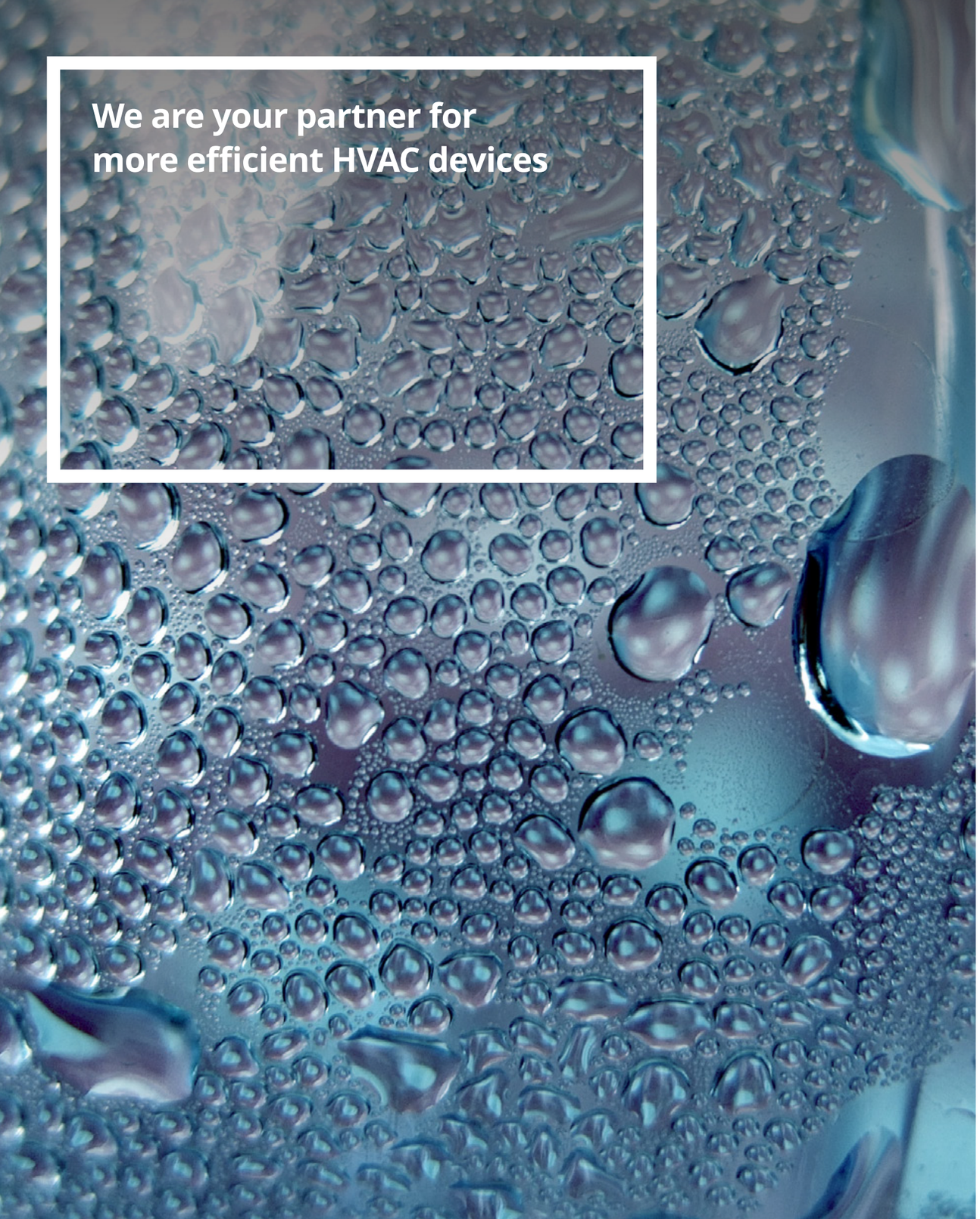
TECHNOFORM

Thermally optimized HVAC frames

Tailored engineering plastics solutions



Plastic solutions for thermal optimization

Our solutions for HVAC systems made of technical plastics

The application of plastic profiles as the frame structure in ventilation and air-conditioning (HVAC) equipment allows far better thermal properties than solutions made of metal.

Depending on the selected polymer, plastics have significantly better insulation properties due to their thermal conductivity that is **more than 870 times lower** than that of aluminum profiles.

Your benefits with plastics:

- better insulation than with metals
- minimization of noise emission
- highly reduced vibrations on housings
- weight reduction

Our special extrusion process enables the processing of numerous technical plastics. To produce our profiles, we select the material according to your individual requirements in order to achieve the optimum customer benefit.

Comparison of material properties

Material properties	Unit	Thermoplastics		
		PA 6.6 GF25	PBT GF30	SAN GF35
Tensile module	MPa	4500	9800	12000
Failure stress	MPa	120	140	150
Deformation resistance temp. (1.80 MPa)	°C	245	215	104
Coefficient of lin. therm. expansion (parallel)	E-6/K	25-35	23	25
Density	kg/m³	1320	1530	1360
Heat conductivity	W/m*K	0.34	0.27	0.215
Electrical resistance	Ω*cm	10^13	10^14	10^14
Moisture absorbency	%	1.5-1.9	0.2	0.25
Charpy impact strength (23 °C)	kJ/m²	40	70	4

Making a decision

PA solution

- More suitable for interior applications
- Cost-efficient standard material
- Linear expansion adjustable to that of aluminum
- Average temperature stability
- Average strength
- High impact strength: absorption of kinetic energy
- Electrically insulating

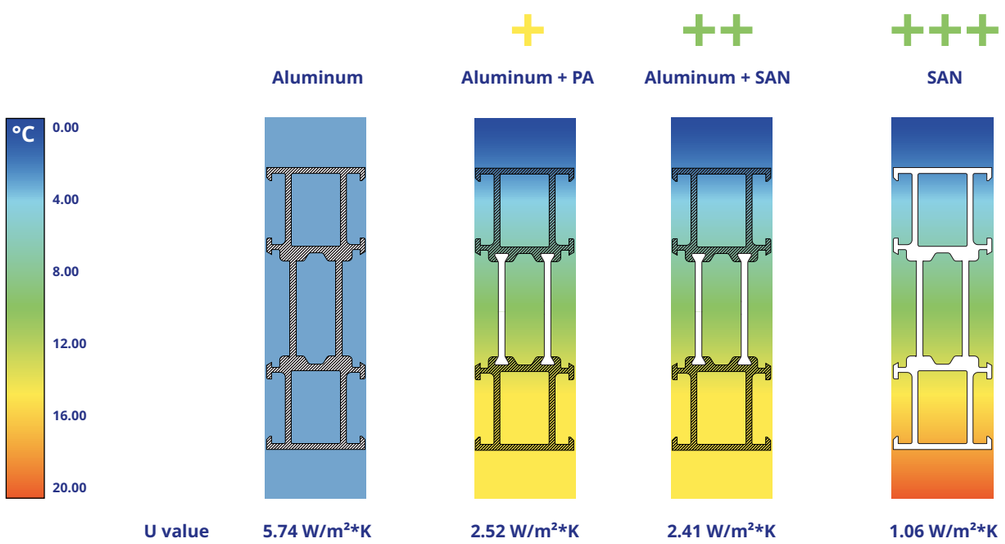
PBT solution

- Suitable for humid environment
- Stable mechanical properties under temperature fluctuation
- Good resistance against cleaning agents
- Good mechanical properties
- Linear expansion adjustable to that of aluminum
- High impact strength: absorption of kinetic energy
- Electrically insulating

SAN solution

- Very good thermal insulation properties
- Good mechanical properties
- Weight reduction by lowering the amount of material
- Very good UV resistance
- Good thermal deformation resistance
- Very good gluing and screwing properties
- Electrically insulating

Thermal insulation of different systems*



* Test setup with systems for thermal insulation made of purely metal, metal/plastics combination and purely plastics. The colour gradient represents the thermal transfer in the system between 0 °C outside and 20 °C inside according to DIN EN ISO 10077-2.

Benefits

- Better thermal insulation than aluminum
- High mechanical resilience
- Protection against condensation
- Avoiding the heat-bridge symptom

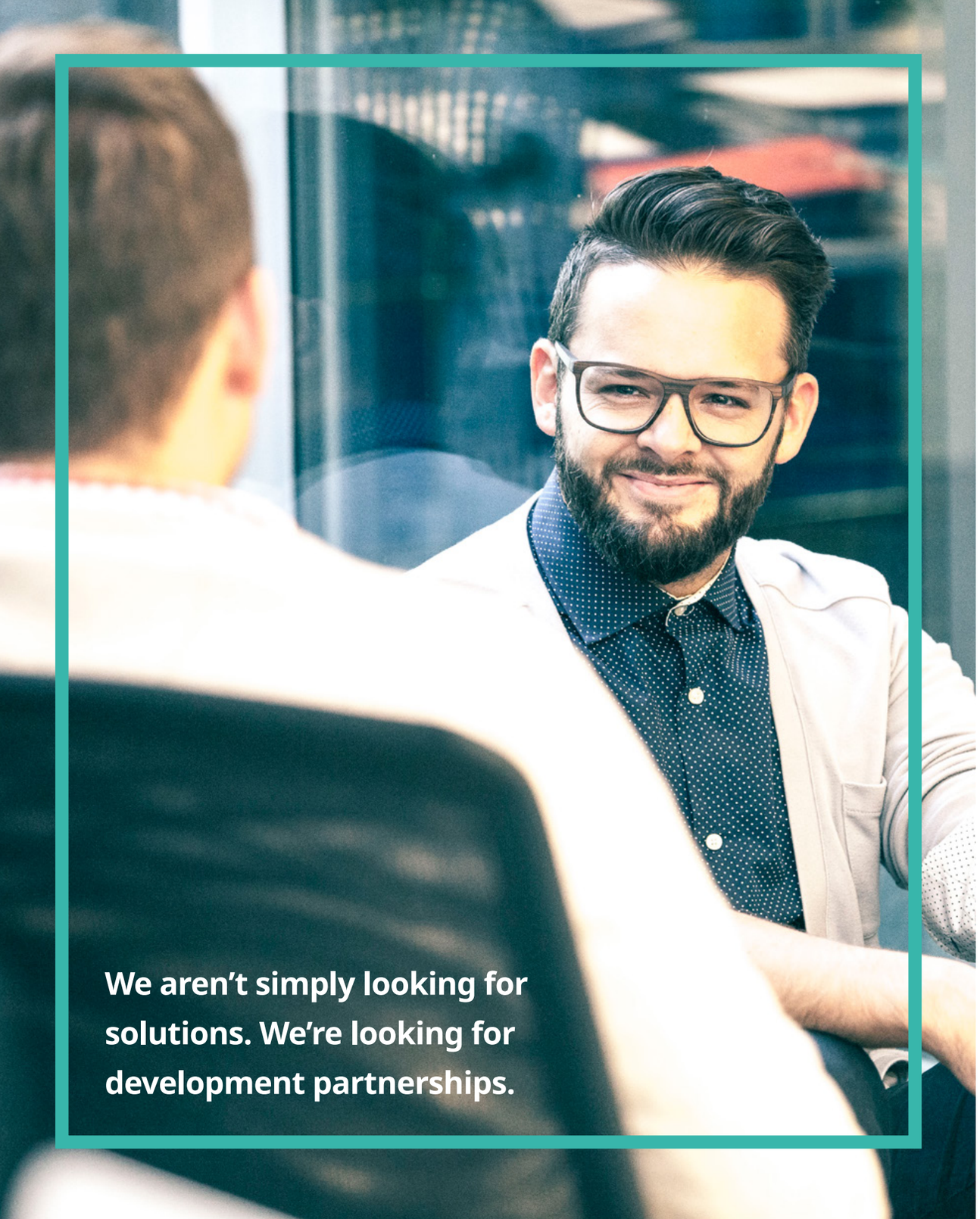
Additional optimization options

- Individual colouring with completely dyed material
- High resistance to weather and UV radiation by adding certain additives
- Mating: gluing and screwing together, welding
- High complexity of the geometry possible in solutions made entirely of plastic

Heating, ventilation
and air conditioning

Material properties	Unit	Pure metal	Metal-plastic		Pure plastic
		Aluminum	Aluminum PA	Aluminum SAN	SAN
Weight	g/m	1471	1287	1292	741
Deflection*	mm	0.1	0.6	0.5	2.1
Thermal cond. coefficient	W/m²*K	5.74	2.52	2.41	1.06
Thermal conductivity	W/m	3.45	1.51	1.44	0.66

*** Assumption of bending under central point load of 500 N with a profile length of 1 m.**



Heating, ventilation
and air conditioning

Services

- Technical thermoplastics with outstanding insulation properties
- Use of different plastics depending on each case of application
- Solutions made of metal combined with plastics and those made entirely of plastic
- Calculation of the profile in terms of thermal transmittance value, loading conditions or other parameters

Market leadership

As market leader in the field of thermal insulation of windows, doors and facades, Technoform is also the right project partner for thermal projects in other sectors. Ranging from the thermal layout and the design of the profile to virtual application simulations, each of our customized insulating plastic profiles benefits from intra-group knowledge exchange.

With us you have a partner for HVAC systems who offers you the highest expertise in thermoplastic extrusion. We develop profiles in any desired geometry with the right properties based on your requirements.

For you, we are looking for:
- New materials
- Optimization of existing materials
- Optimal customer benefit
- Best price-performance ratio

Automotive

Aviation

Chemical Industry

Construction

Electrical Engineering

Insulating Glass

Lighting

Machine Construction

Oil & Gas

Power Generation

Railway

Seawater Desalination

Shipping

Ventilation/
Air Conditioning

Windows/
Doors/Facades

› Haven't found your industry? Ask us.

We love to innovate your industry.

Originally started with tailored plastic profile solutions, Technoform has always been opening up new business fields – and still does. Providing holistic know-how and technical expertise, we are a trusted partner and problem solver for various industries today, from construction and insulating glass to automotive and aviation, from oil and gas to wastewater treatment and seawater desalination.

Our promise: consistent high quality and fastest delivery times, from the initial idea to the first sample, from pilot lot to serial production. You're looking for a plastics extrusion specialist? We make your task our own.

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