KIMMCO ISOVER SAINT-GOBAIN

Trustable Insulation For A Healthy Wellbeing

Innovative Pre-insulated duct system for Sustainable Buildings

Efficient & fire safe

ABOUT US

KIMMCO-ISOVER is a Joint Venture between

Alghanim Industries and

Saint-Gobain

Mineral wool leader in the Middle East

2
manufacturing facilites
Glass wool & Stone wool

40 Years
Over 40 years of track record in manufacturing and supply of insulation material

5 Sales offices in GCC
&
Authorized distributors in over **40** other countries

KIMMCO ISOVER SAINT-GOBAIN

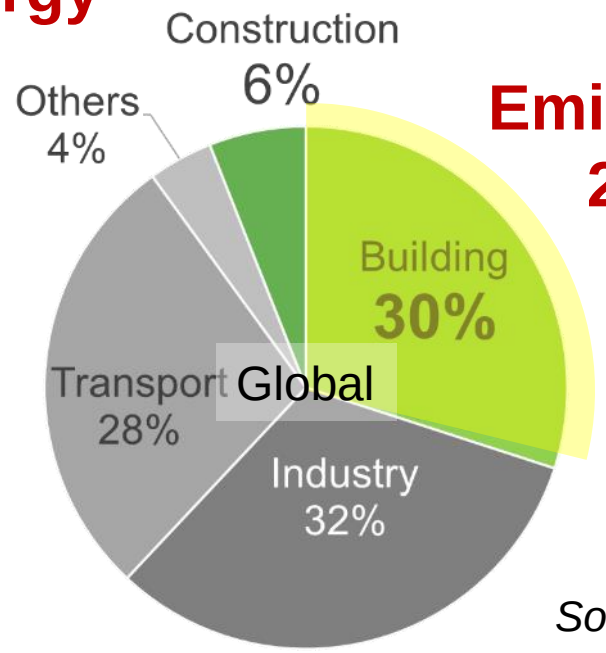
Energy efficiency

-The first fuel of a sustainable global energy system

Buildings

A source of enormous untapped efficiency potential

Energy



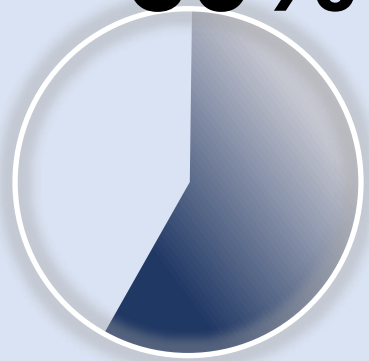
Emission 28%

Source: IEA (2019)

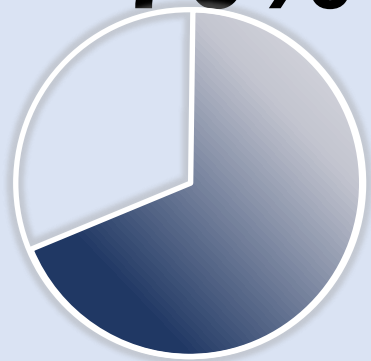
HVAC has a huge impact on total energy consumption of a Building

HVAC Energy Consumption

in a typical building



Global



GCC

RECREE-2015

Vision-

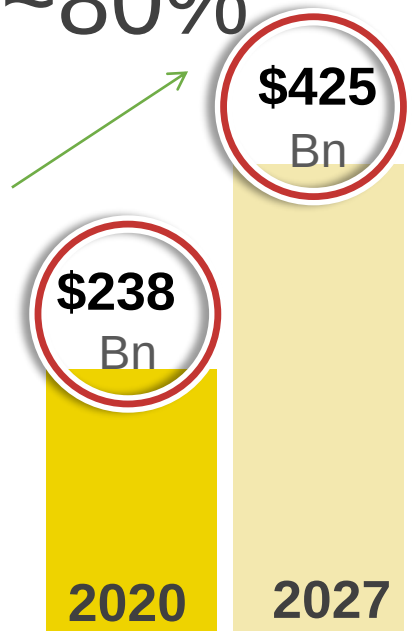
Carbon neutral
Mitigating Climate Change

Green Buildings plays a critical role in achieving **Energy efficiency in Buildings**

Benefits of Green Buildings

- Environment
- Savings
- Wellbeing

~80%



Global Green Buildings Materials Market

Insulation:

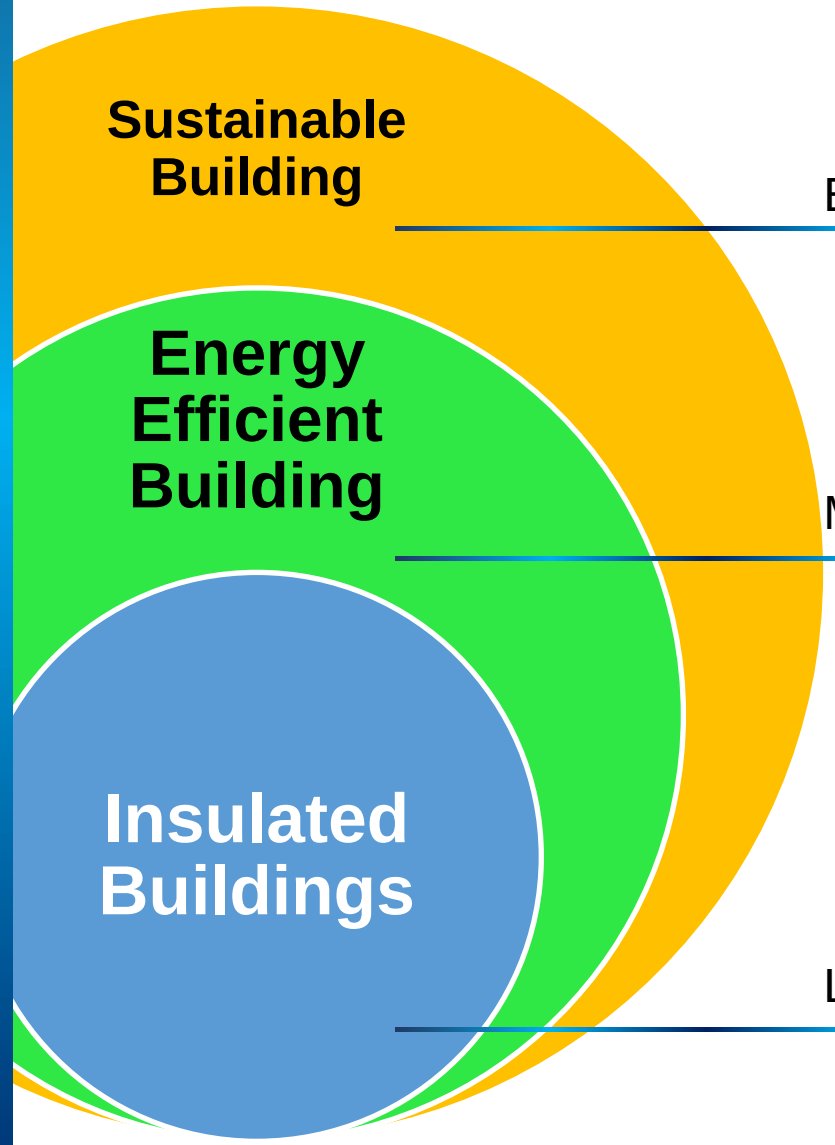
US$71

Billion in 2027

CAGR of 5%

| *Source: Research and Markets*

With human in center, Green Buildings are Evolving



Early 2000

Mid 1970s

Late 1930s

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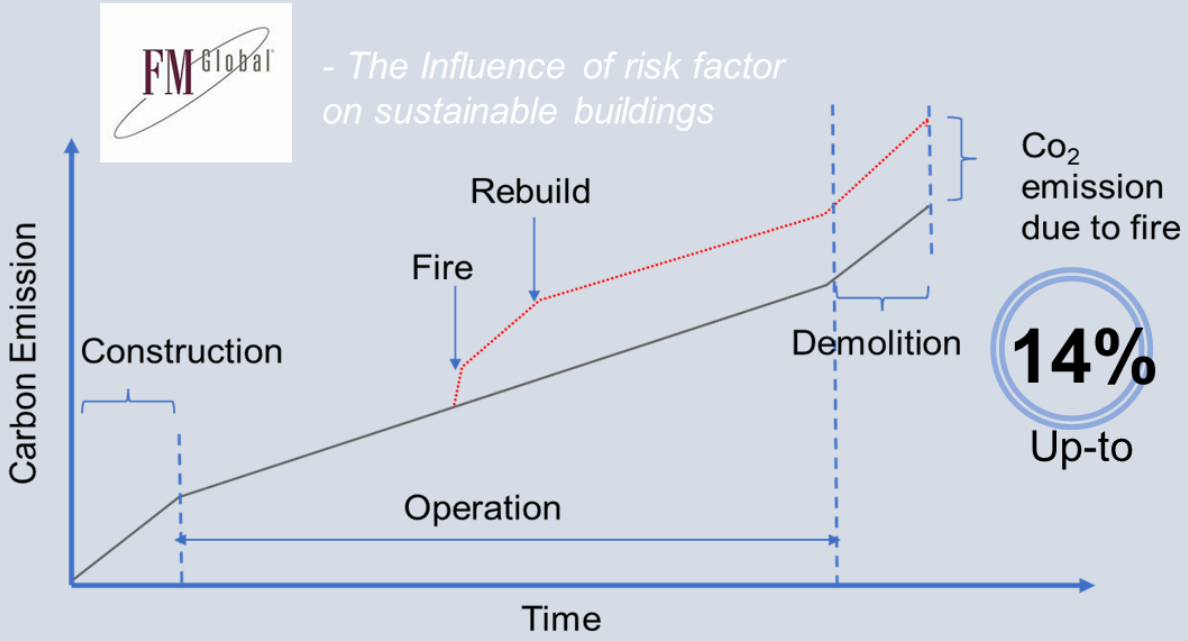
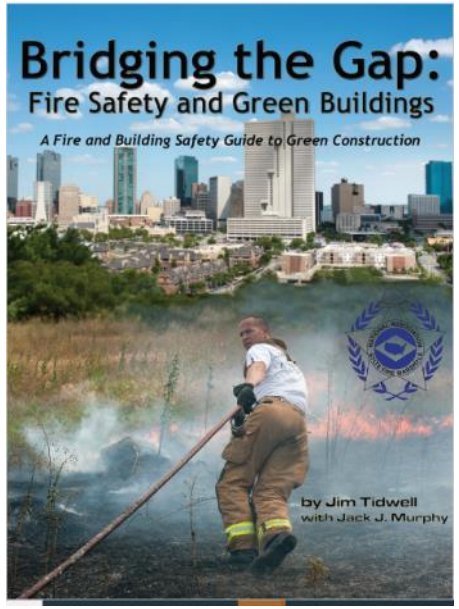
Green Building

- Ecofriendly Product/Systems
- Energy Efficient Solutions
- Healthy

.. But **Fire aspects should not be ignored**

Fire aspects Should not be ignored





Risk

X3 times

*When improving **only energy efficiency** of the building **without considering fire risk***

Co_2

30- 40 Kg/sqmt

Source: Bridging the Gap-fire safety & green Building - The Influence of risk factor on sustainable buildings - Environmental impact of automatic fire sprinklers –DCD

Growing challenges for Engineers/ consultants **Building Materials Manufactures**

Green Building Requirements

Design / architecture

Building materials/ systems

Low Cost

Faster construction

Fire Safety

Our commendation

Understand the fire behavior of the Building materials and Systems

SMOKE IS MORE FATAL THAN FIRE …

- Carbon Monoxide
- Other Toxic gases
- Too low Oxygen level to sustain life
- Incapacitation- Physical/mental
- Bodily burns
- Non-visibility due to smoke
- Psychological effect
- Physical injuries

High impact | some impact | No impact

MAJOR CASE OF CASUALTY IN A FIRE

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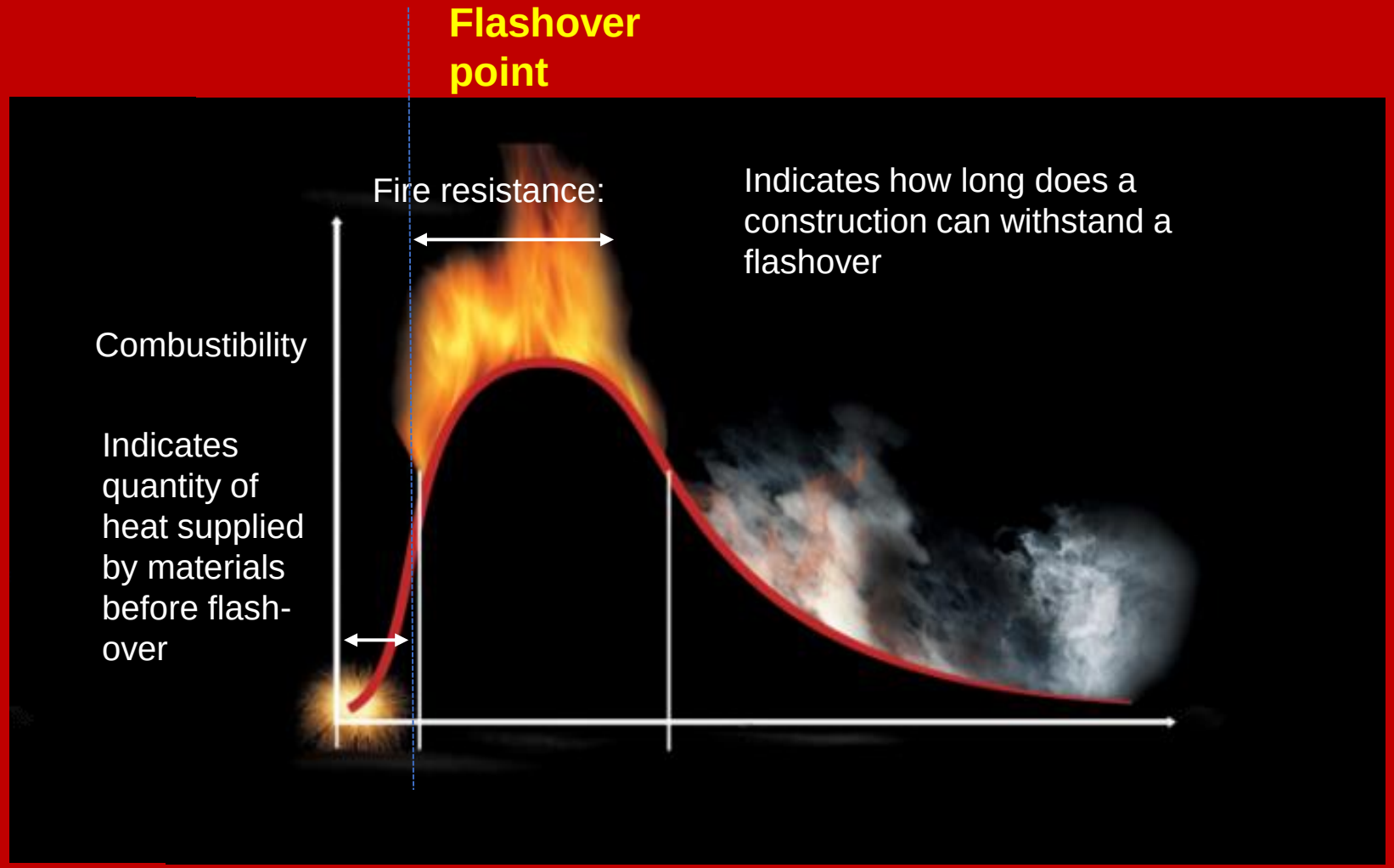
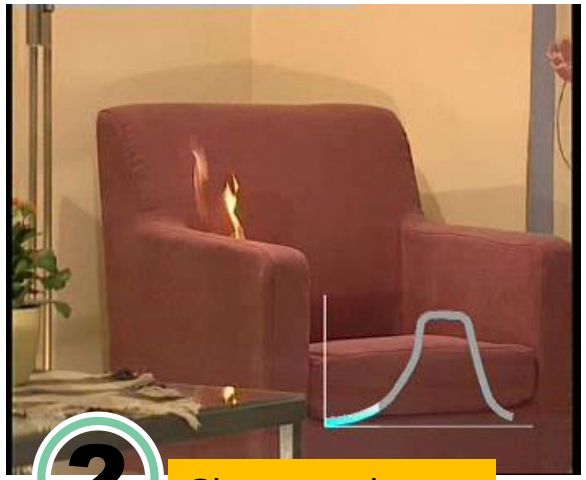
Fire Curve


Flashover point
Fire resistance:
Indicates how long does a construction can withstand a flashover
Combustibility
Indicates quantity of heat supplied by materials before flash-over
Temp.
Time.

1 Ignition



2 Slow growth

3 Fast growth

4 Flashover

Fire reaction of Building products

- Safe evacuation
- Reduced fire growth
- Damages can be minimized

Fire resistance of Building elements

- Try to save the building
- Try to prevent fire from spreading
- No chance to escape from the fire room

5 Full development

Recommendation

EN13501 – Euroclass system

Euro Class	Contribution to Fire	Type of insulation productions Examples
A1	Non-Combustible	Stone wool, Glass wool, Foam Glass
A2	Limited Combustion- No flashover	High density & binder or faced Stone wool and Glass wool
B	No Flashover	Some faced Glass wool & Some Phenolic Foams
C	Flashover after 10 minutes	Some PIR
D	Flashover after 2 minutes	Most of he PIR
E	Flashover before 2 minutes	Flame retarded EPS, PUR
F	No performance Determined	Non flame – retarded EPS

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ASTM E84

Scope: Determine the relative burning behavior of the material by observing the flame spread along the specimen

Class A:
Flame Spread 0-25; smoke-developed 0-450

Class B:
Flame Spread 26-75; smoke-developed 0-450

Class C:
Flame Spread 76-200; smoke-developed 0-450

EN 13501

Reaction to fire	
A1,A2	No flash over
B	No flash
C	Flash over between 10 and 20 minutes
D	Flash over between 2 and 10 min.
E	Flash over before 2 min.
F	Products non classified (not tested)

Tendency to release smoke	
s1	Little or no smoke
s2	Quite a lot of smoke
s3	Substantial smoke release

Release of flaming droplets/ particles	
d0	None
d1	Some
d2	High amount of droplets

Good News

"Effective **fire protections & prevention measures have the potential to reduce the impact of fire on environment & safety** to a point the impact **Controlled** "

Source -The Influence of risk factor on sustainable buildings

KIMMCO ISOVER SAINT-GOBAIN

Duct system is one the Key component of HVAC system

HVAC has a huge impact on total energy consumption of a Building

HVAC Energy Consumption

60%

Global

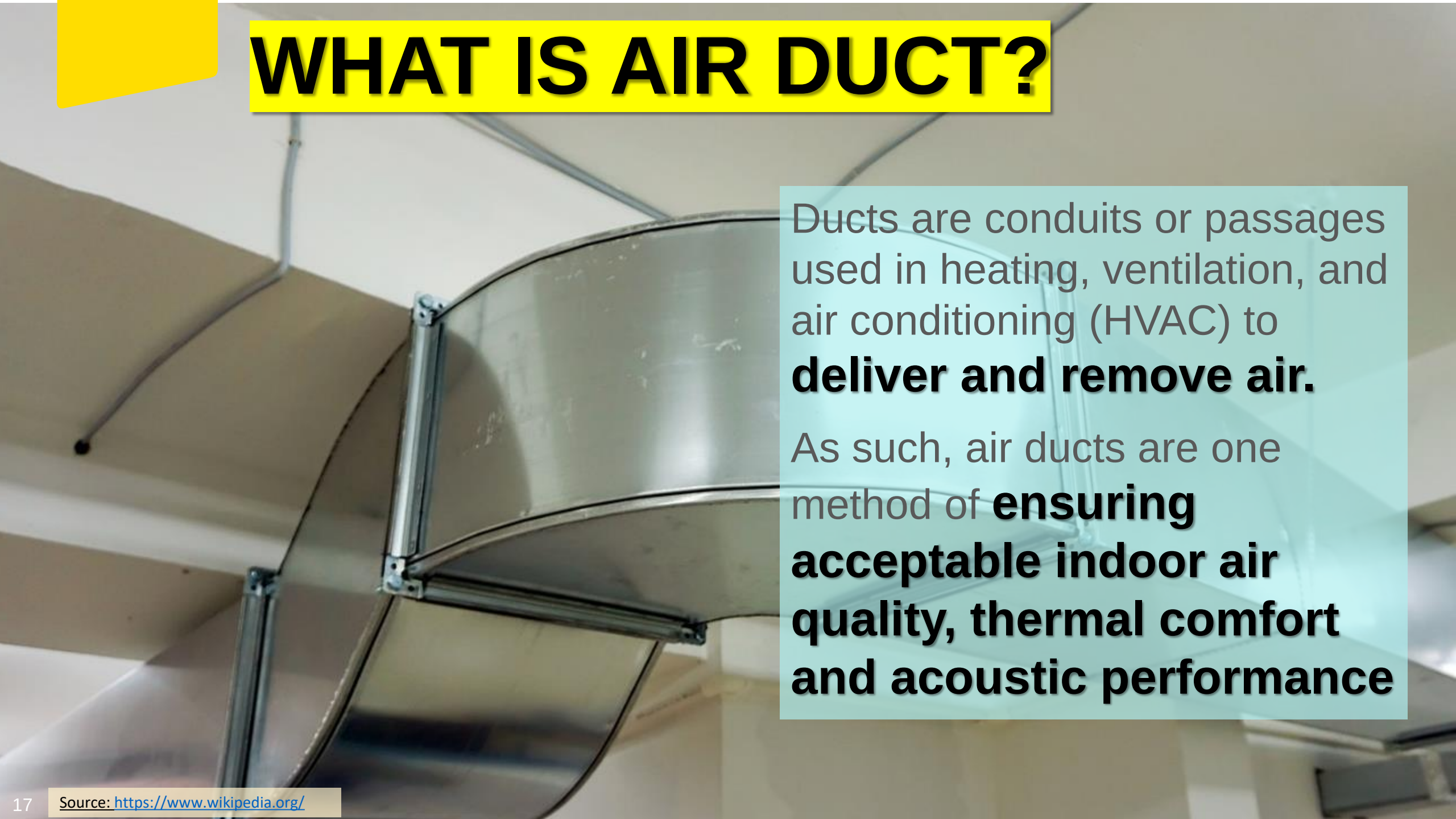
70%

GCC

in a typical building

RECREE-2015

WHAT IS AIR DUCT?



Ducts are conduits or passages used in heating, ventilation, and air conditioning (HVAC) to **deliver and remove air.**

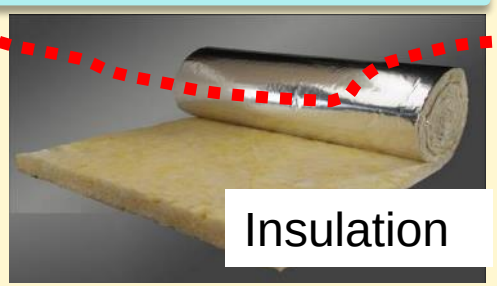
As such, air ducts are one method of **ensuring acceptable indoor air quality, thermal comfort and acoustic performance**

Source: https://www.wikipedia.org/

TYPES OF DUCTS IN GCC

Metal Duct

- GI
- Steel
- Aluminum



Insulation

Pre-Insulated Duct "PID"

A

Plastic organic base

B

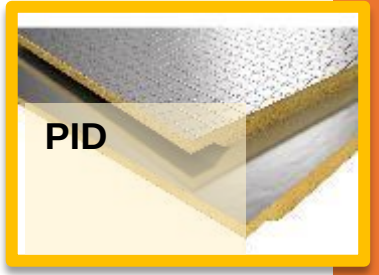
Glass Wool self-support

Flexible Duct for connection

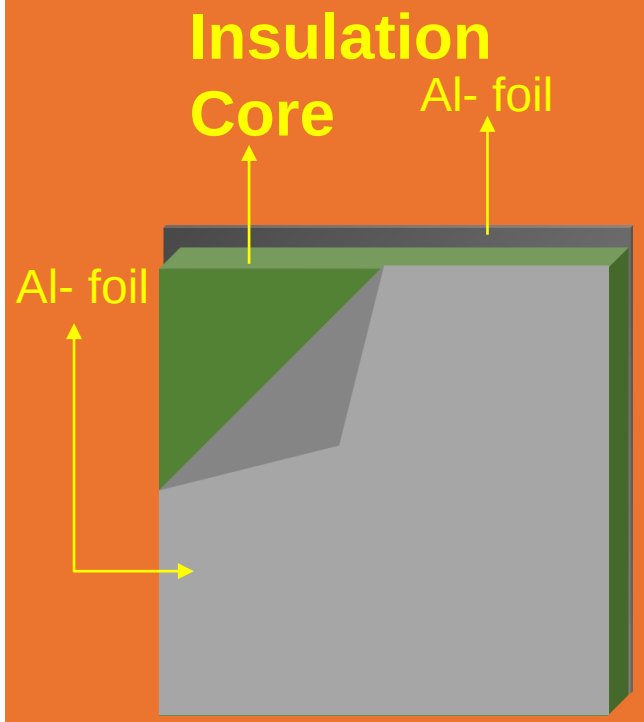
GI metal duct

Video Source: Sente

Pre-Insulated Duct "PID"



Typical PID construction



Why to insulate Ducts?

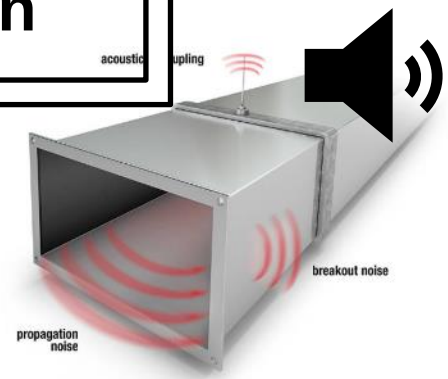
1 Primary Function

Reduce Heat gain/loss (Energy conser

Energy Efficiency

Reduce the risk Condensation

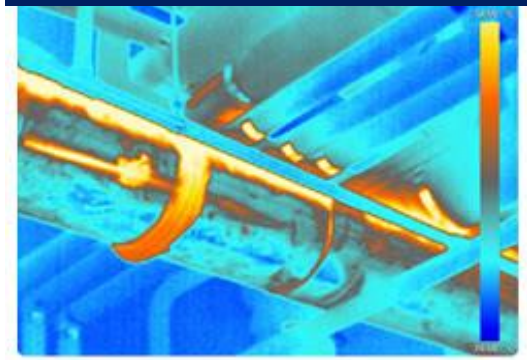
2 Secondary Function



Acoustics

1 Primary Function

Reduce Heat gain/loss (Energy Conservation)



- Thermal Comfort
- Energy Savings
- Cost Savings
- Low Capital cost – small size machines
- Low machine ware & tear
- Low maintenance

Reduce the risk Condensation

- Water leakage
- Damp proof – No mold & fungal growth
- Sick Building
- Extra maintenance

How the primary function of **Energy conservation** & reduce
of **conden** are achie

1

Air leakage

Thermal Insulation

Condensation Control

GI metal duct

ganic

PID -Glass wool

Know the fire performance of the insulation material – Prefer at least for **Class B,s1,d0**

Additional insulatio
is wrapped around the duct of suitable thickness

No additional
insulation required

No additional
insulation required

Organic based insulation
- *NR*
- *Polyolefin..*

Non-Organic based insulation
- *GW*
- *SW*

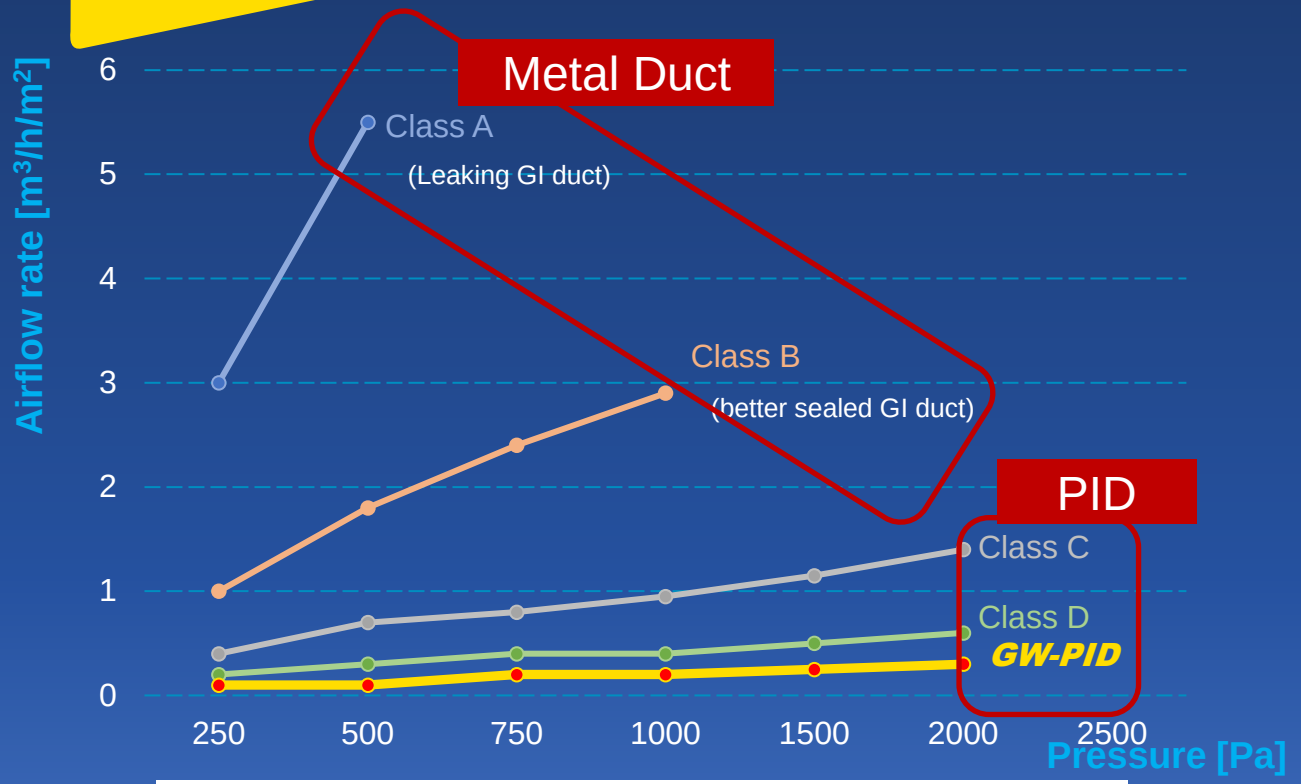
PIR

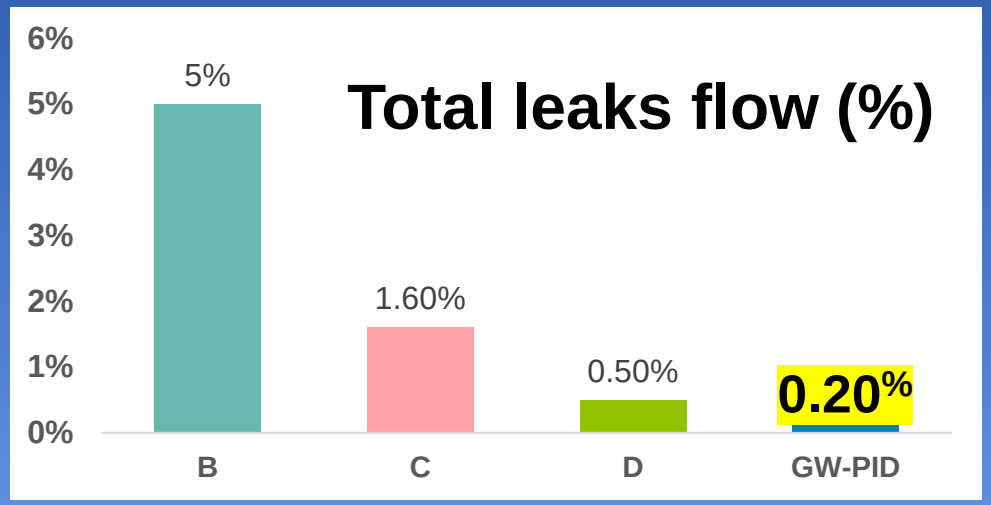
Phenolic

Glass wool

Air leakage in HVAC ducts

Test in accordance with EN1507. EN12237

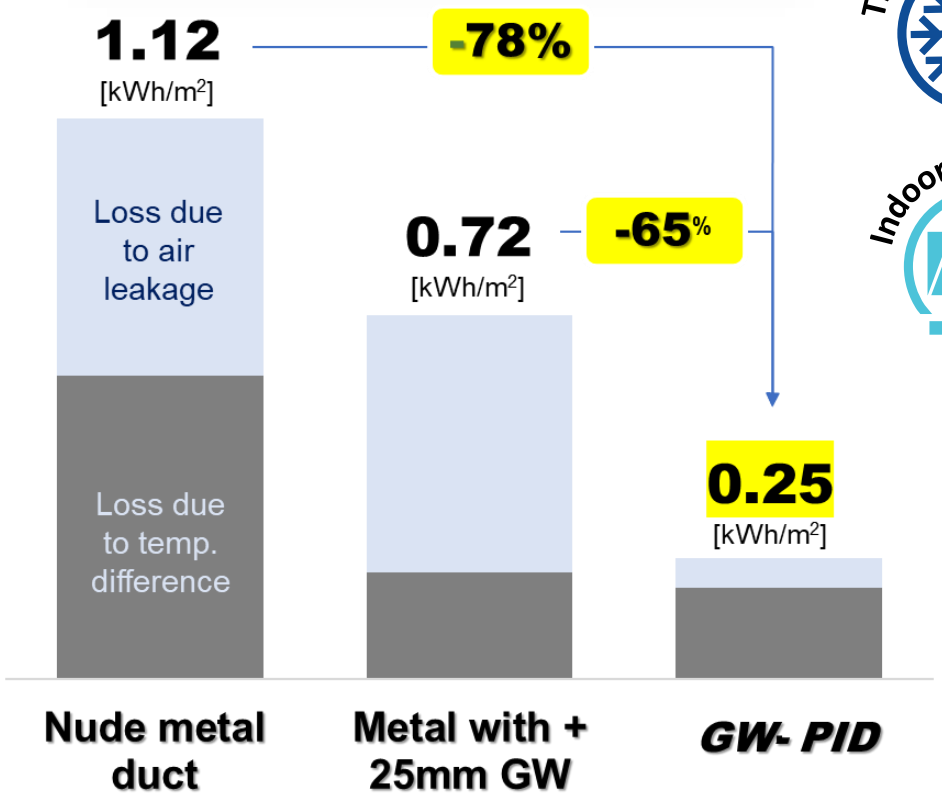




Energy Saving =

Air-tightness ✣

Temperature gain

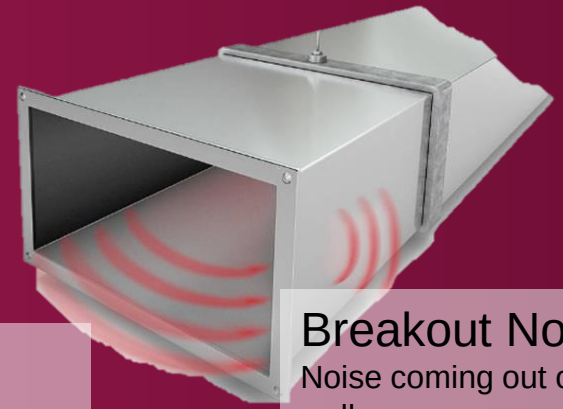


Thermal Insulation

Indoor Air Quality IAQ

Secondary function – Acoustic

2



Propagation
Noise- noise going through duct

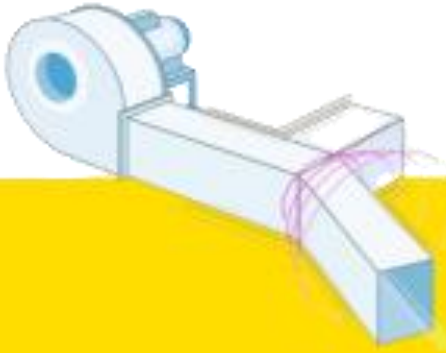
Breakout Noise-
Noise coming out of duct wall

Ventilation/ air-conditioning system

Noise transmission due to the ventilation and/or air-conditioning system itself.

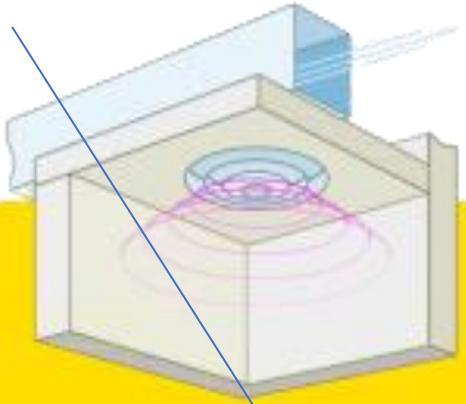
Machinery vibrations

Noise transmission due to the structure on account of vibration.



Air circulation

Generation of noise by the air speed effect.



Grilles and diffusers

Noise transmission via grilles and diffusers.

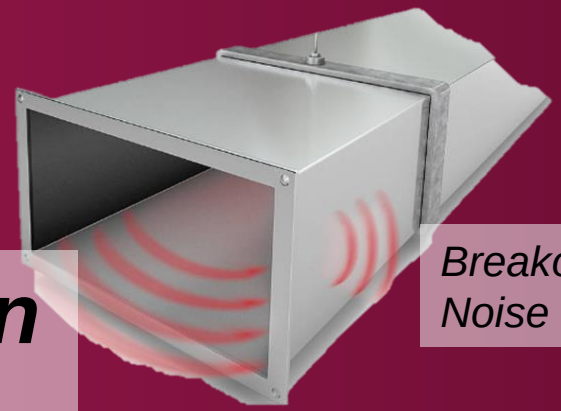
Secondary function – Acoustic

2

GI metal duct

PID-Organic

Propagation
noise



Breakout Noise

PID -Glass wool

Acoustic Insulation

Line **the inside of the duct** with sound absorbing material

- Normally it is Glass wool insulation is used in this region
- Sometime organic insulation is also used

Air duct noise silencer

Time saving by high productivity

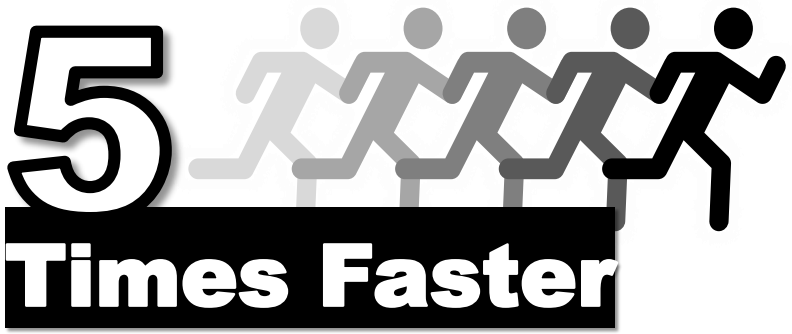
GI metal duct

Questions the Safety of the installers

PID-Organic

PID -Glass wool

Time saving by high productivity



+50% Savings in installation cost

- >50% Lighter in weight vs. GI duct, so it is Easy to carry & install and requires few numbers of workers on site
- No special cranes required
- Less hangers & accessories
- Easy to store & saving spaces

GI metal duct

Know the fire performance of the insulation material – Prefer at least for Class B,s1,d0

PID -Glass wool

Challenges

- Insulation- energy conservation
- Air-leakage
- Heavy – less productivity/safety
- Insulation for Acoustics

Inbuilt guarantee insulation performance

5% leakage v/s **0.2%**- Best in class

5 times less weight and faster

Inbuilt sound insulation

KIMMCO ISOVER SAINT-GOBAIN

Trustable Insulation For A Healthy Wellbeing

Case study: CLIMAVER – Glass wool based pre insulated duct System

CLIMAVER®

AVAILABLE TYPE

Hear
ACOUSTIC COMFORT EXTRA

CLIMAVER PLUS R®

- External & Internal facing: alu + kraft

CLIMAVER neto®

- External facing: alu + kraft
- Internal facing: Black textile

Indoor Air Quality · Fire Resistance · Light Weight · Acoustic Insulation · Easy to Install · Thermal Insulation · Condensation Control · Sustainable Product

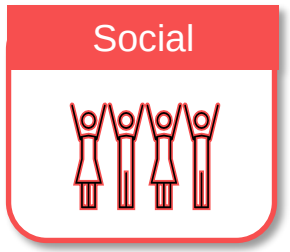
1

What is fire performance of CLIMAVER® ?

2

CLIMAVER®

an innovatively duct solution for Sustainable Buildings



By Nature it is NON COMBUSTIBLE

Fire classification according EN13501

Reaction to fire	
A1, A2	No flash over
B	**No flash over**
C	Flash over between 10 and 20 minutes
D	Flash over between 2 and 10 min.
E	Flash over before 2 min.
F	Products non classified (not tested)

Tendency to release smoke	
s1	**Little or no smoke**
s2	Quite a lot of smoke
s3	Substantial smoke release

Release of flaming droplets/ particles	
d0	**None**
d1	Some
d2	High amount of droplets

CLIMAVER®

UL 181 CERTIFIED

- Standards of the National Fire Protection Association for the Installation of Air-Conditioning and Ventilating Systems- NFPA

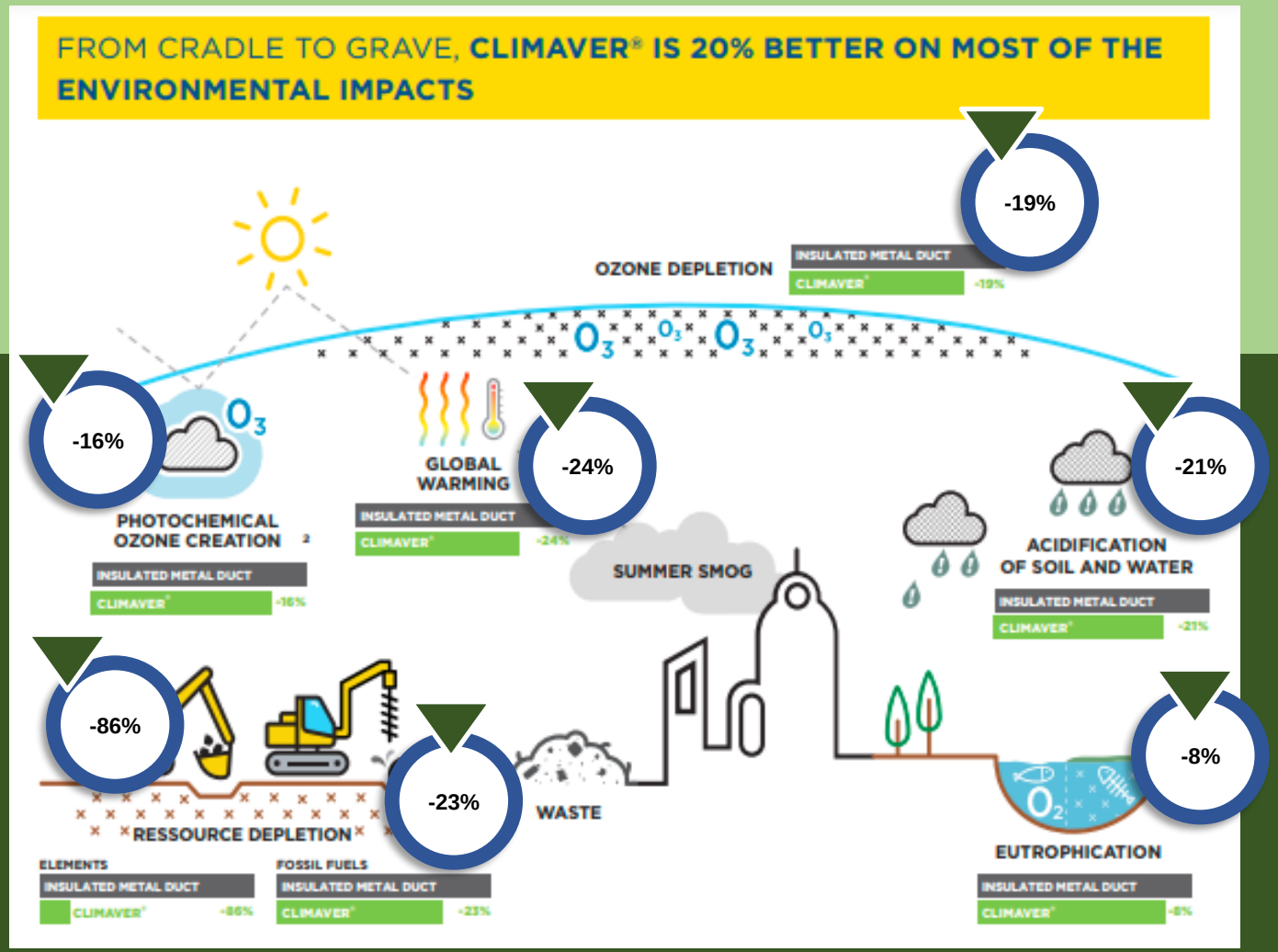
		RIGID	FLEXIBLE
Fire	Surface burning characteristics	•	•
	Flame Penetration	•	•
	Burning	•	•
Durability	Corrosion [a]	•	•
	Mold Growth and Humidity	•	•
	Temperature	•	•
	Puncture	•	
	Static Load	•	13
	Impact	•	
	Erosion	•	•
	Pressure	•	•
	Collapse	•	•
	Tension		•
	Torsion		•
	Bending		•
	Leakage	•	•

Make ductwork more sustainable with *CLIMAVER*®

Third party verified

EPD Verified

LCA

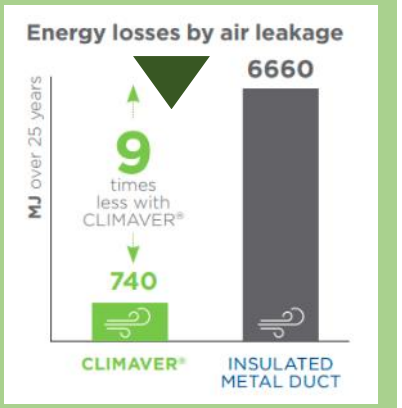


Make ductwork more sustainable with *CLIMAVER*®

Third party verified

EPD Verified

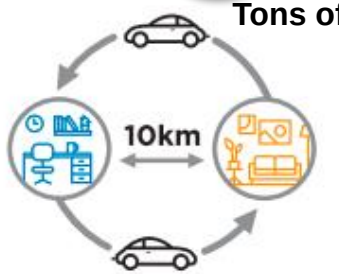
LCA



FOR A TYPICAL BUILDING OFFICE, **USING 1000m² OF CLIMAVER® INSTEAD OF INSULATED METAL DUCT WOULD SAVE:**

(1000m² OF CLIMAVER® IS EQUIVALENT TO 700 LINEAR METERS OF DUCTWORK OF AN INNER SECTION OF 0,4m×0,2m)

-30 Tons of Co_2



x 36 years

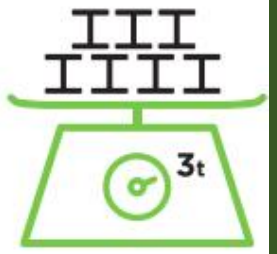
More than 36 years driving 20km a day connecting work[1]

Equivalent to 180'000 km travelled by car or 30 tons of CO2 emissions

4000x

The electricity usage of 4000 inhabitants for 24h[2]

Equivalent to 215'000 MJ of electricity consumption saved over 25 years



More than 3 tons of steel to be installed, insulated and dismantled at the end of the life cycle

LEED v4

Category	Credits	Points	CLIMAVER offer
Integrative process	Credit “integrative process”	**1**	BIM
Energy & atmosphere	Optimize energy performance	**Up to 18**	Air tightness & efficacy
Material & resources	Building life cycle impact reduction	**5**	LCA
Material & resources	Environmental product declaration	**2**	EPD
Material & resources	Sourcing of raw materials	**2**	Recycled content attestation
Material & resources	Material ingredients	**2**	EUCEB, ISO 14001
Material & resources	Construction and demolition waste management	**2**	Waste reduction doc CLIMAVER
Indoor Environmental Quality	Low-emitting materials	**3**	GREENGUARD certificate
Indoor Environmental Quality	Thermal comfort	**1**	K value and Thermal comfort
Indoor Environmental Quality	Acoustic performance	**1**	Best with Neto and meets ASHRA
Innovation	Innovation	**5**	Software: Techcalc, Acoustic, dimensions, BIM objects

Up to-42 Points

Environment

SUMMARY

- Building must focus on People, Environment & Wealth
- Green Building does not mean include all the Green Products
- Building must be suitable all though its lifetime

Thank you
Questions & answer