Issues on electrical energy assets management in Bulgaria

- Schneider Electric approach
- Reality in Bulgaria
- Risks and impact

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8.Jan.2015

Schneider Electric

Schneider Electric at a glance

24
billion € sales
(2013)

41%
of sales in new economies
(last twelve months)

150 000+
people in 100+ countries

4–5%
of sales devoted to R&D

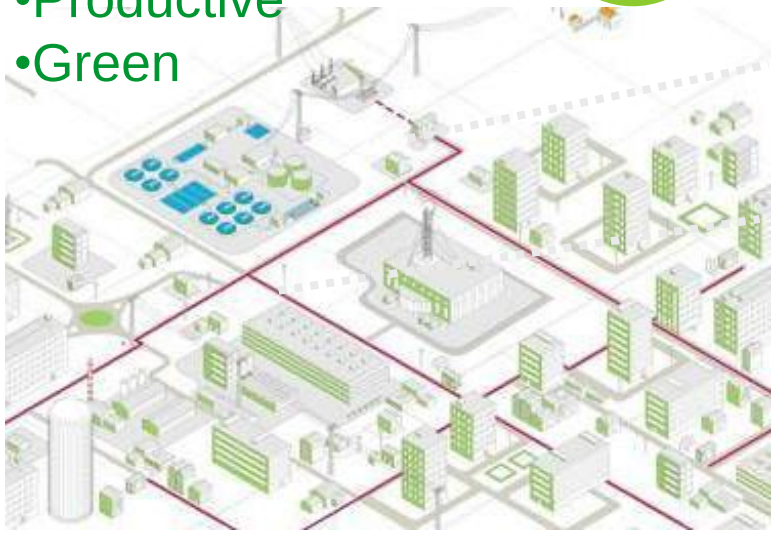
The global specialist in Energy management

Making energy:
- Safe
- Reliable
- Efficient
- Productive
- Green

Covering **72%** of world final energy consumption

up to **30%** energy saving

Energy production & transmission

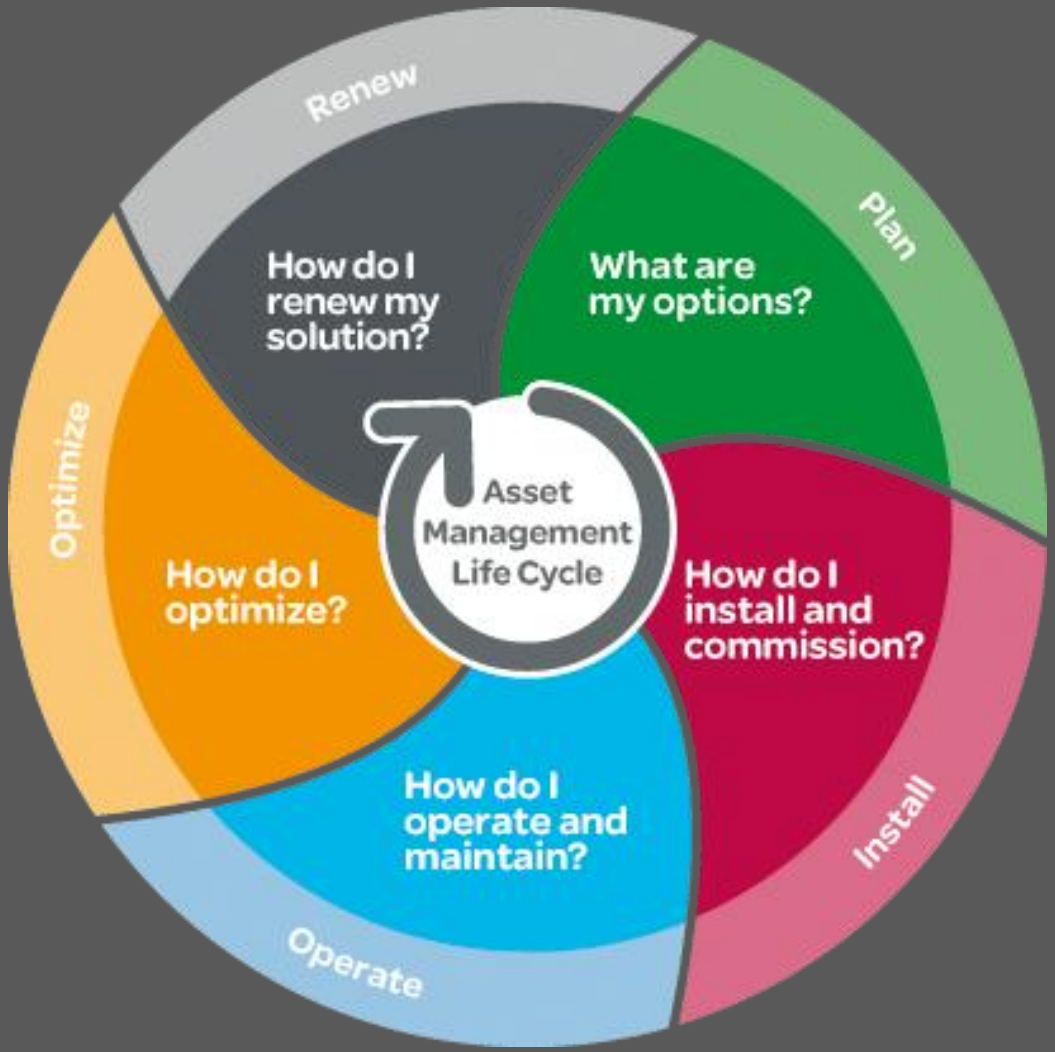


Energy usage

A Recognised Sustainable commitment

Dow Jones Sustainability Indexes · ETHIBEL SUSTAINABILITY INDEX EXCELLENCE · ASPI

Peace of mind throughout your installation life cycle



Why carry out Electrical Maintenance ?

The question is not whether your equipment will malfunction but WHEN ?

- Electrical equipment is also governed by this law
- So let's ask ourselves some questions

What is the financial impact of 1 hour's production shutdown?

Application	Loss (*)
Health establishment	Human lives...
Stock market transactions	€ 6,500,000
Credit card sales	€ 2,600,000
Petrochemical	€ 100,000
Plane ticket booking system	€ 90,000
Mobile phone network	€ 40,000
Automobile	€ 30,000
Pharmaceutical	€ 30,000
Food processing	€ 20,000
Cement	€ 15,000

(*) Direct and indirect costs of non-availability

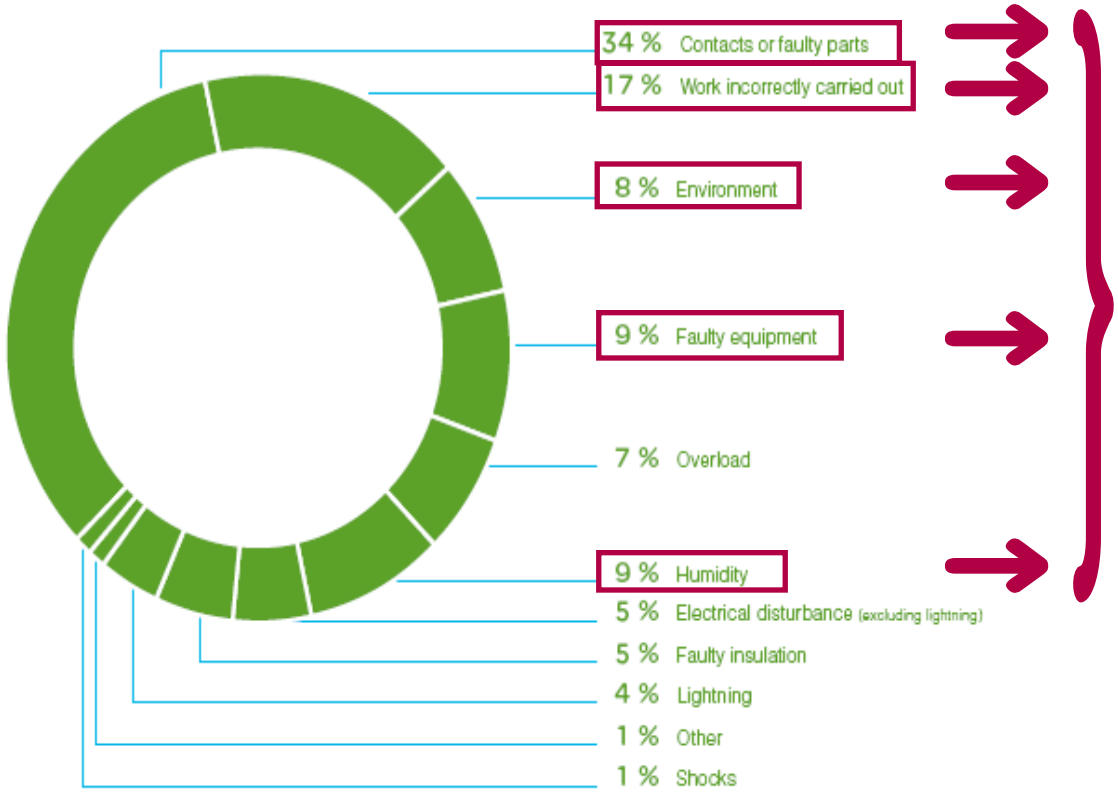
Source: Contingency Planning Research & Schneider Electric

The Electrical Maintenance

Why carry out **Electrical Maintenance**?

- What are the main causes of equipment breakdown?

Source: Schneider Electric expert assessment & Hartfold Boiler Steam



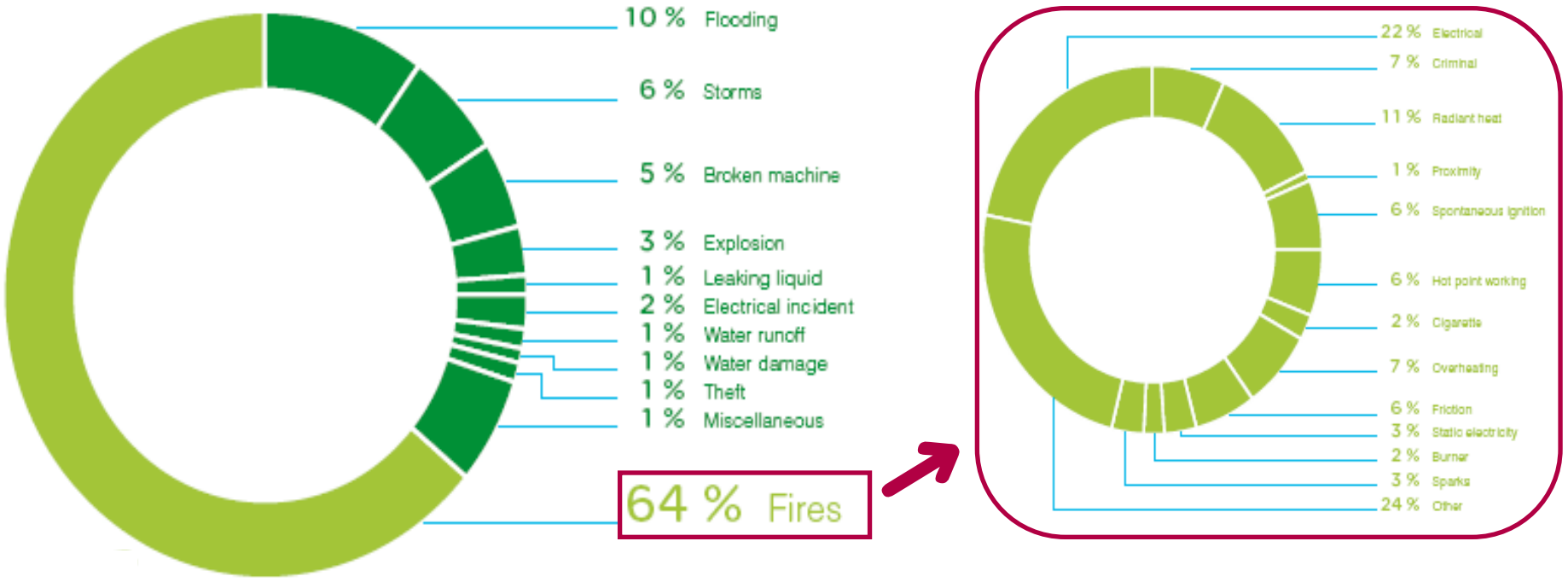
Maintenance can avoid **77%** of breakdown causes

The Electrical Maintenance

Why carry out **Electrical Maintenance**?

- What are the major damages impacting costs and the role of "electrical equipment failure"?

Source : FM Global insurance company

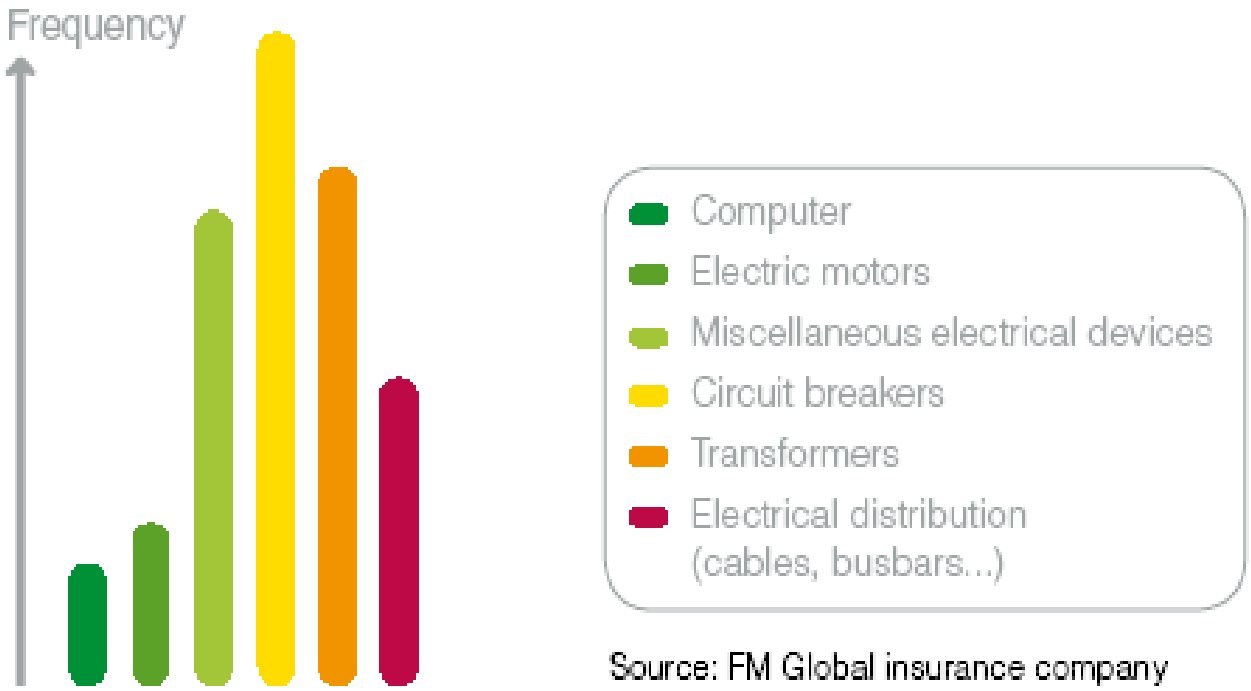


The Electrical Maintenance

Why carry out **Electrical Maintenance**?

- What type of equipment is to blame in "electrical" fires?

Frequency of fires according to type of electrical equipment over a 10 year period (study carried out in France, Benelux and Spain)

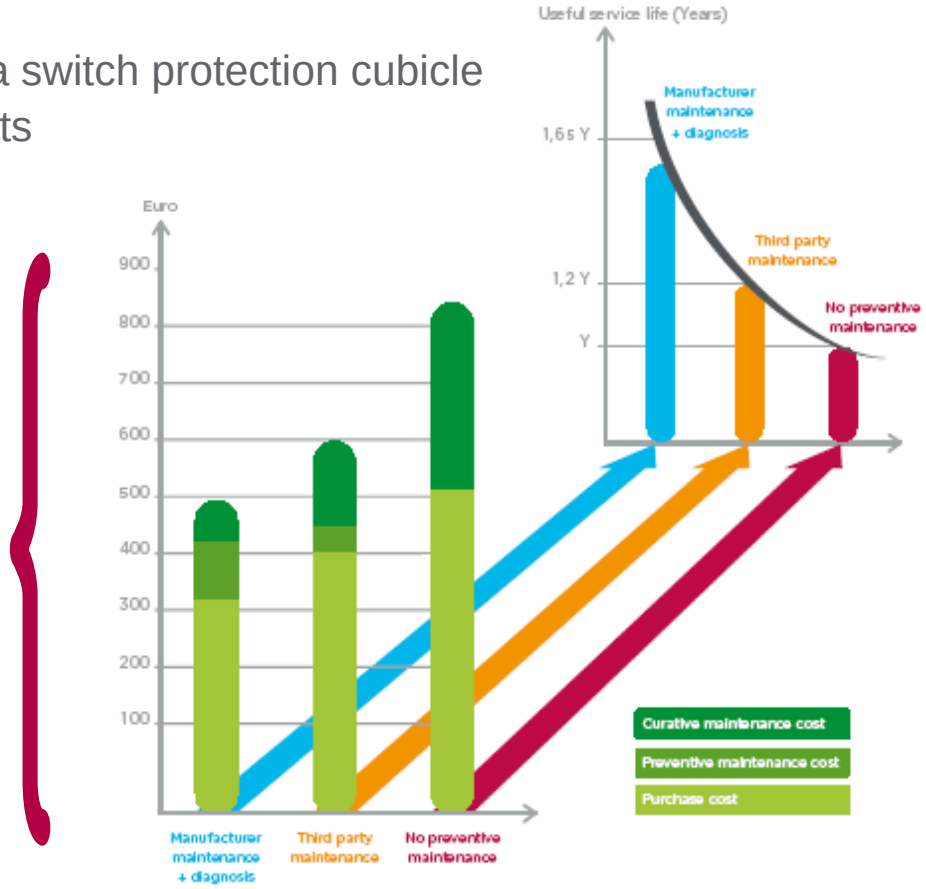


Source: FM Global insurance company

The Electrical Maintenance

Why carry out **Electrical Maintenance**?

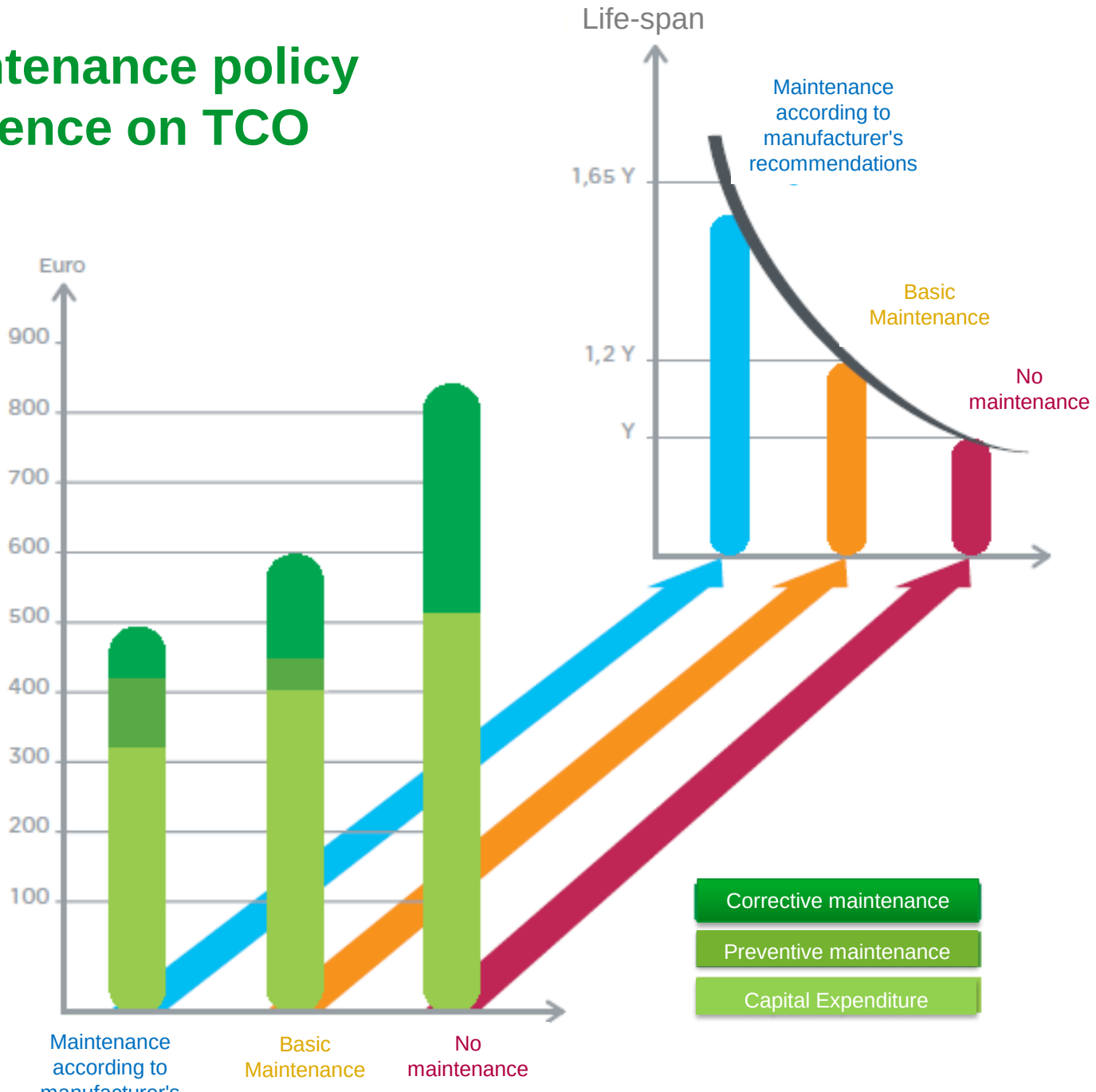
- What is the impact of maintenance policy on costs?
  - Example of complete costs for a switch protection cubicle
  - The costs shown are yearly costs



Hence, **for manufacturer maintenance**:

- Yearly, the acquisition costs are lower as the useful service life of the equipment is longer
- Preventive maintenance limits the cost of curative maintenance (better reliability)

Maintenance policy influence on TCO



In Bulgarian Industry's dominant electrical energy distribution equipment is more than 30 years old

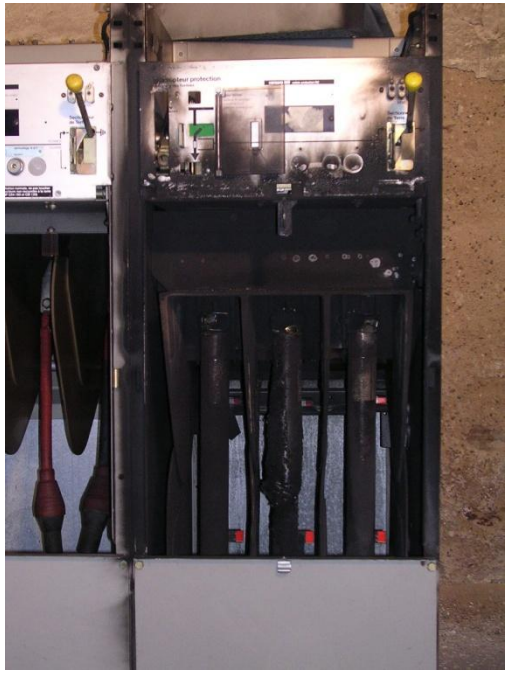
Our observations in Bulgaria

- electrical energy distribution equipment is more than **30 years old**
- **Low budget maintenance** or **no maintenance** during life-span
- Very **high risk for safety**
- High risks **for production interruption and financial losses** due to power failures
- Risks for **physical damage of property** and financial losses
- Assets which are not directly related to manufacturing are neglected (although there is no production if there is no electricity)
- No conception for CapEx и OpEx

Some bad examples

- December 2014 – Hospital in Sofia: 2 failures of main Circuit Breakers lead to
  - 91 people miss 1 day of their medical treatment
  - 1 month hospital has no reserve of the power supply – increased risk of long black out
- September 2014 – Sofia Office building - fault in a circuit breaker leads to blackout in offices and a bank office.
  - Facility management company panelized
  - Financial losses for Bank and offices

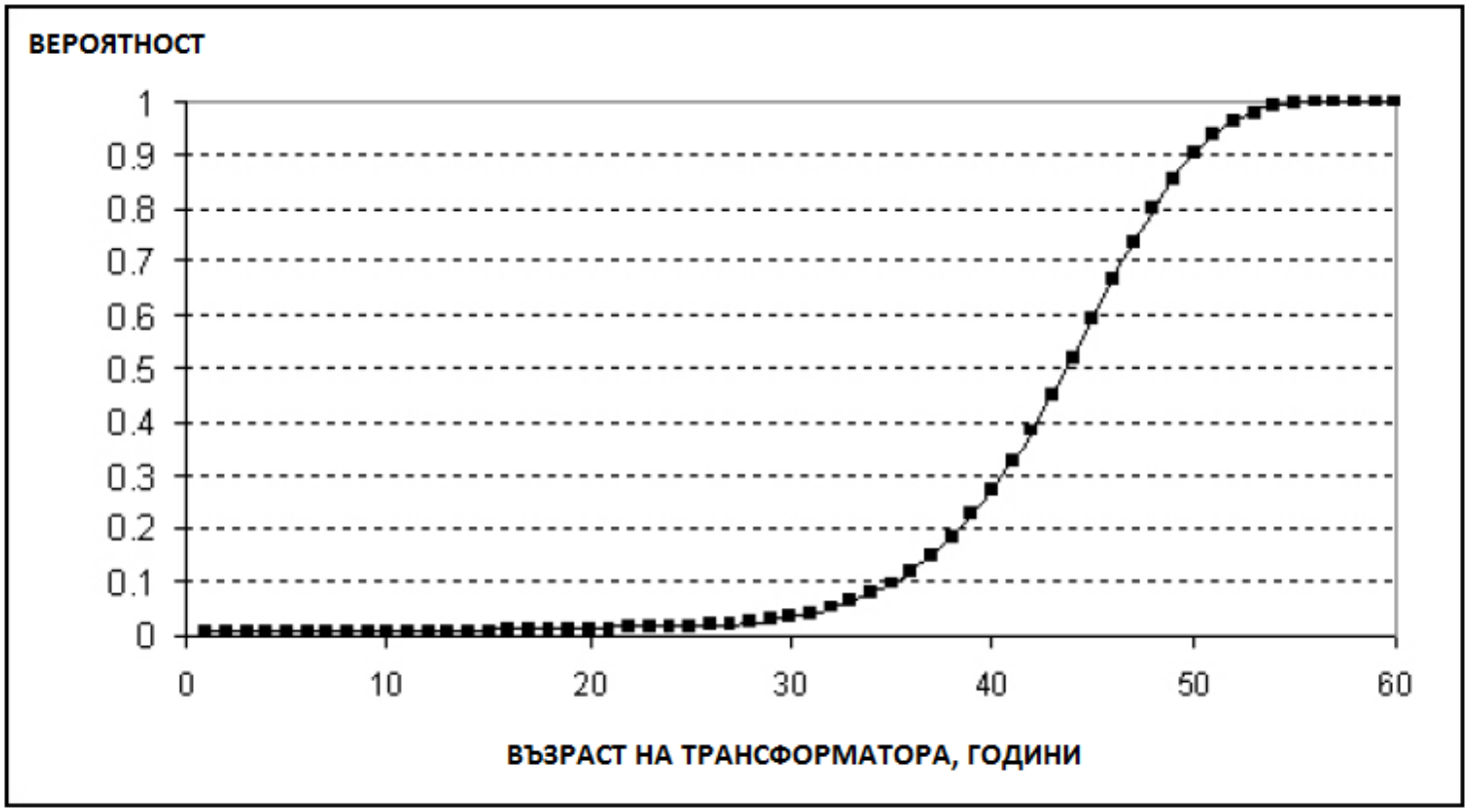
Some bad examples



- April 2014 – Industrial plant – fault of main MV feeder switchboard due to postponed maintenance priced for 4kEuro leads to:
  - 30 kEuro cost for damaged equipment
  - Productivity loss for 1 hour for the factory
  - Risk for long black out of the plant
- Airport – low budget maintenance leads to
  - destroyed equipment cost 25 kEUR
  - Risk for complete black out of some facilities
- 2013 Industrial Plant in Automotive – lack of maintenance program and postponed maintenance lead to:
  - Productivity loss for several hours (tens of kEur loss)
  - Destroyed equipment for 25 kEUR

Why do we think it will get worst

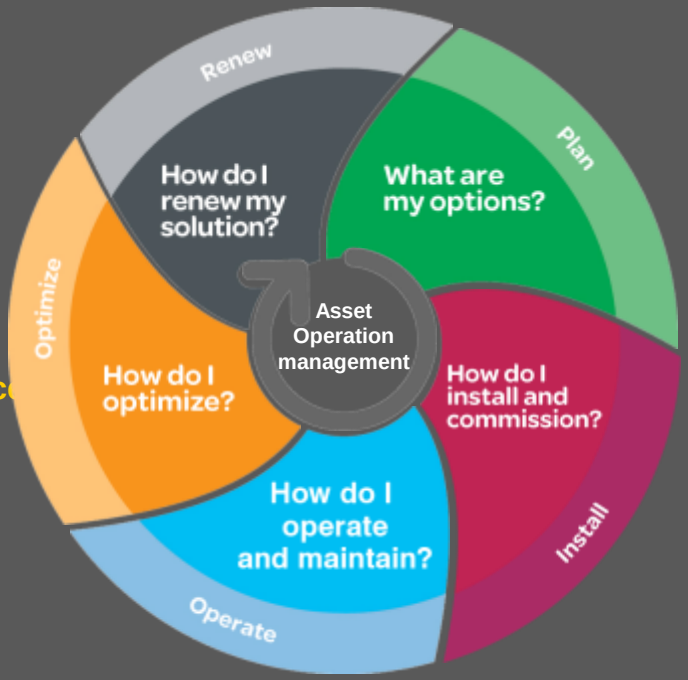
Probability for fault of equipment increases dramatically after sertain years of exploitation. *See example for transformer (critical after 30th year)*



Schneider Electric helps you to optimise your Total Cost of Ownership throughout life cycle

Schneider Electric helps you define and implement the best solution evolvement, increasing performance and flexibility, while controlling aging infrastructures associated costs.

Our experts can help you plan, define and design the right solution for your needs.



Our Solution Experts will give you proactive and tailored recommendations you need to reduc risk, improve solution performance and reliability.

We can help you convert your plans into an efficient, reliable and safe solution.

Schneider Electric helps you maximize your solution uptime and performance, with capital expenditure control through proactive set of actions.

Two main focus in Bulgaria

1. Consult regarding current condition, risks, solutions – **Electrical installation assessment** by external expert organization

2. Build a **plan for maintenance** (and modernization if needed)

Thank you!

Discussion?

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