LIBERTY AIR HANDLING UNITS & CIRCULARITY

SUSTAINABLE TECHNOLOGY FOR FUTURE GENERATIONS

LIBERTY
by rosenberg nL

WHY COMPOSITE?

It is our vision that circularity starts with extending the lifespan of our air handling units. After all, this provides a longer service life (under similar conditions) which is always better than replacement by new products.

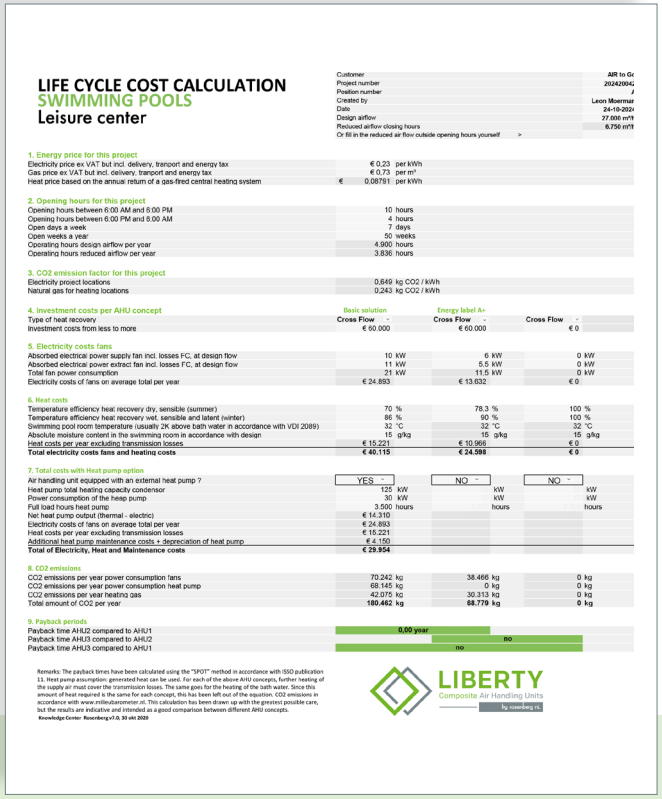
Liberty air handling units are made of composite. This results in air handling units that are cold bridge-free, strong and lightweight. They are designed to last extremely long, even in the most corrosive environment: CX extreme.

Most metals will rust immediately upon exposure to the environment. This is a natural process that can be prevented by unnatural coating or environmentally harmful galvanising or coating. Composite is completely corrosion resistant and therefore does not require any surface treatment. Choosing composite minimizes our carbon footprint by at least 54%, compared to metal.

LIBERTY AIR HANDLING UNITS: SUSTAINABLE SOLUTIONS ENGINEERED FOR DURABILITY, EVEN IN THE MOST DEMANDING CIRCUMSTANCES.

FIRST CLASS PERFORMANCES

THERMAL TRANSMISSION	T1
THERMAL COLD BRIDGE	TB1
MECHANICAL STRENGTH	D1
AIR TIGHTNESS	L1
FILTER BYPASS LEAKAGE	F9



LIFE CYCLE COST CALCULATION
SWIMMING POOLS
Leisure center

Customer		AIR to Ge
Project number		20242004
Position number		/
Created by		Leon Moerman
Date		24-10-2024
Design airflow		27.000 m³/h
Reduced airflow closing hours		6.750 m³/h
Or fill in the reduced air flow outside opening hours yourself	>	

1. Energy price for this project

Electricity price ex VAT but incl. delivery, transport and energy tax	€ 0,23	per kWh
Gas price ex VAT but incl. delivery, transport and energy tax	€ 0,73	per m³
Heat price based on the annual return of a gas-fired central heating system	€ 0,08791	per kWh

2. Opening hours for this project

Opening hours between 6:00 AM and 6:00 PM	10	hours
Opening hours between 6:00 PM and 6:00 AM	4	hours
Open days a week	7	days
Open weeks a year	50	weeks
Operating hours design airflow per year	4.900	hours
Operating hours reduced airflow per year	3.836	hours

3. CO2 emission factor for this project

Electricity project locations	0,649	kg CO2 / kWh
Natural gas for heating locations	0,243	kg CO2 / kWh

4. Investment costs per AHU concept

	Basic solution	Energy label A+	
Type of heat recovery	Cross Flow	Cross Flow	Cross Flow
Investment costs from less to more	€ 60.000	€ 60.000	€ 0

5. Electricity costs fans

Absorbed electrical power supply fan incl. losses FC, at design flow	10 kW	6 kW	0 kW
Absorbed electrical power extract fan incl. losses FC, at design flow	11 kW	5,5 kW	0 kW
Total fan power consumption	21 kW	11,5 kW	0 kW
Electricity costs of fans on average total per year	€ 24.893	€ 13.632	€ 0

6. Heat costs

Temperature efficiency heat recovery dry, sensible (summer)	70 %	78,3 %	100 %
Temperature efficiency heat recovery wet, sensible and latent (winter)	86 %	90 %	100 %
Swimming pool room temperature (usually 2K above bath water in accordance with VDI 2089)	32 °C	32 °C	32 °C
Absolute moisture content in the swimming room in accordance with design	15 g/kg	15 g/kg	15 g/kg
Heat costs per year excluding transmission losses	€ 15.221	€ 10.966	€ 0
Total electricity costs fans and heating costs	**€ 40.115**	**€ 24.598**	**€ 0**

7. Total costs with Heat pump option

Air handling unit equipped with an external heat pump ?	YES	NO	NO
Heat pump total heating capacity condensor	125 kW	kW	kW
Power consumption of the heap pump	30 kW	kW	kW
Full load hours heat pump	3.500 hours	hours	hours
Net heat pump output (thermal - electric)	€ 14.310		
Electricity costs of fans on average total per year	€ 24.893		
Heat costs per year excluding transmission losses	€ 15.221		
Additional heat pump maintenance costs + depreciation of heat pump	€ 4.150		
Total of Electricity, Heat and Maintenance costs	**€ 29.954**		

8. CO2 emissions

CO2 emissions per year power consumption fans	70.242 kg	38.466 kg	0 kg
CO2 emissions per year power consumption heat pump	68.145 kg	0 kg	0 kg
CO2 emissions per year heating gas	42.075 kg	30.313 kg	0 kg
Total amount of CO2 per year	**180.462 kg**	**68.779 kg**	**0 kg**

9. Payback periods

Payback time AHU2 compared to AHU1	0,00 year
Payback time AHU3 compared to AHU2	no
Payback time AHU3 compared to AHU1	no

Remarks: The payback times have been calculated using the "SPOT" method in accordance with ISSO publication 11. Heat pump assumption: generated heat can be used. For each of the above AHU concepts, further heating of the supply air must cover the transmission losses. The same goes for the heating of the bath water. Since this amount of heat required is the same for each concept, this has been left out of the equation. CO2 emissions in accordance with www.milieubarometer.nl. This calculation has been drawn up with the greatest possible care, but the results are indicative and intended as a good comparison between different AHU concepts.

Knowledge Center Rosenberg v1.0, 30 okt 2020

LIBERTY
Composite Air Handling Units
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CLIMATE NEUTRAL

In order to guarantee well-designed and efficient air handling units, we are EUROVENT certified. This enables us to design with certified and minimal energy consumption, along with the corresponding reduction in CO_2 emissions.

"THE CARBON FOOTPRINT OF COMPOSITE IS MORE THAN HALF (54% !) LOWER THAN METAL."
Source: EUCia

Thanks to our focus on energy use, we are able to exceed the European Ecodesign legislation 1253/2014, resulting in lower energy use and associated lower CO_2 emissions: essential for achieving climate neutrality. Helping you with these energy-conscious decisions, we can support you with detailed Life Cycle Cost calculations.

MATERIALS

Our modular designs allow for easy adjustments and partial replacements, providing flexibility for renovations and extending the lifespan of your installation.

The hygienic inner wall is composed of 80% granules from recycled consumer and industrial waste (PCR/PET), compliant with legislation (EC) 1935/2004 and (EU) No 10/2011.

Our knowledge center is dedicated to enhancing circularity and increasing the use of sustainable materials.

THE UP TO 40% LOWER WEIGHT HAS A POSITIVE EFFECT THROUGHOUT THE CHAIN.

Bureau Veritas Certification

Certificaat van Goedkeuring
uitgereikt aan
HC Groep B.V.

Tielenstraat 19, 5145 RC Waalwijk, Nederland
KvK nummer: 17260502
Bedrijfsgrootte: Midden
Organizational Boundary: Zie Appendix

Bureau Veritas Inspection and Certification The Netherlands B.V. verklaart dat het managementsysteem van bovengenoemde organisatie beoordeeld en in overeenstemming bevonden werd met de eisen van de norm zoals hieronder vermeld.

Norm

CO2 - bewust Certificaat niveau 3
Versie 3.1
Het managementsysteem voor het CO2-bewust handelen van HC Groep B.V. voldoet aan niveau 3 van het handboek CO2-Prestatieladder versie 3.1

Toepassingsgebied

Aansturen en beheren van bedrijven welke actief zijn op het gebied van binnenklimaattechniek, ventilatie- en luchtbehandeling, welke zijn opgenomen op de appendix van dit certificaat.
NACE Code: F43.22

Initiële goedkeuringsdatum: 1 juni 2023
Vervaldatum vorige cyclus: N.A.
Certificatie/Hercertificatie audit datum: 23 februari 2023
Certificatie/Hercertificatie start datum: 1 juni 2023
Behoudens een voortdurende effectieve werking van het managementsysteem van de genoemde organisatie, vervalt dit certificaat op: 31 mei 2026

Verdere toelichting met betrekking tot de scope van dit certificaat en de toepasselijkheid van de managementsysteem eisen, kan worden verkregen door contact op te nemen met de gecertificeerde organisatie.

Om de geldigheid van dit certificaat te controleren kunt u bellen naar: +31 (0) 88 450 5520

Certificaatnummer: NL026134 Versie: 1 Revisiedatum: 1 juni 2023

Anton Kovalsch – Director Certification Benelux

Kantoor beheer: Bureau Veritas Inspection and Certification The Netherlands B.V. Plotterweg 38, 3821 BB Amersfoort
Kantoor uitgifte: Bureau Veritas Inspection and Certification The Netherlands B.V. Plotterweg 38, 3821 BB Amersfoort

ABOUT US

Since our start in 1983, we have supplied a wide range of fans. After the successful introduction of composite roof fans, we started developing and producing the Liberty product line: our unique series of fully composite air handling units. The Liberty air handling units are successfully used in our Dutch home market and abroad in both new construction and renovation projects. In addition to the chemical and food industry, we are also strongly represented in non-residential construction, swimming pools and healthcare and educational institutions.

Our company pays a lot of attention to quality and innovation. We hold relevant certifications for this purpose, including ISO 9001 and Eurovent. With the use of our own assembly and production lines, custom-built is possible. By continuously developing products, investing in employee expertise and considering customer feedback, we are able to supply the market with energy-saving solutions that are designed and built to last.

Since 2023, we have become a subsidiary of the HC Groep, market leader in the field of indoor climate technology in the Netherlands.

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