

Climate Recovery Duct System Planning Guide – CO₂



Overview

Calculations are based on Climate Recovery Ducts in comparison to sheet metal ducts insulated with 30mm lamella mat. The total surface area of finished products in square meters (m²) while CO₂ is provided in kilograms (kg).

All data used regarding CO₂ emissions was provided from the Swedish Recycling Industries' Association^A and can be found on the next page. Data regarding product composition provided by commonly accepted values and CR manufacturing processes.

Climate Recovery Duct		Total
Insulation kg/m ²	2,2	0,88 kg CO ₂ /m ²
Recycled glass CO ₂ /kg	0,4	
Aluminium kg/m ²	0,032	0,34 kg CO ₂ /m ²
Recycled aluminium CO ₂ /kg	10,6	
PE kg/m ²	0,035	0,028 kg CO ₂ /m ²
Recycled PE CO ₂ /kg	0,8	
PP kg/m ²	0,017	0,014 kg CO ₂ /m ²
Recycled PP CO ₂ /kg	0,8	
PU (Sleeve) kg/m ²	0,215	0,172 kg CO ₂ /m ²
Recycled PU CO ₂ /kg	0,8	
Total		1,43 kg CO₂/m²

Round sheet metal duct with insulation		Total
Sheet metal duct kg/m ²	4,36	9,16 kg CO ₂ /m ²
Recycled steel CO ₂ /kg	2,1	
Insulation 30mm kg/m ²	0,84	0,34 kg CO ₂ /m ²
Recycled glass CO ₂ /kg	0,4	
Aluminium kg/m ²	0,032	0,34 kg CO ₂ /m ²
Recycled aluminium CO ₂ /kg	10,6	
Total		9,85 kg CO₂/m²

These tables show us that the CR Duct lowers CO₂ emissions by 85% compared to round sheet metal ducts with added insulation.

CO₂ Planning

Notes

- The effects of packaging do not make a large enough impact on the end result to note.
- No data on transport has been included, such as comparing CR Ducts in flat packaging compared to round sheet metal ducts.
- The values used are for utilizing recycled material compared to new raw material production. While we recognize that not all material utilized by all parties is 100% recycled, if strictly raw material values are used, the numbers would be more heavily in favor of CR.

Climate benefits from recycled material compared to new raw material production

Material	CO ₂ /kg	Reduced CO ₂
Glass	0,4	41 %
Aluminium	10,6	96 %
Steel	2,1	87 %
Plastic	0,8	37 %
Paper and cardboard	0,4	37 %
Organic rubbish (compost)	0,02	27 %
Organic rubbish (rotting)	0,07	87 %

Conclusion

We state that at least 80% of CO₂/m² can be saved by using the Climate Recovery Duct System as opposed to sheet metal with added insulation.

Real Life Application

To simplify calculations, CR Ducts save on average $\approx 8 \text{ kg CO}_2/\text{m}^2$.

In Sweden, a normal villa consumes $\approx 1000 \text{ kWh/year}$ through the air-handling unit.

As an assumption based on our knowledge of the market, this villa possesses $20\text{-}30 \text{ m}^2$ of insulated ductwork, so we will use 25 m^2 .

The amount of CO_2/kWh is dependent on domestic energy availability versus imports. We will assume that $1 \text{ kWh} = 20\text{g CO}_2$ output, based on wind, water, nuclear, and bio-based energy provision^B.

Therefore, an average air-handling unit will utilize $20 \text{ kg CO}_2/\text{year}$.
($1000 \text{ kWh} \times 20 \text{ g CO}_2/\text{kWh} = 20 \text{ kg CO}_2$)

Per our calculations, 25 m^2 of installed CR Ducts save about 200 kg CO_2 .
($8\text{kg CO}_2 \times 25 \text{ m}^2 = 200 \text{ kg}$).

Based on this data, installation of the CR Duct System can create a CO_2 -neutral operation over a 10-year period.

A: <http://www.recycling.se/branschfragor/atervinningens-klimatnytta>

B: <http://www.svenskenergi.se/Elfakta/Miljo-och-klimat/Klimatpaverkan/Hur-mycket-koldioxid-medfor-din-elanvandning/>



Notes

Enjoy work
Create business.
www.climate-recovery.com

Disclaimer
All information in this document is subject to change at the discretion of Climate Recovery.
Information is offered with no obligation to the end user or application.
All photos, logos, and branding within this document is the property of Climate Recovery and is not to be reproduced without prior written consent.

