

Collecting Pipes



Diffuser Silencers



Dump Tubes

GLAUNACH
www.vent-silencer.com



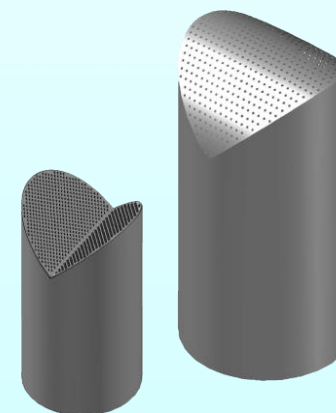
Absorbing
Silencers



Inline Silencers



Micro Silencers



Fishmouths

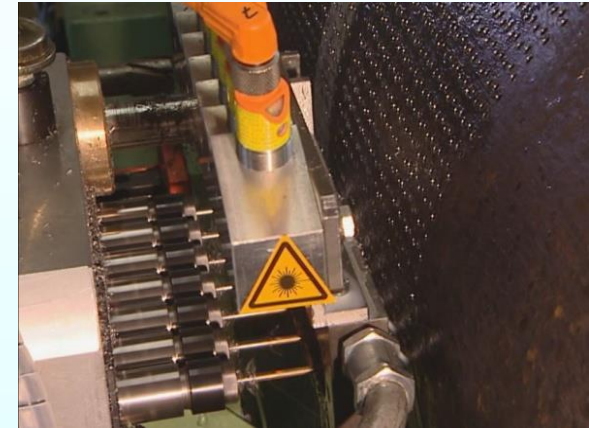
NOISE CONTROL FOR DISCHARGING STEAM AND GAS





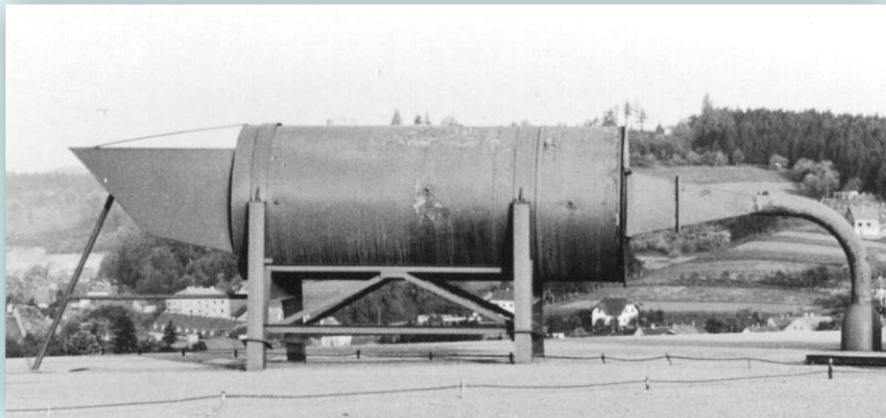
GLAUNACH GMBH
Klagenfurt AUSTRIA





carbon neutral
production
by solar power

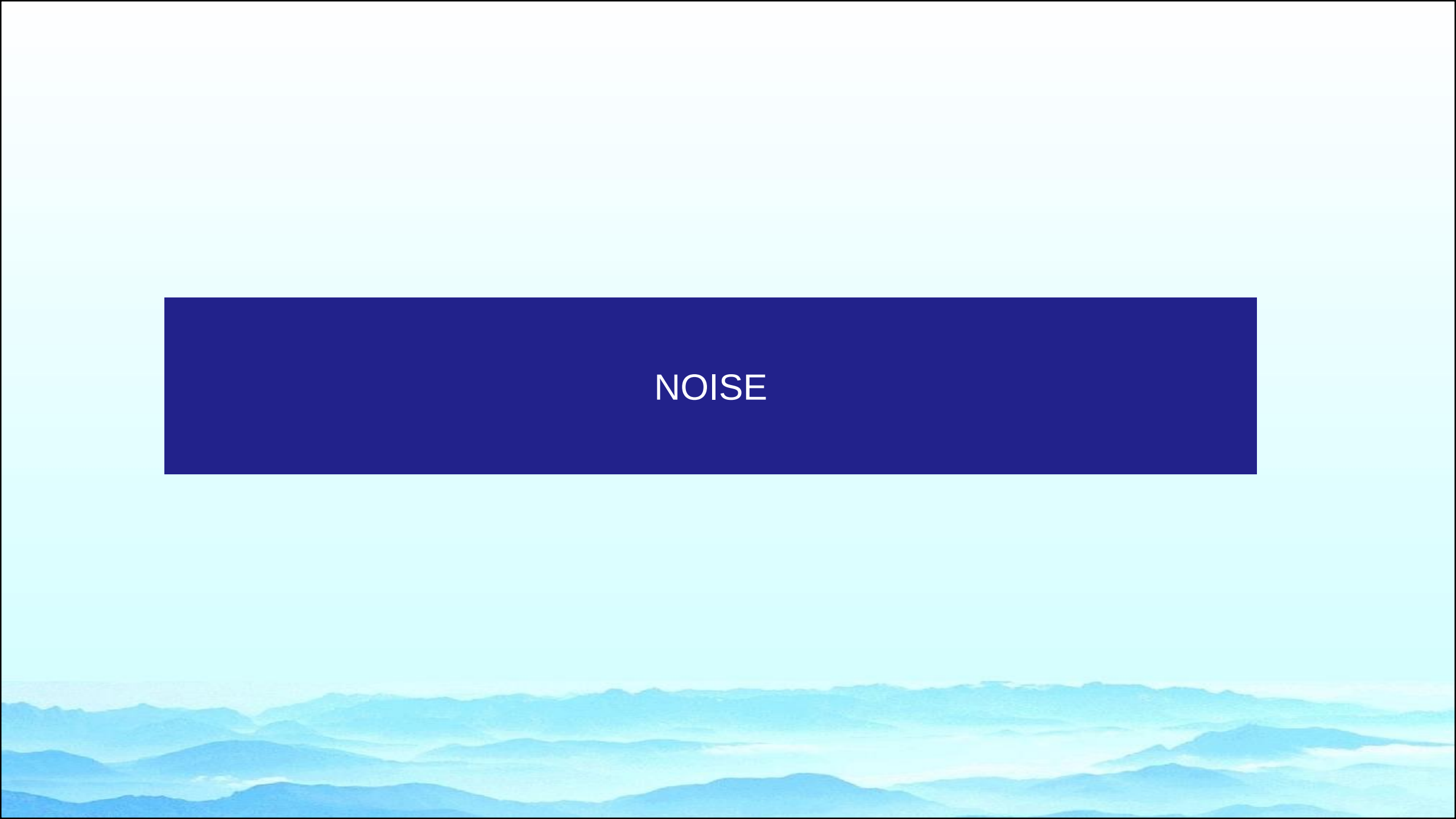
- More than 60 years of research & development has resulted in a unique vent silencer design.
- Extensive data bases have been developed with ongoing enhancements.
- More than 10000 Glaunach silencers are in operation worldwide.



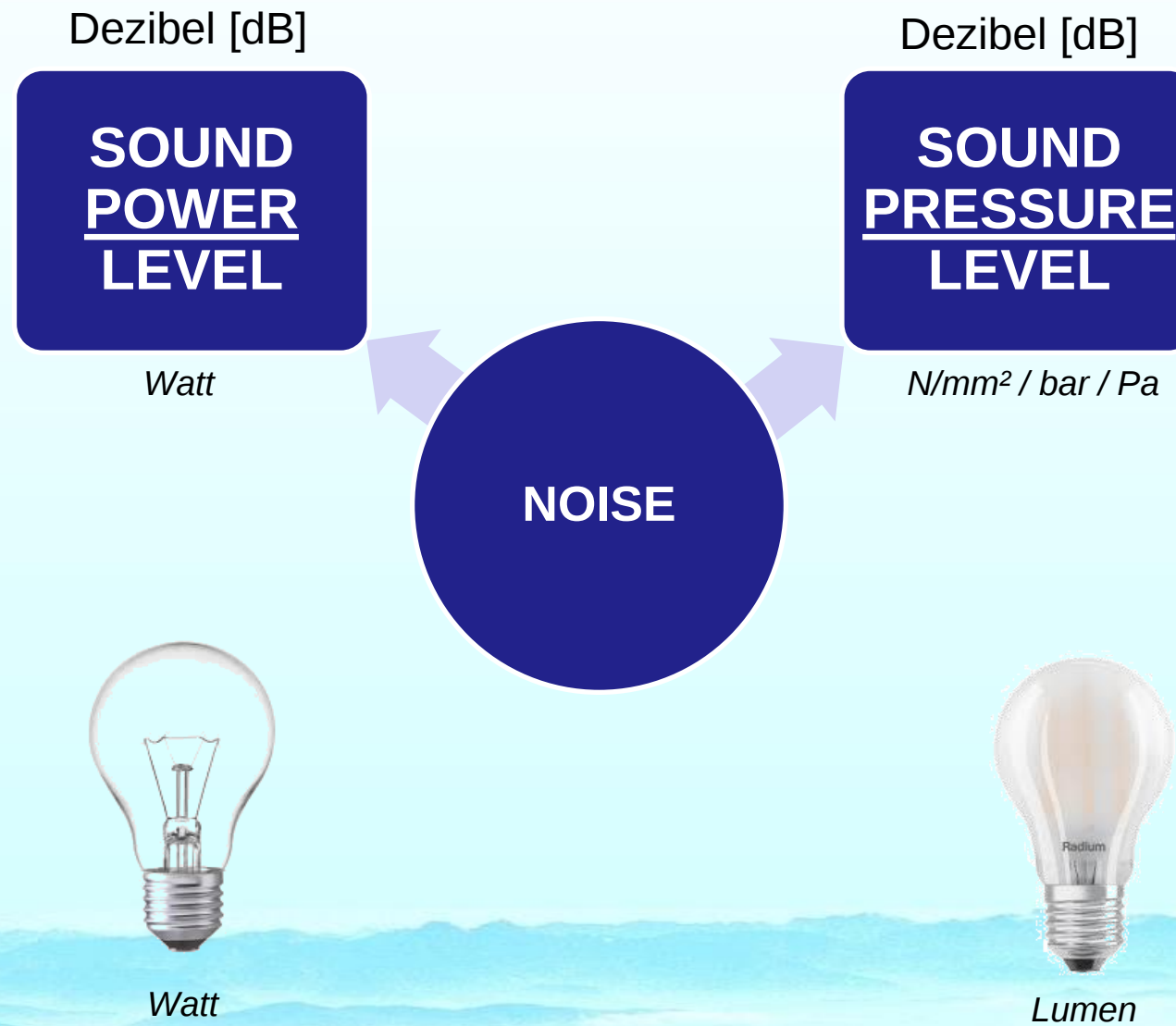
1950

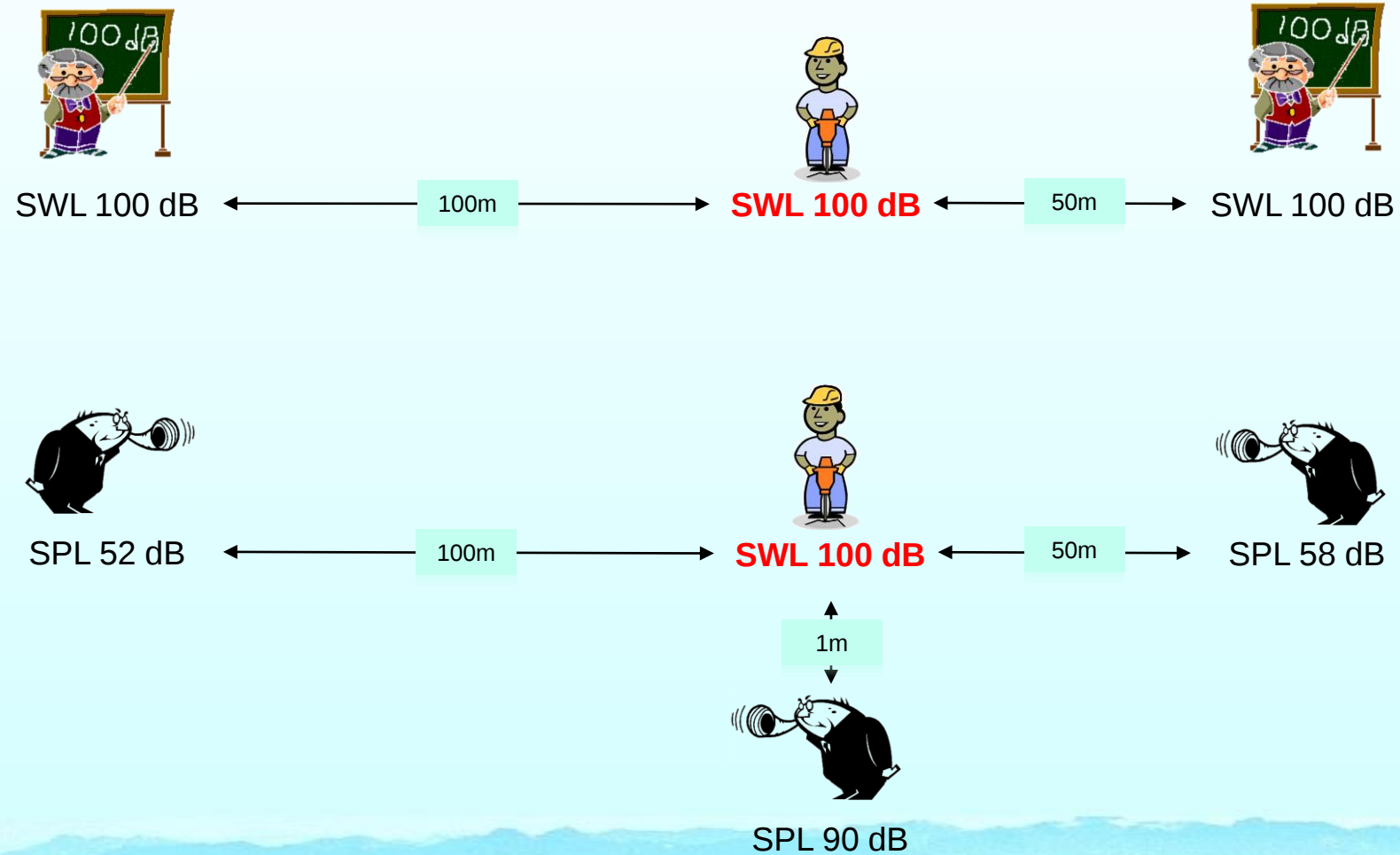


TODAY

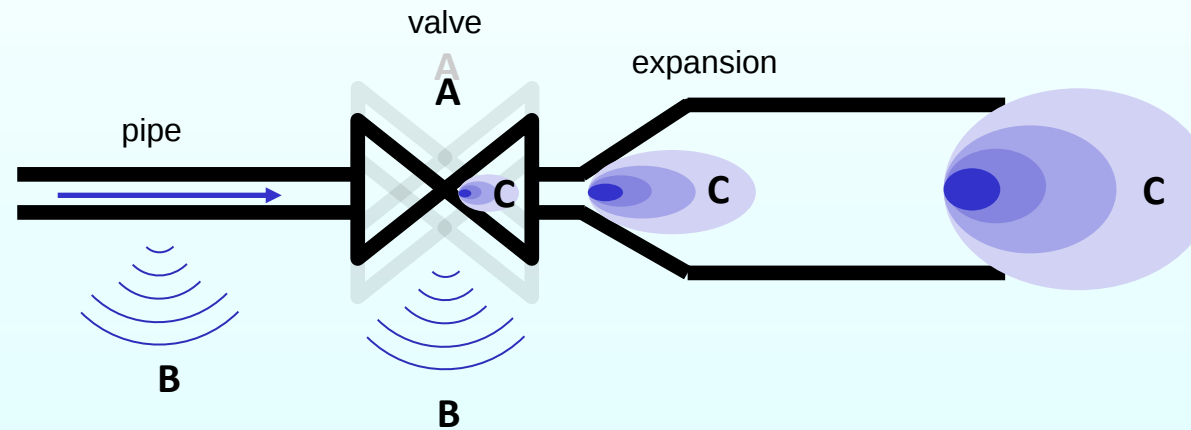
The background of the slide features a misty, layered mountain range in shades of blue and teal, creating a sense of depth and tranquility. A solid dark blue horizontal bar is positioned in the upper-middle section of the slide.

NOISE



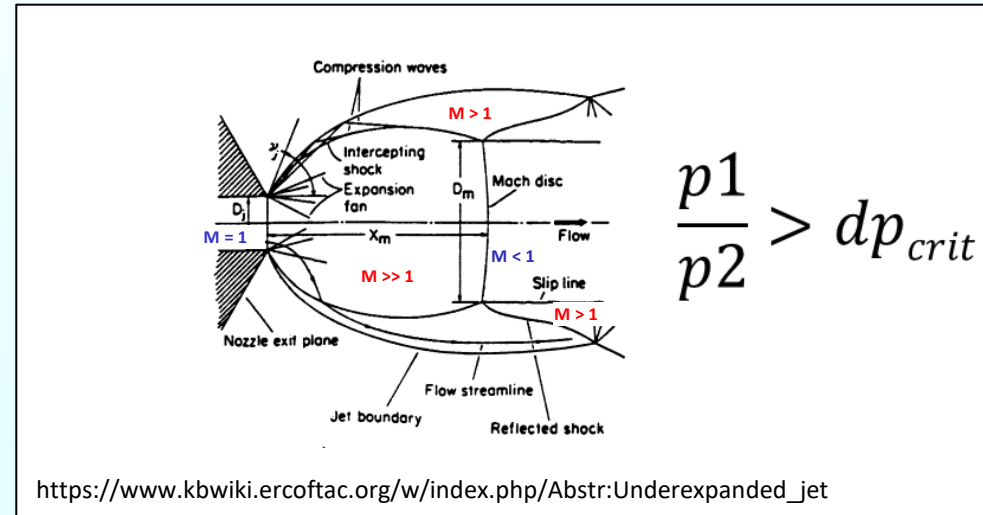


Noise Source	Sound Power Level	Sound Pressure Level	
	dB	dB	distance
normal conversation	55	50	1m
vent silencer	120	100	1m
freight train	130	120	1m
hard-rock-concert	140	130	1m
alarm siren	150	120	30m
jet plane taking off	160	140	50m
valve	170	160	1m
space rocket during lift off	180	120	5km



- A.** Structure-Borne Sound (vibrations and pulsations)
- B.** Flow induced noise (pipes and valves with max. MACH 1)
- C.** Shock Waves (under-expanded jets with high MACH numbers)





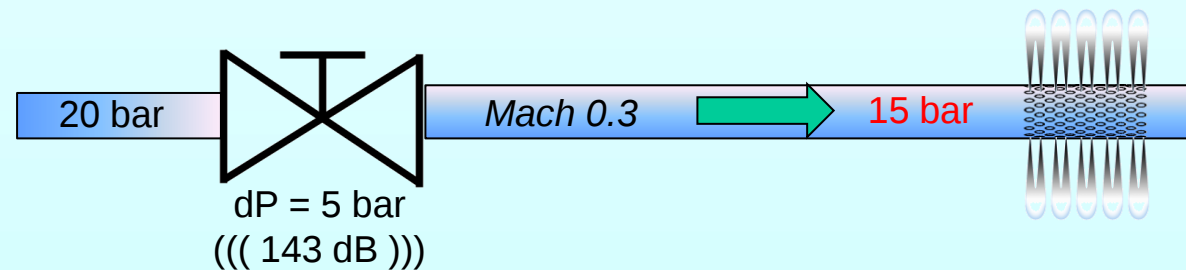
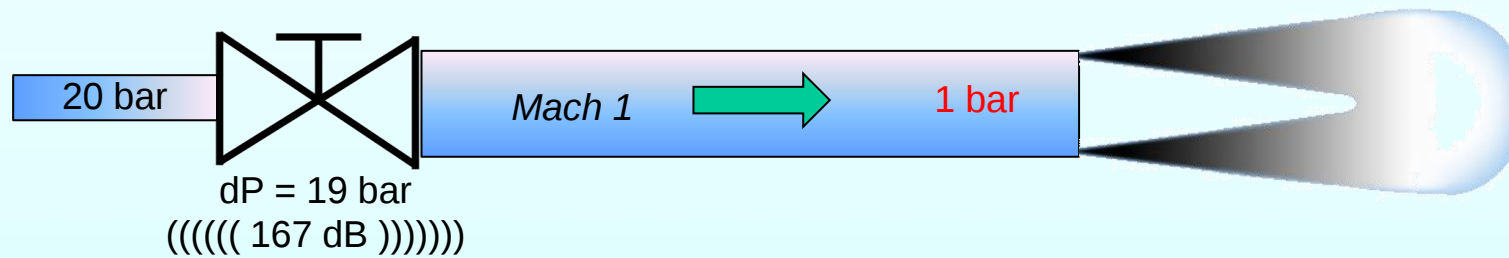
under-expanded jets (shock waves)

For high pressure nozzles the near field of under-expanded jets is characterized by a well-known structure constituted by an intense expansion with a high Mach number, which ends in a normal shock, the mach-disk and a surrounding barrel shock

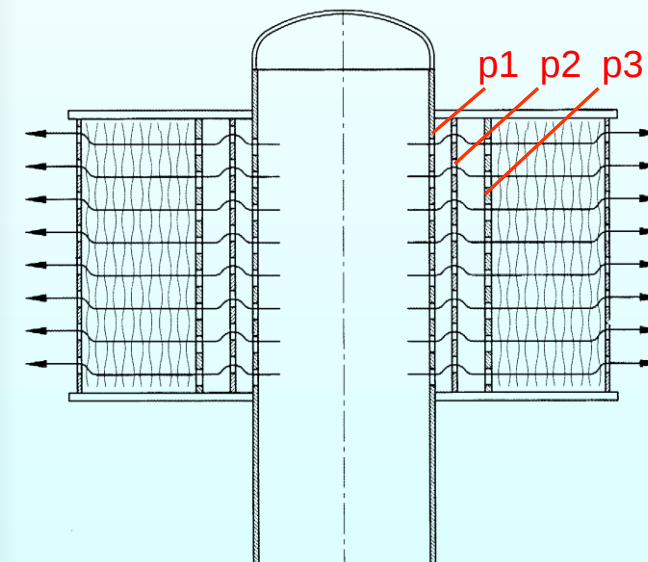
up to MACH 7

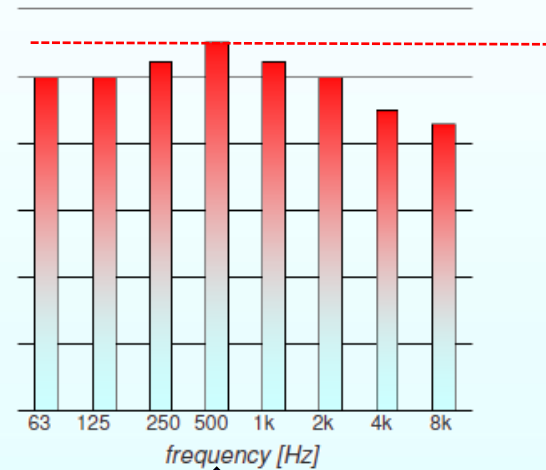
PRESSURE TRANSFER

- higher pressure at blow off pipe = smaller diameter
- less velocity at blow off pipe = less flow noise
- less pressure drop at valve = less valve noise



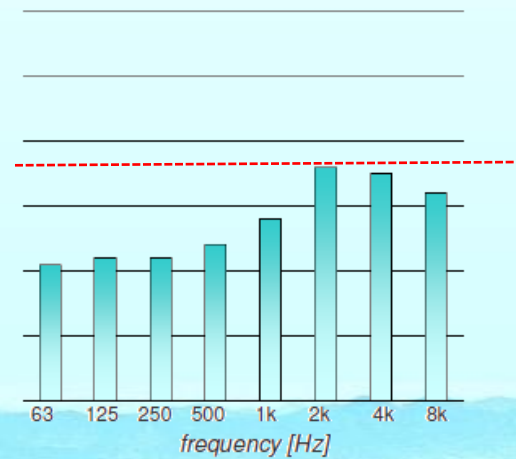
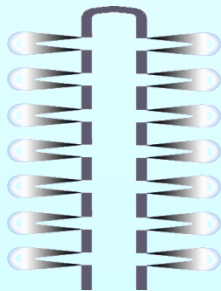
dp_{critical} = CRITICAL PRESSURE DROP for Mach 1





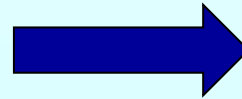
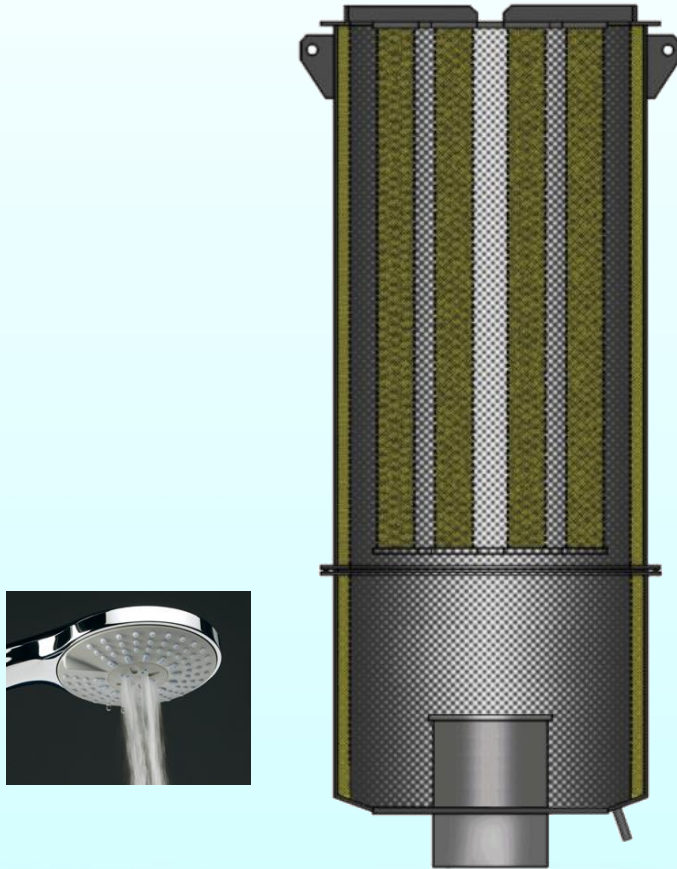
PEAK FREQUENCY SHIFTING

the peak frequency is shifted to higher values,
which significantly helps for further noise
reduction

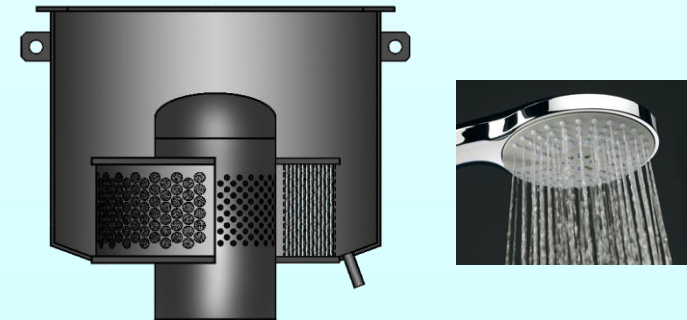


VENT SILENCERS

ABSORBING SILENCER



DIFFUSER SILENCER



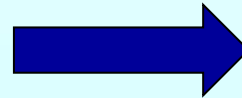
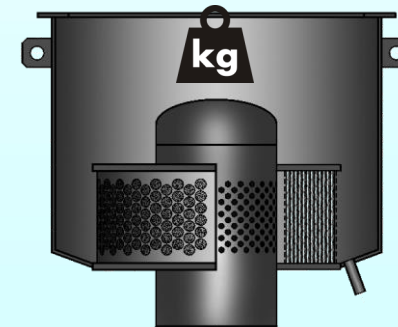
ABSORBING SILENCER



SMALLER SIZE

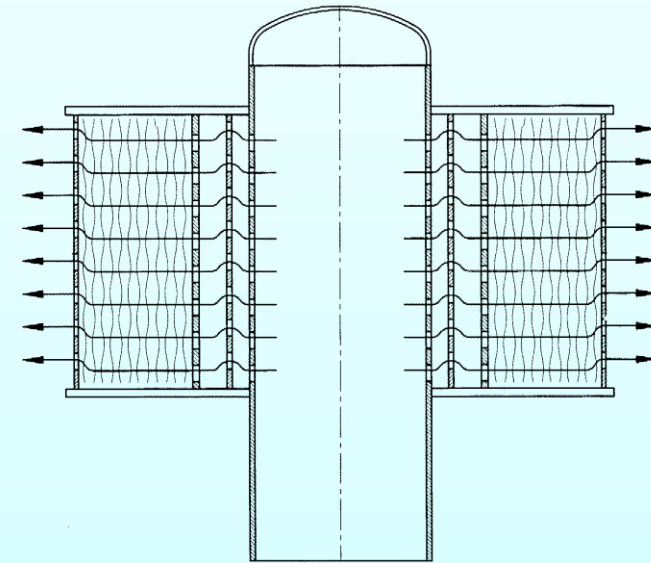
- = less weight
- = less construction work
- = less installation costs

DIFFUSER SILENCER



DIFFUSER SILENCERS

gas expands through several drilled diffuser pipes and a woven stainless steel wire mesh



TYPE D



diffuser silencers

up to 50 dB noise reduction

TYPE DA

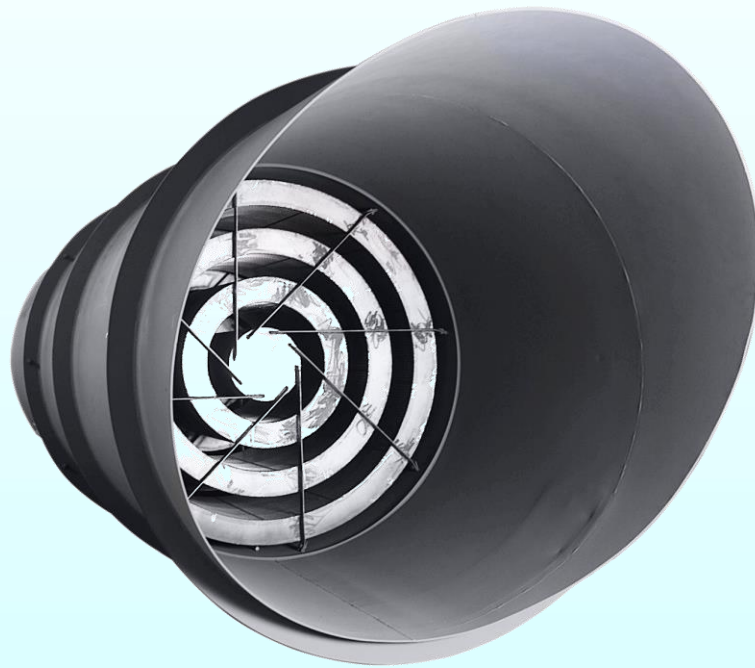


diffuser silencers

up to 50 dB noise reduction

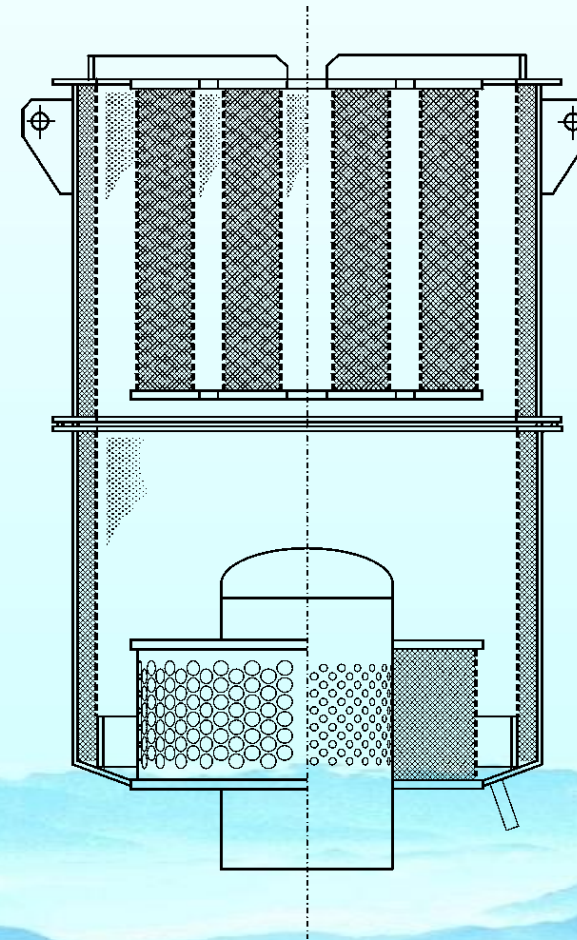
with noise absorbing shell insulation

TYPE DAA

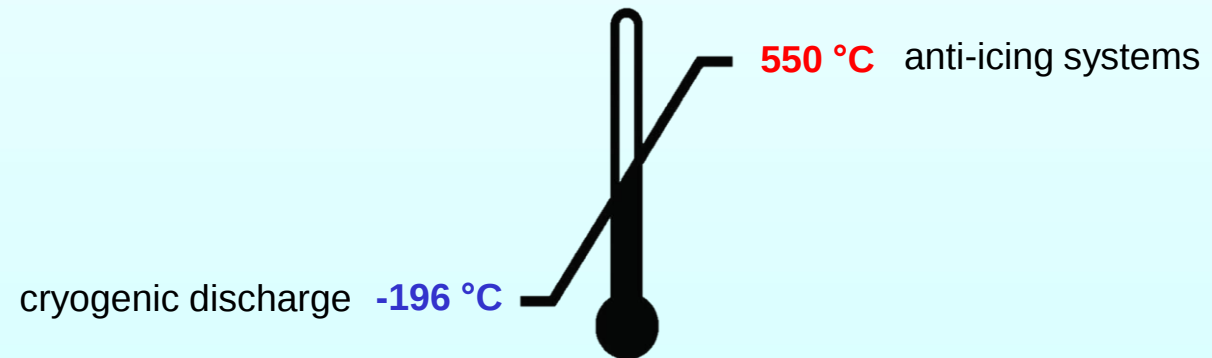


combined diffuser & absorbing silencers

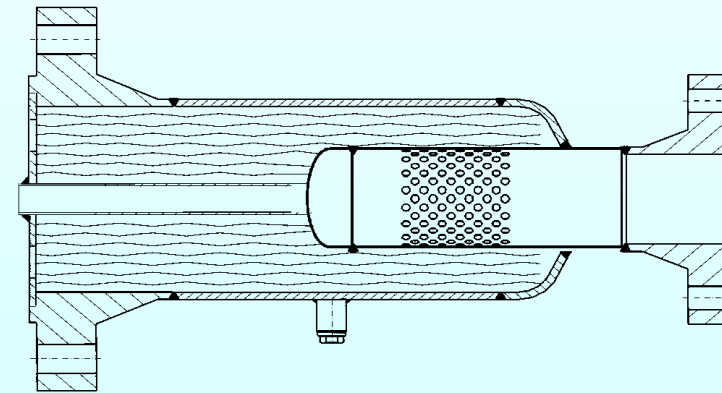
> 50 dB noise reduction



Micro Silencers Cryo-Gas and Anti-Icing



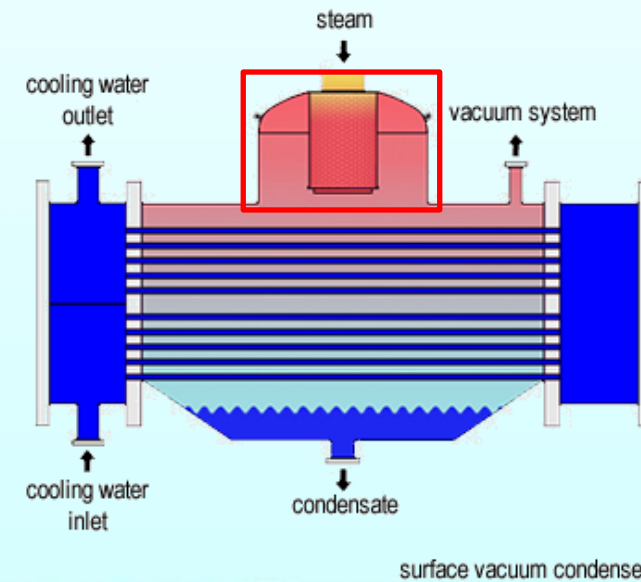
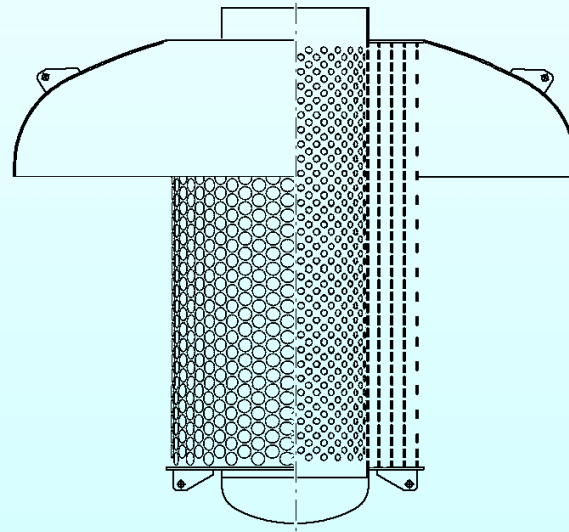
INLINE



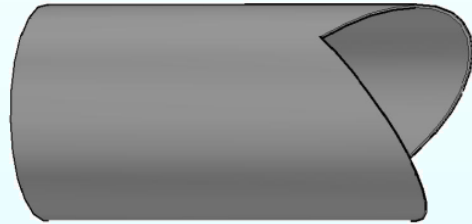
DUMP TUBES



for air cooled condensers
redirection of the gas flow
temperature control
pressure control

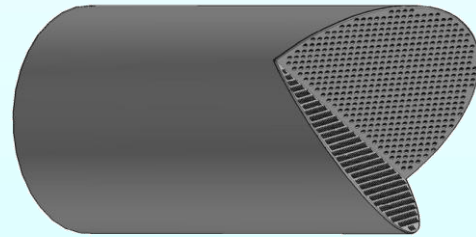


FISH MOUTH

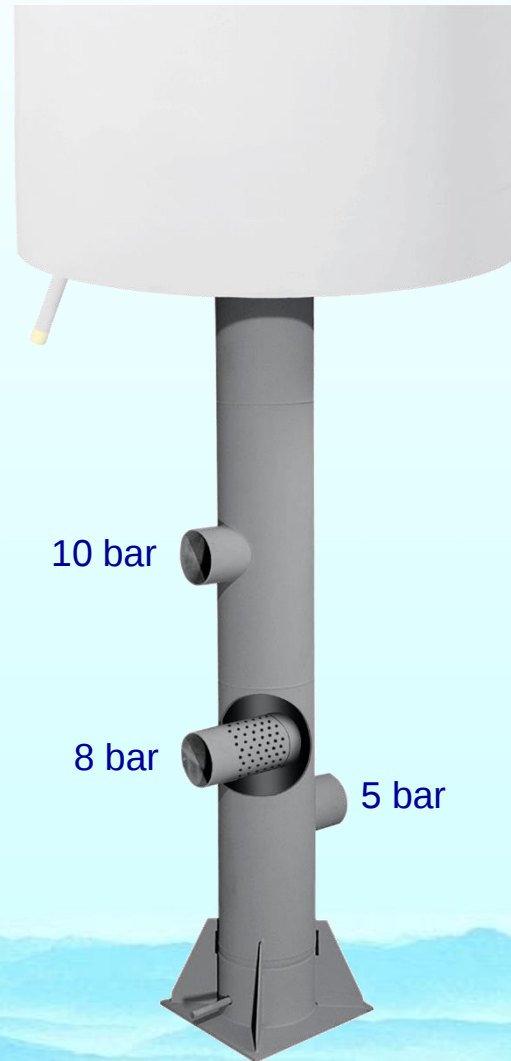


increasing cross-sectional area

at unchanged pipe diameter

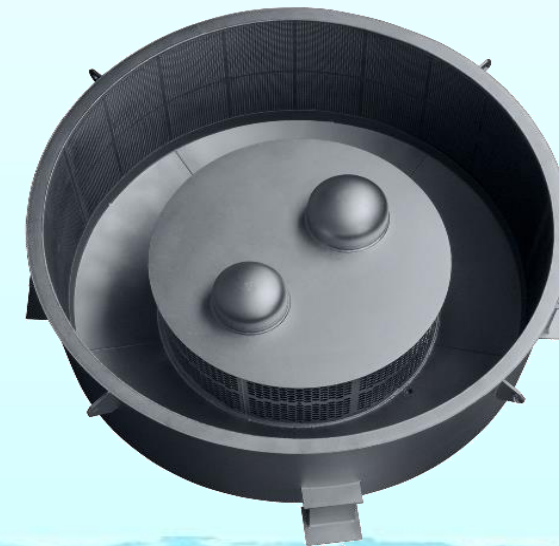


INLET MANIFOLDS



different inlet pressures
simultaneous flow
temperature control
pressure control
noise reduction

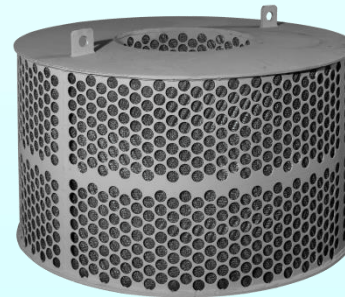
MULTIPLE INLETS



RENTAL SILENCERS



for maintenance
e.g. cleaning pipes, start up



all rental silencers are equipped
with an extras exchangeable diffuser cartridge

The background of the slide features a soft-focus, artistic rendering of a mountain range. The mountains are depicted in various shades of light blue and teal, creating a sense of depth and atmosphere. The peaks are rounded and layered, with some appearing more distinct than others, suggesting a misty or hazy environment. The overall tone is calm and serene.

VENT SILENCER ACCESSORIES

LIFTING LUGS



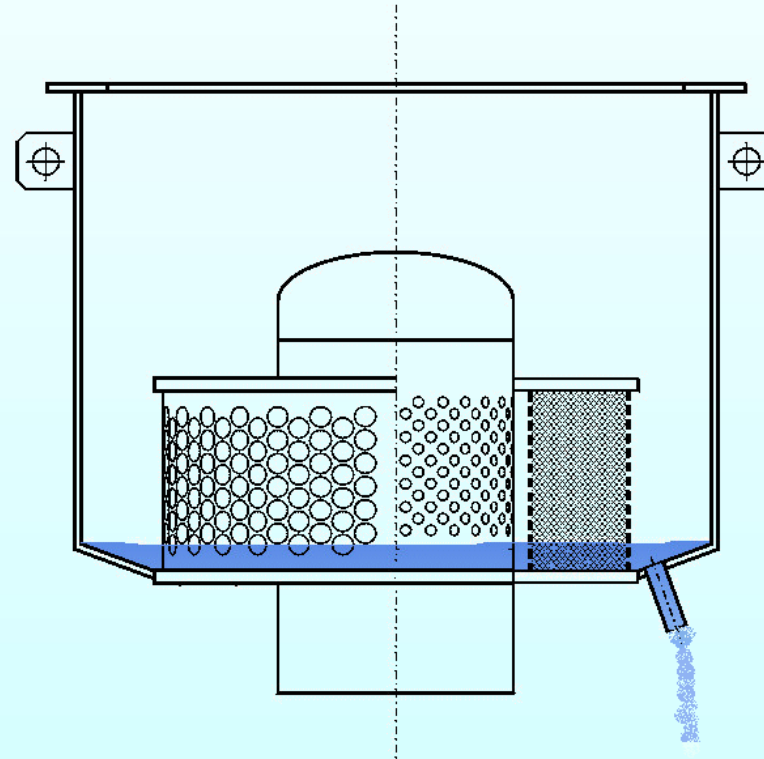
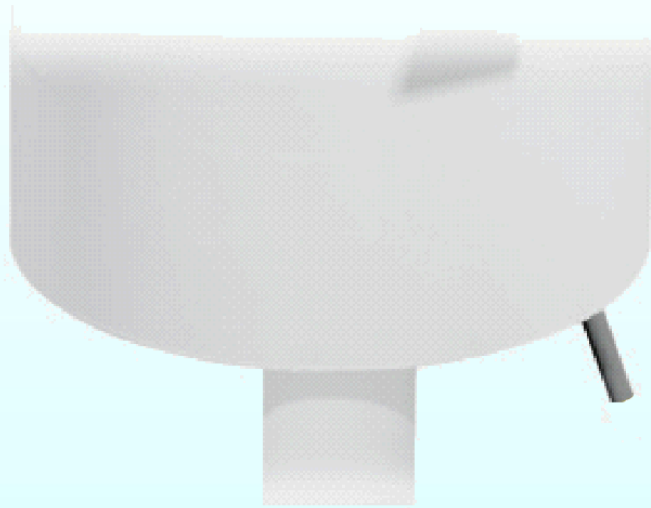
furnished on all units for ease of handling

NAME PLATES



made of anodized aluminum or
stainless steel

EXTERNAL DEWATERING



MOUNTING BRACKETS



LEGS



GOOSE NECKS



redirection of the gas flow

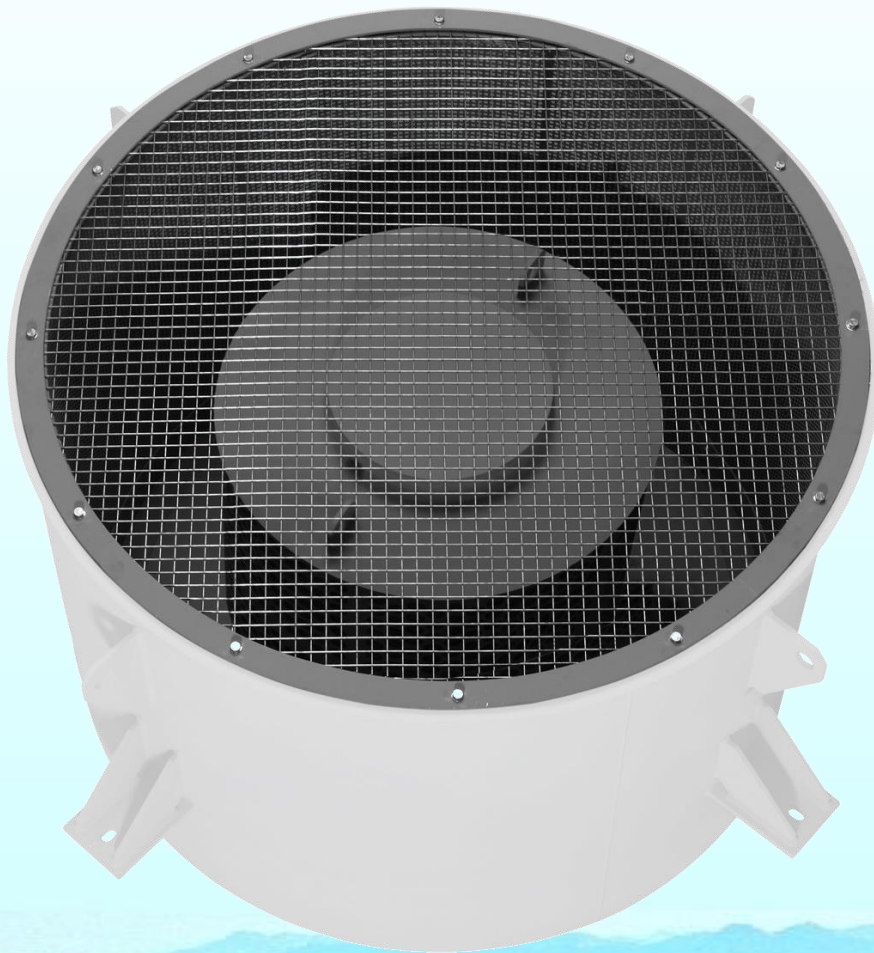
WEATHER HOODS



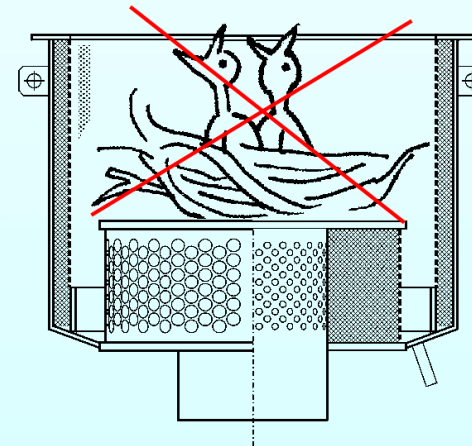
for heavy rain / snow fall



BIRD SCREENS



prevents birds from nesting
made from stainless steel



Bird Screen



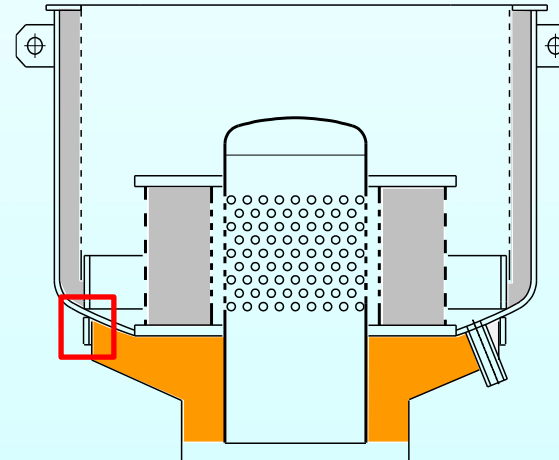
Big Birds

Combination of Goose-Neck and Bird-Screen
typically at sea side installations

EAVE RING



keeps rain water away from the inlet pipe.
connecting point for pipeline insulation.



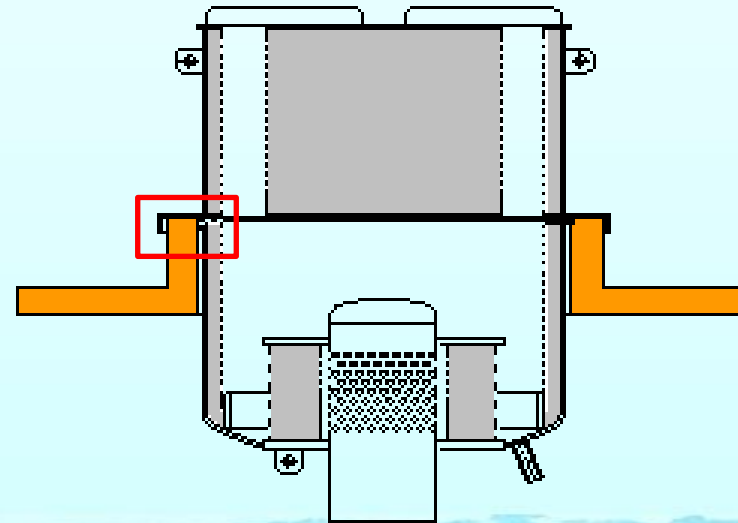
COLLAR SHEET



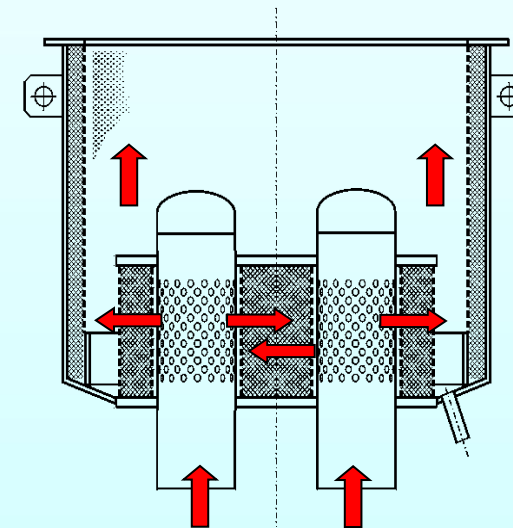
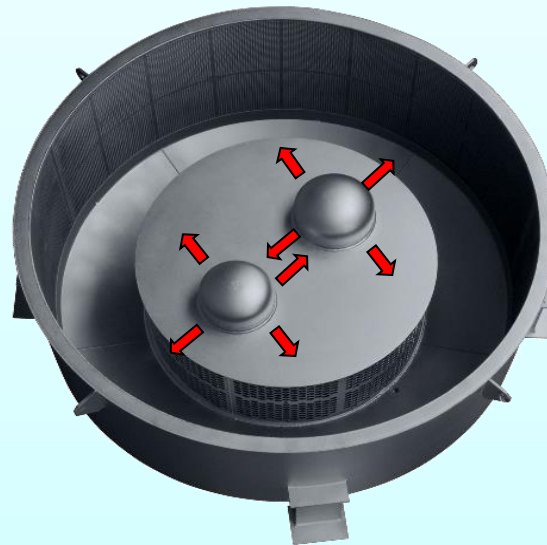
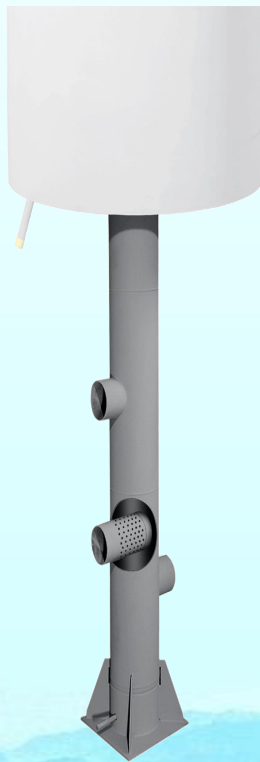
keeps rain water away from the silencer body.

connecting point for insulation.

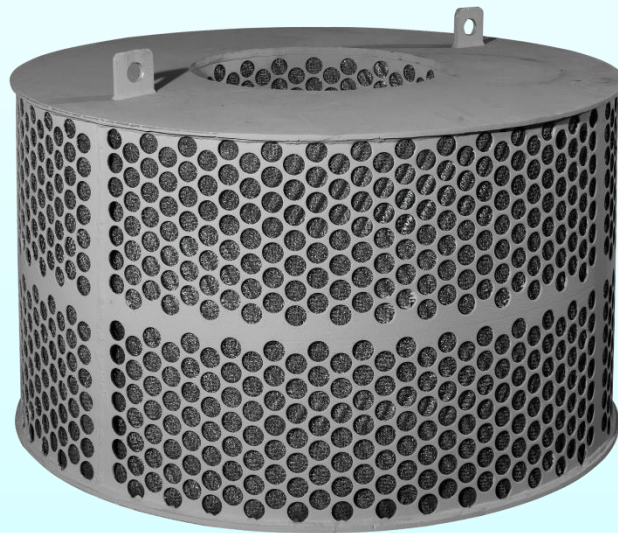
mounting support for in-roof installation. →



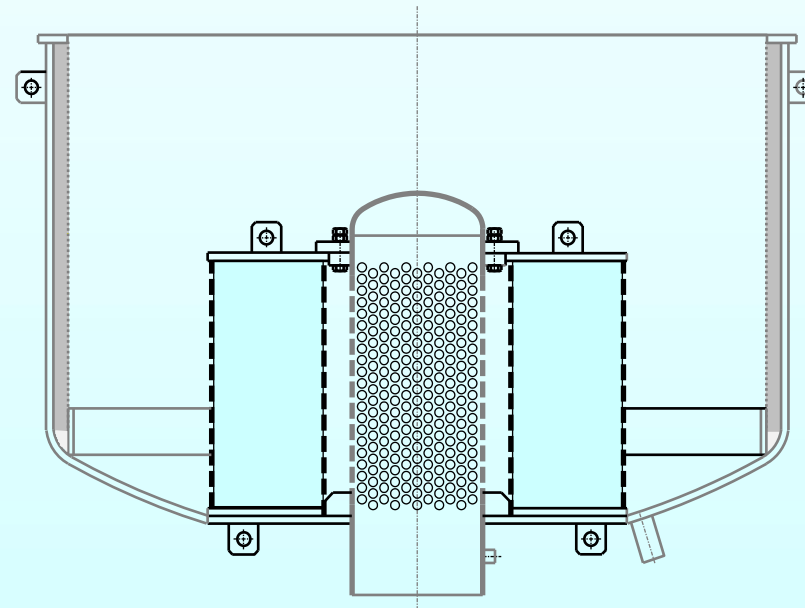
MULTIPLE INLETS



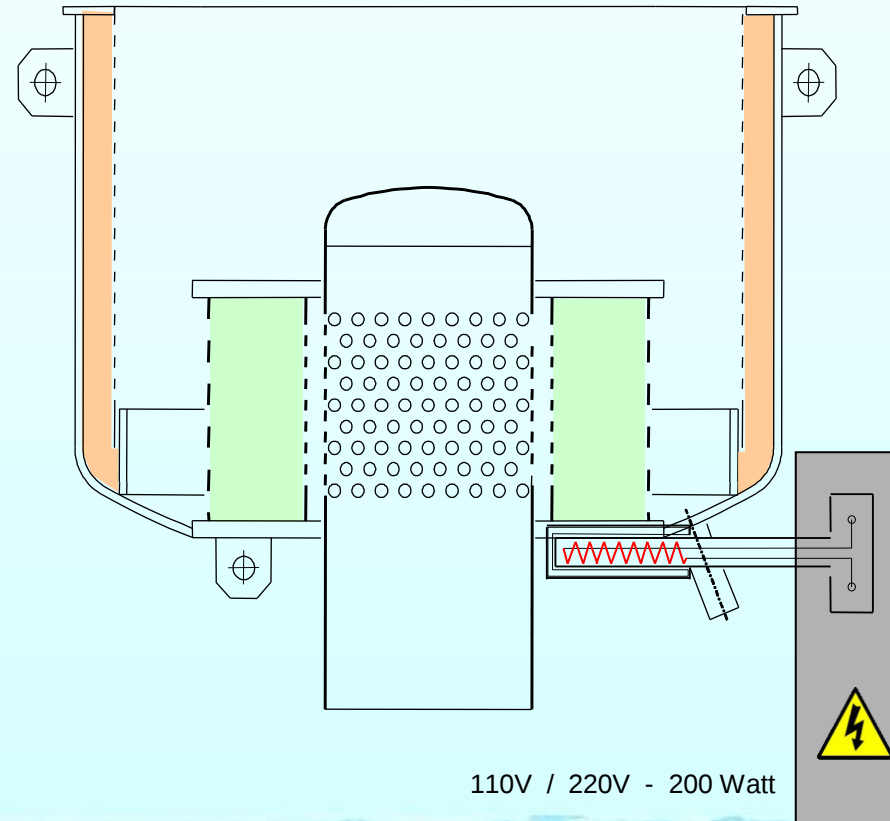
DIFFUSER CARTRIDGE



exchangeable diffuser cartridge
for fluids with impurities



HEATER

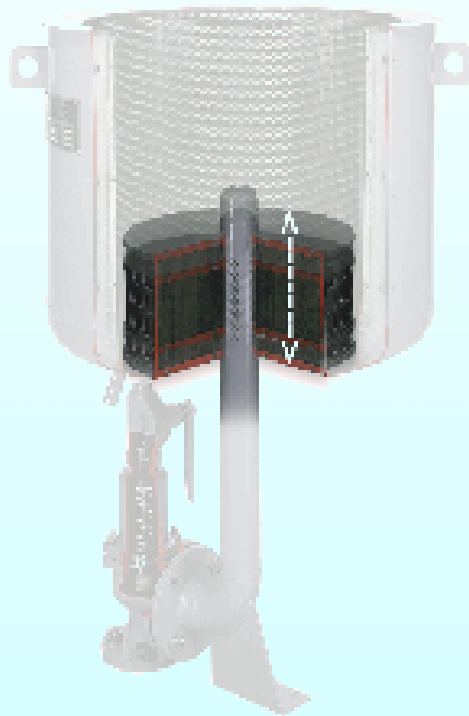


110V / 220V - 200 Watt

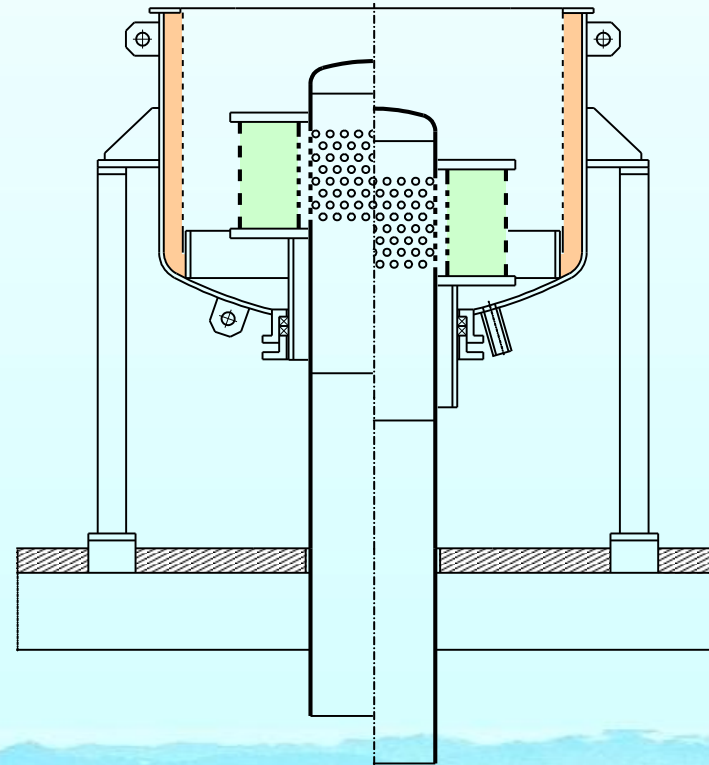
EXPANSION JOINTS



SLIDING DIFFUSER



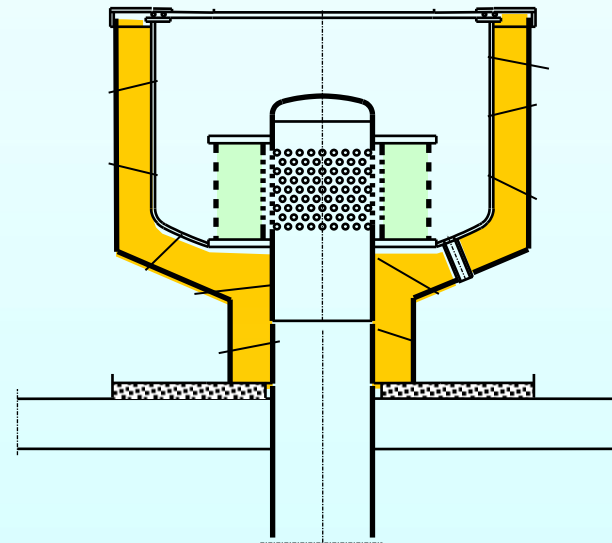
for vertical movements



INSULATION CLIPS

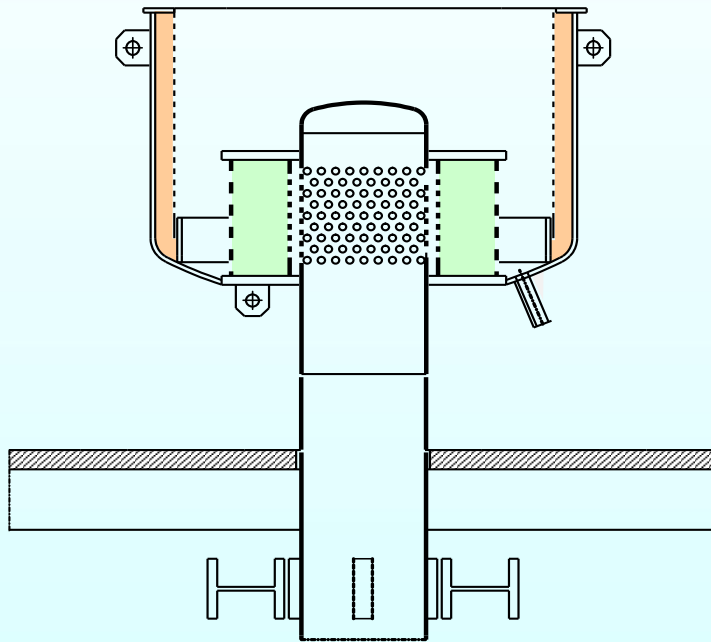


for fastening of supplementary insulation



INSTALLATION

ROOF-INDEPENDENT SUPPORT

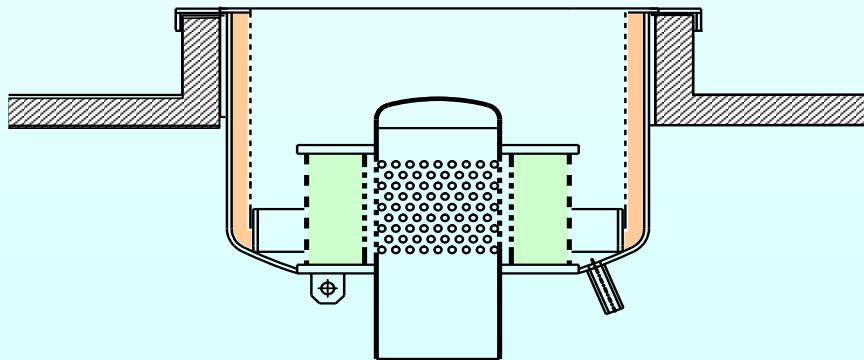


- no additional load is added to the roof structure
- silencer can freely move with thermal expansions

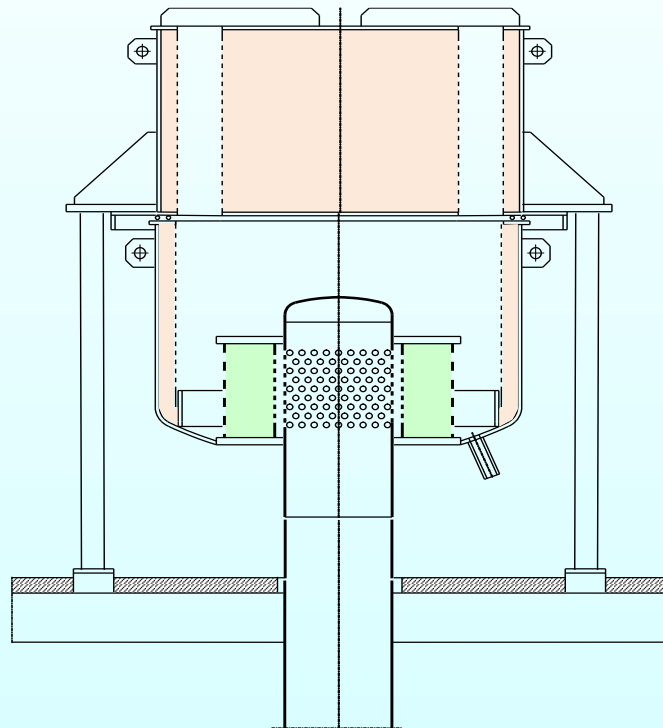


IN-ROOF SUPPORT

- reduces moment arm of wind forces
- requires less insulation material



ON-ROOF SUPPORT



for large and heavy silencers



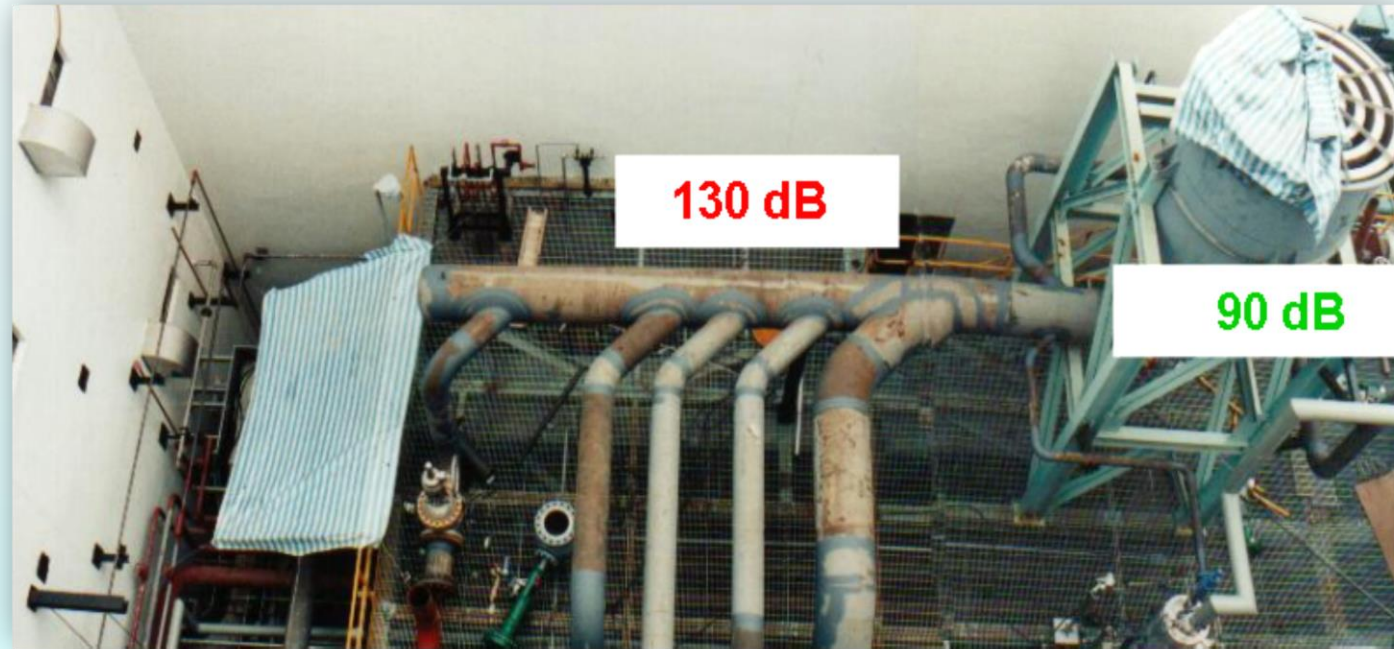
FAULT PREVENTION



insulated blow off pipe



no insulation
small blow off pipe



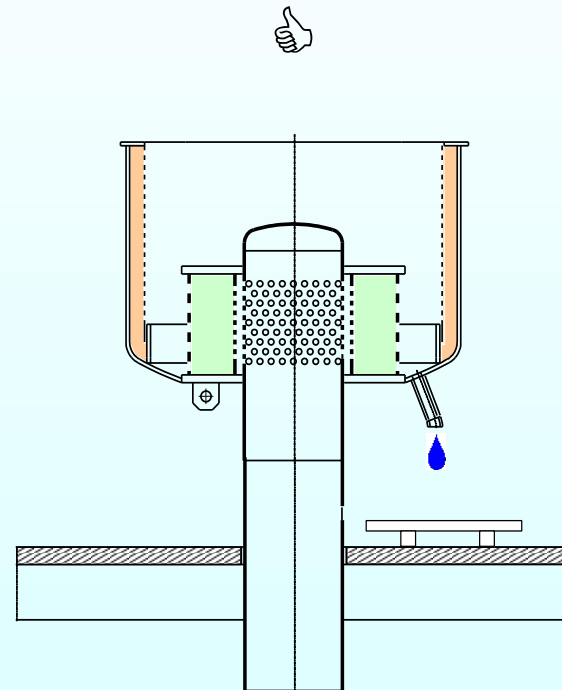
the noise level emitted by the blow-off pipes
is higher then the reduced noise level of the silencer



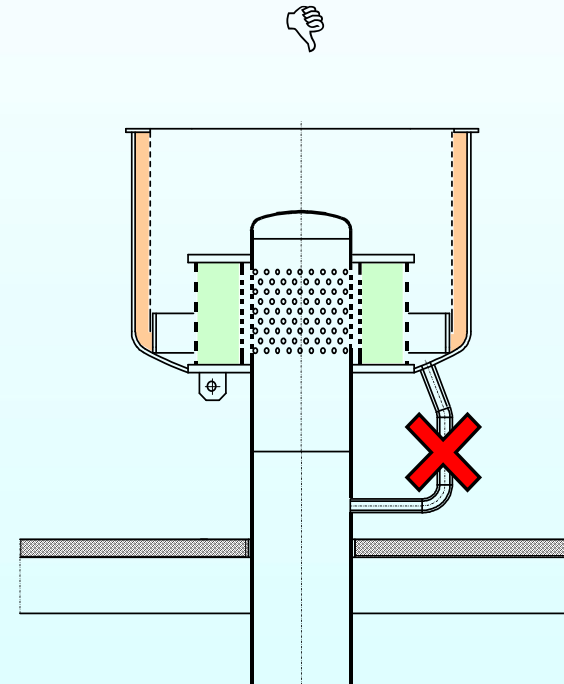
silencers installed on the roof
with optimum noise and safety performance



installation inside a building



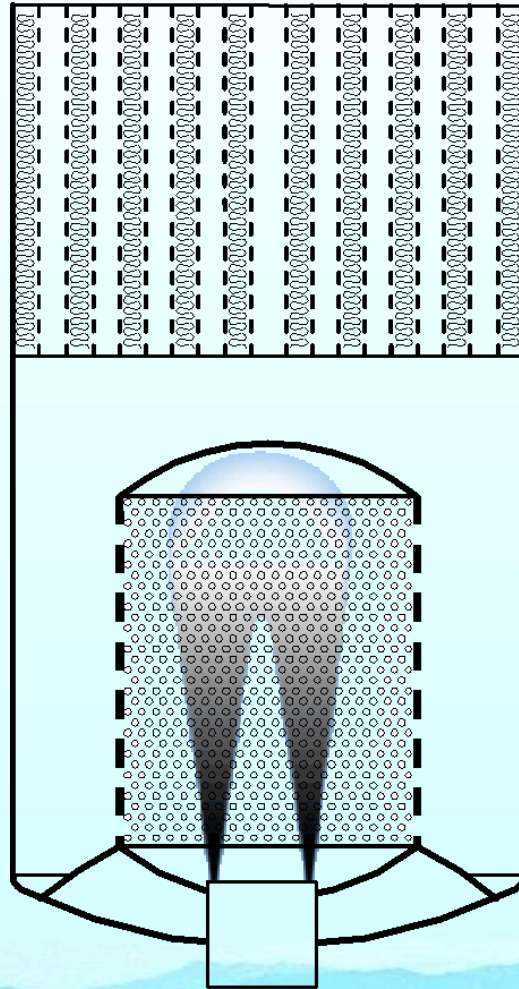
dewatering pipes should be
as short as possible to prevent
ice plugs



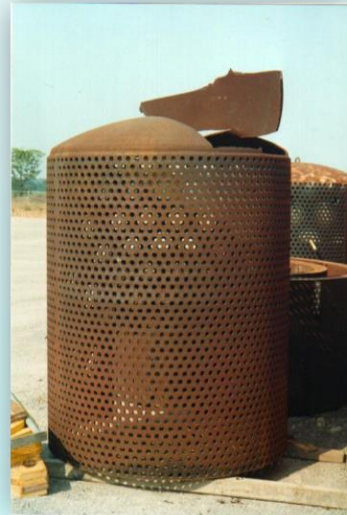
don't bypass the drainage
the silencer may be damaged
and the noise level will increase

Catastrophic Failure

diffusers are pressure loaded units !



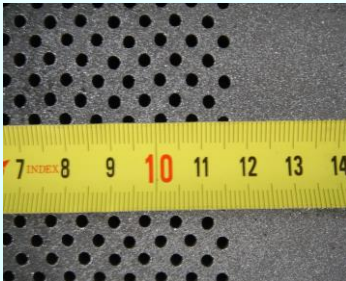
poor diffuser design



GLAUNACH DIFFUSER DESIGN



diffuser pipes
wrapped with
stainless steel
wire mesh



3mm holes are
drilled into
seamless pipes



all welds on
pressurized parts
are NDT tested

OTHER



absence of wire
mesh cause flow
noise

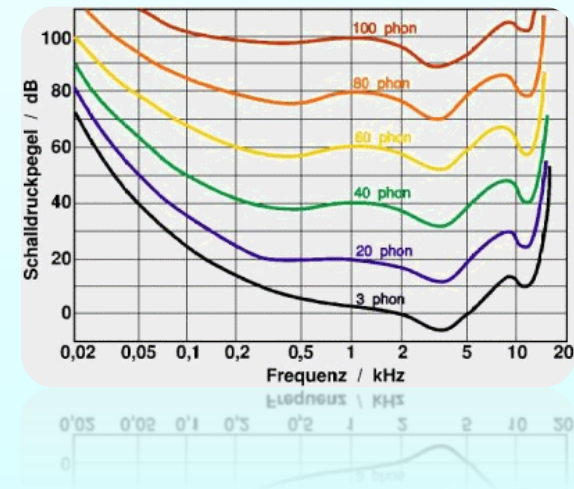
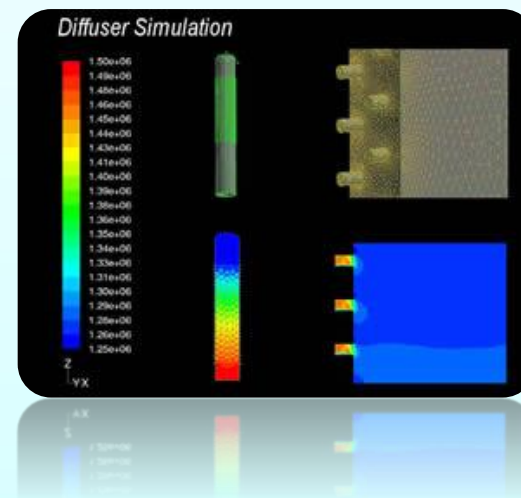


rolled perforated
plates
> 12mm

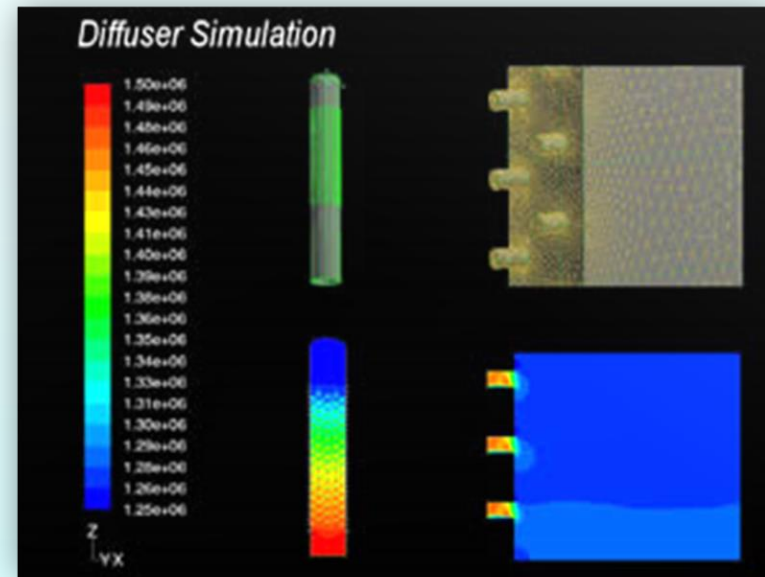
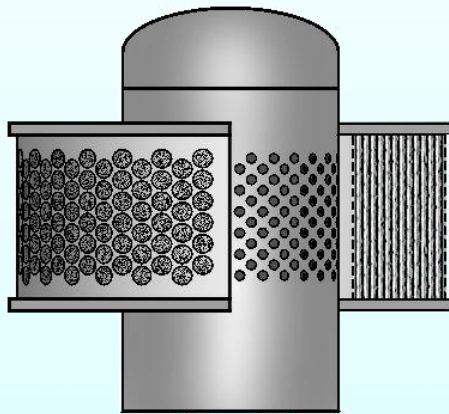


poor welding

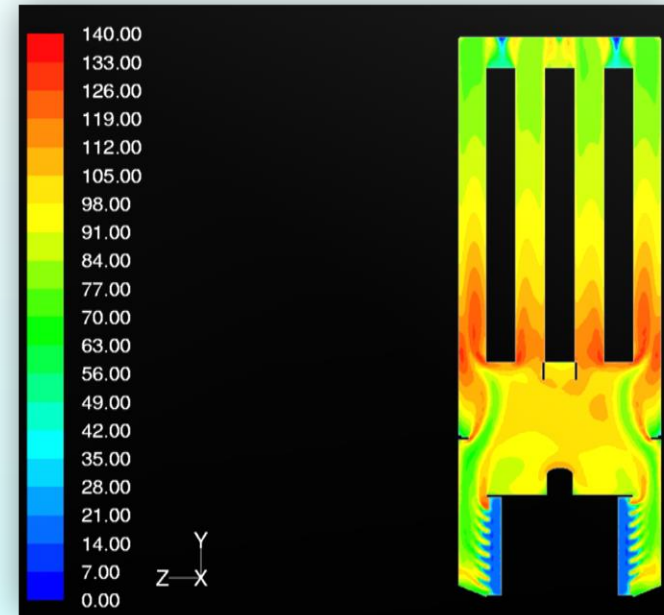
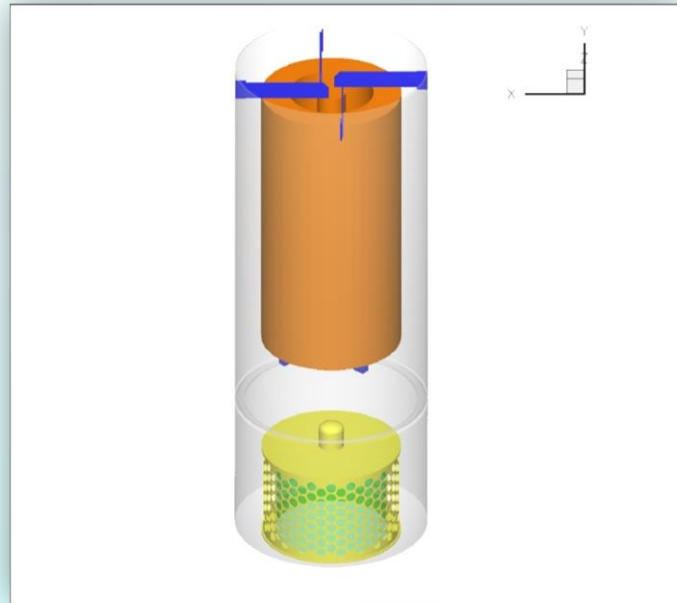
R&D



CFD Simulations

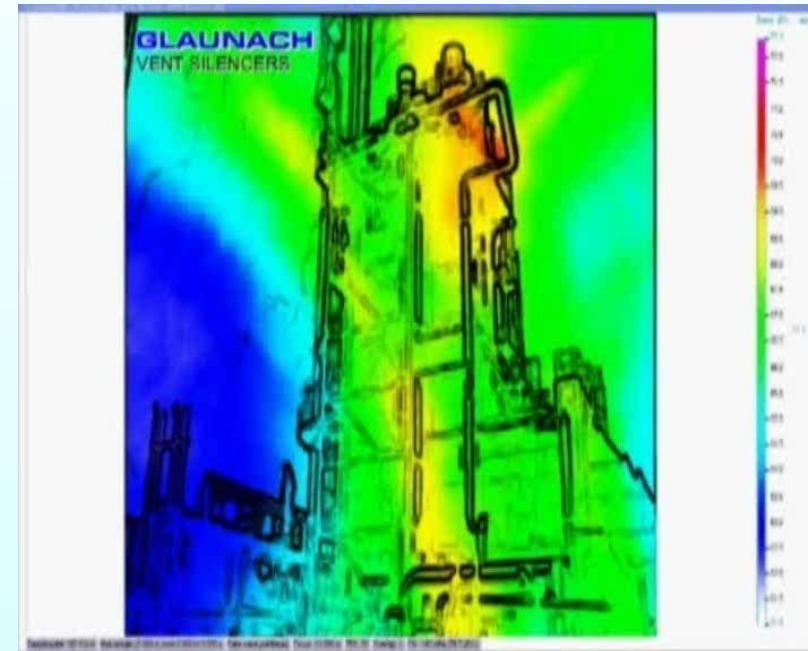


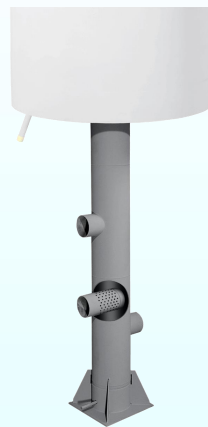
CFD Simulations



R&D

acoustic camera for identifying noise leakages





Collecting Pipes



Diffuser Silencers



Dump Tubes

GLAUNACH
www.vent-silencer.com



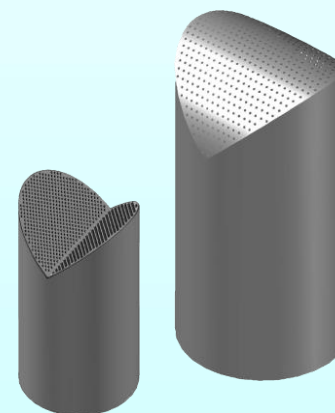
Absorbing
Silencers



Inline Silencers



Micro Silencers



Fishmouths