The Role of Retrofitting for Sustainability Targets

Why we cannot ignore the energy performance of our existing buildings

70% of all buildings in operation today were built before the current energy codes and only a few have been upgraded
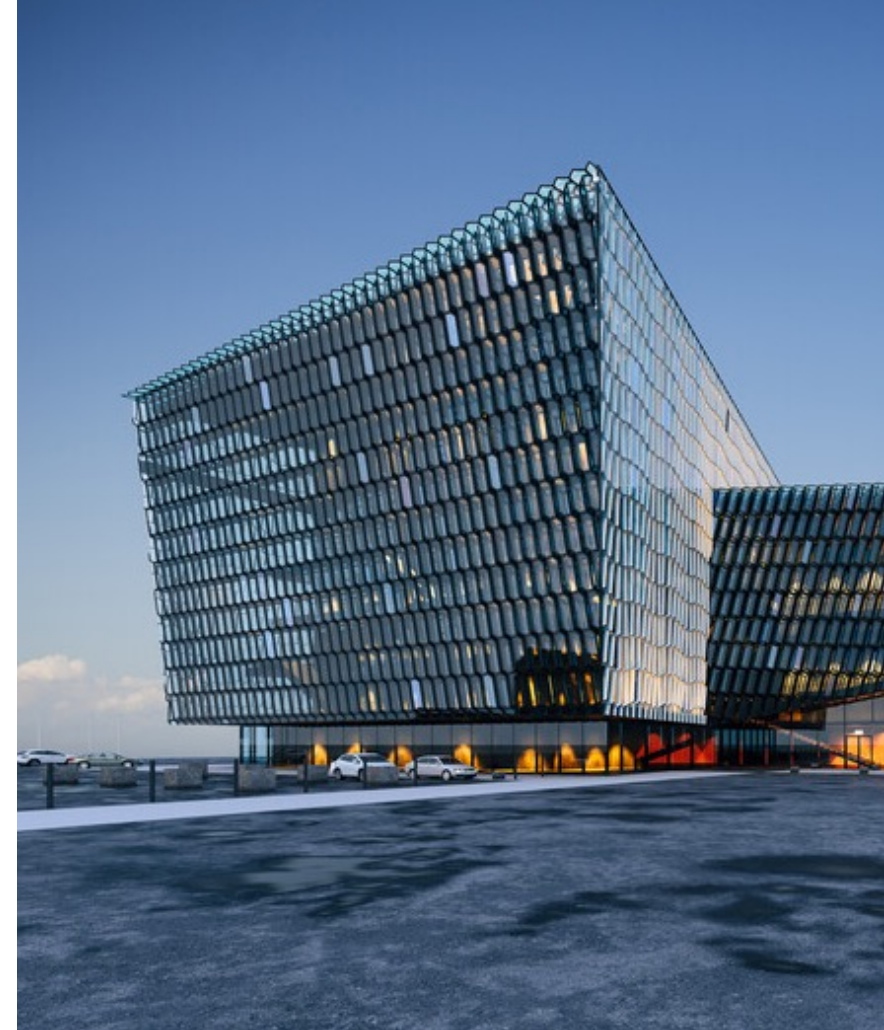
What is our city challenge

- 45% of all green house gasses in our cities come from buildings

- On average 50% of a buildings operational carbon footprint is from heating and cooling systems

- More than 70% of all buildings in operation do not comply with current energy codes

- 90% of all buildings in operation today will still be in use by 2050

- If we teardown the buildings and build new, it typically takes 30 years to pay back the carbon debt from construction for a **net zero building**
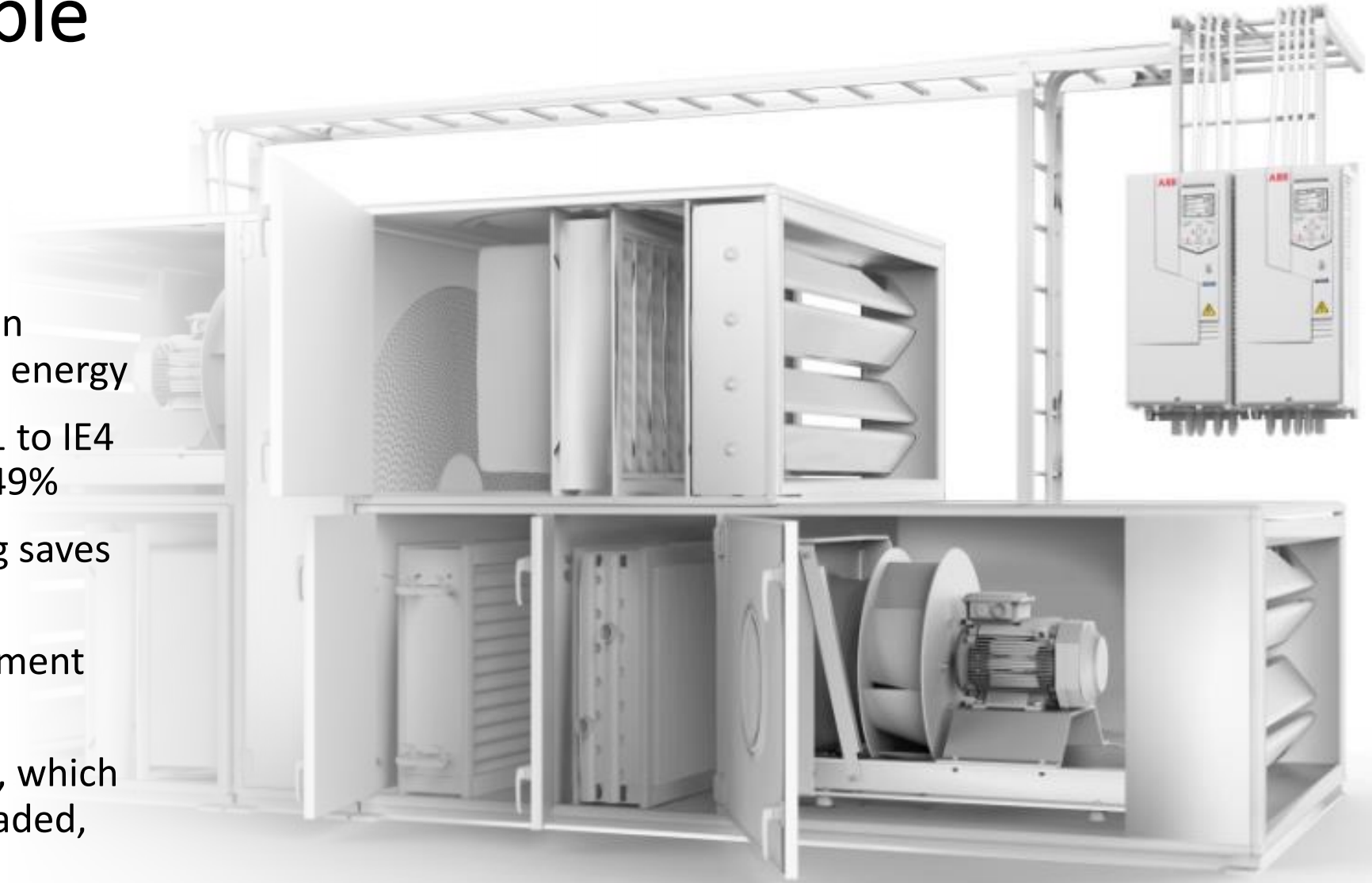
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Why is it so hard to get it right

1 If someone else pays the bills, facility managers do not need to invest in energy savings

2 Property owners are motivated by tenant retention and lease renewal, not by energy savings

3 Tenant retention and lease renewal tied to supporting work requirements and comfort

4 Most sustainable solutions often have a higher upfront investment, so incentives are needed

5 Operations costs and sustainability takes lower priority than addressing worker needs

There are simple solutions available

- Applying variable speed on pumps and fans save 40% energy

- Changing motors from IE1 to IE4 reduces motor losses by 49%

- Adding energy monitoring saves 10% energy

- Modern building management systems save 15% energy

- Keep a focus on solutions, which can be repaired and upgraded, as technologies improve

How can we accelerate this

- Energy and IAQ labelling of all buildings

- Setting requirements that ex. the lowest 15% are upgraded in short timeframe

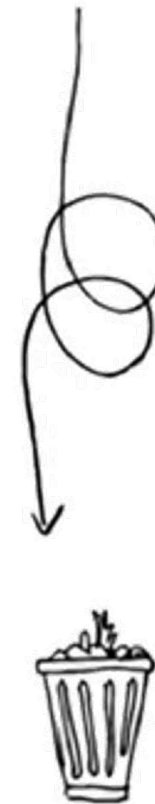- Developing market surveillance ensuring that EE and circular designs are made and implemented

Reuse and recycle

- With no focus we just waste materials

- With recycling we recover some or most materials

- With reuse, we avoid scrap and re-manufacturing

Retrofitting summary

- 90% of all existing buildings will stay in operation

- It takes 30 years to pay back the carbon debt of new build

- Without retrofitting cities cannot reach climate goals

- Just adding drives, motors and controls can save up to 50% energy

- Regulatory requirements and financial incentives needed