maintenance. Don't give me the problem of battery maintenance instead.”

Installer (Netherlands)

Battery ~~lies~~ life

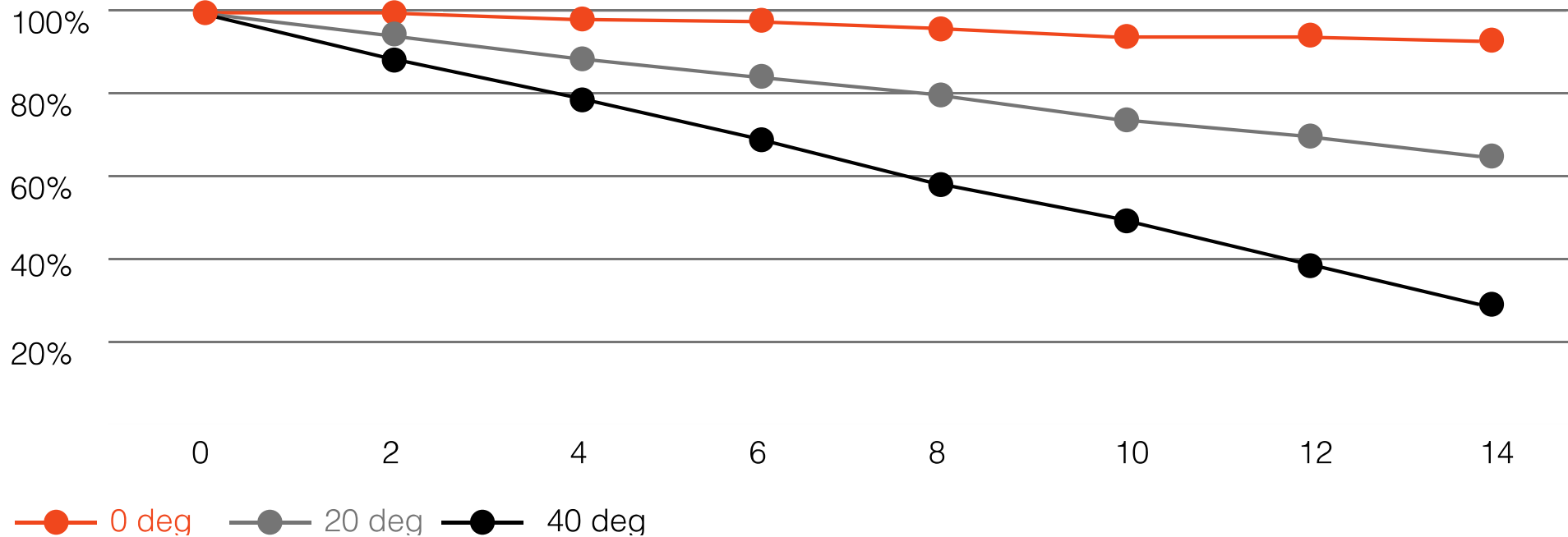
A well designed battery-powered sensor

- Has a battery life close to the shelf life
- Prevents battery leakage
- Allows predictive maintenance (group replacement)

Battery ~~lies~~ life

A well designed battery-powered sensor

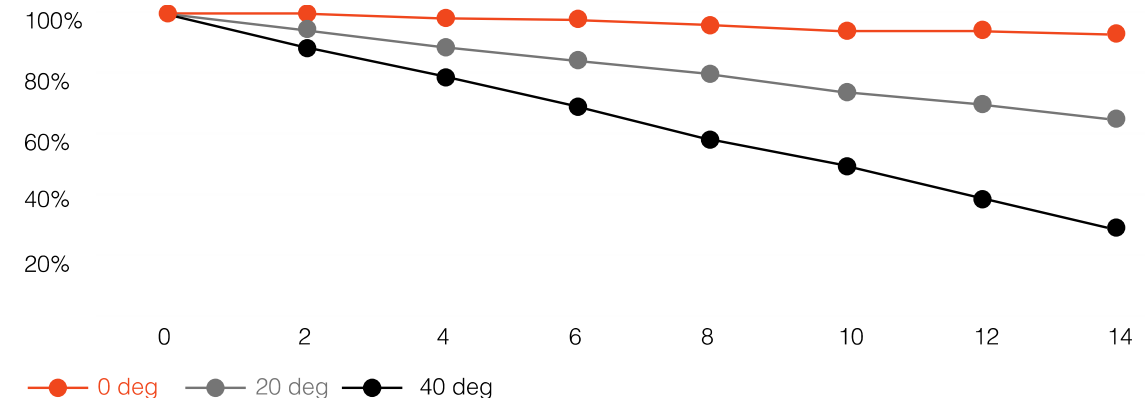
Alkaline (AA) battery shelf life



Battery ~~lies~~ life

A well designed battery-powered sensor

Alkaline (AA) battery shelf life



Practical battery life depends on

- Capacity (size)
- Ambient temperature
- Peak load usage (read: during transmissions)

Summary

Interoperability is key

- Use of open standards-
- Ensure forward and backward compatibility
- Used by multiple vendors



Vigorously address security issues

- Differentiate from consumer IoT
- High security levels as a result of design, not as after-thought patchwork
- Ensure out-of-the-box high security levels

Ensure long and predictable service intervals

- Differentiate from Consumer devices (<<5 year battery life)
- Measure remaining service life

Thank you.

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