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HÜGIN GROUP INTERNATIONAL



ACOUSTIC SYSTEM OF DE-ESCALATION AND DEFENCE

AS2D



In times of business globalization, criminal and terrorist activities have increased. Furthermore, the gap between rich and poor continues to widen with more and more countries affected. The peaceful co-existence worldwide is threatened and increasingly violence is reported.

The “Institute of Fire Safety and Safety Technology“ of our company Hügin Group International has managed to develop a highly efficient system. In close collaboration with Professor Dr. J. Herbertz¹, a leading and awarded scientist in acoustic, noise and vibration engineering, we have developed and approved a pneumatic transducer. After the death of Prof. Herbertz the system "Herbertzhorn" was legally protected as a trademark and concretized in the following fold concept „AS2D“ (Acoustic System of De-escalation and Defence)

The various possible modes of operation of this special defence system by:

- internal security
- protection of critical infrastructures and borders
- Maritime piracy
- protection of large-scale facilities allow innovative protection options.

New models of non-lethal security systems became necessary to avoid the mandatory use of lethal weapons against unrest in crisis areas.

The logo for Hügin, featuring the name in a stylized, blue cursive script.

Dipl.-Ing. Lothar Hügin
Managing Director - CEO

¹Prof. Dr. J. Herbertz (died Nov. 2008) was one of the leading acoustic physicists in the world

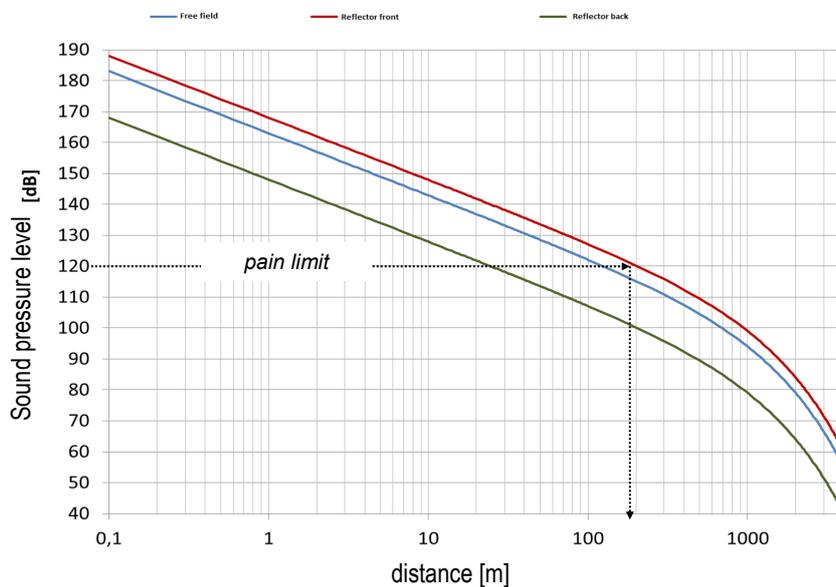
GENERAL REMARKS ABOUT THE AS2D

The AS2D is a long distance sound defense system that produces an extremely loud and painful tone even at relatively great distances. It is based on the principle of a whistle (pneumatic system).

People can be kept at a distance of up to 200m (pain threshold of the human ear is 120 dB).

In close proximity (less than 40m) a longer period of presence (>10 seconds) is intolerable. Interpersonal communication is impossible.

The aim of our research was to produce a sound painful for the



human ear.

This sound is in a frequency range of 1.5 to approx. 2.2 kHz and corresponds to the frequency of the human ear.

The AS2D produces an acoustic pressure level of up to just below 190 dB.

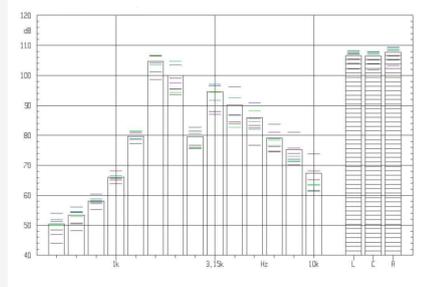
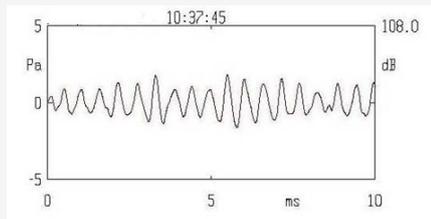
The physical limit is about 192 dB (depending on the air pressure conditions), with in accordance, the sound of the AS2D the physical limit is reached.

A louder sound is not possible.

In physical terms the AS2D is 1000 times more intensive than the engine made a jet starting up (approx. 130 dB), that is, the reason why the acoustic pressure level is not linear but logarithmic.



Herbertzhorn



Herbertzhorn with reflector

Even with ear protection the sound of the AS2D cannot be masked because the sound penetrates the body. In close proximity (below 40m) this means that the sound (even with ear protection) has an effect on the sense of balance.

The strength of the sound power (effective output) of a AS2D is approx. 13,500 Watt.

In order to be able to produce this extremely loud tone each AS2D requires 280 to 300l of air per second, where the necessary operating pressure is between 2.2 and 3.4 bar. The different operating pressure depends on the air pressure, the relative humidity and the temperature of the area of operations.

CAPABILITIES AND FIELDS OF APPLICATION:

- Keep taboo areas clear of violent rioters and criminals
- Keep rioters and offenders at a distance
- Interrupt and disturb the communication of interferers and violent offenders
- Cancellation, interruption and hindering of violent action sequences by interferers and offenders by creating disorientation, confusion and distraction
- Protection of vulnerable objects

TECHNICAL DATA:

- Energy source: pneumatic
- Input power: > 20,000 Watt
- Sound power: 13,500 Watt
- Sound pressure level: up to 188 dB
- Frequency: 1.5 to 2.2 kHz
- Air consumption 300 l/sec
- Operating pressure: 2.2 to 3.4 bar
- Manual and automatic control
- Camera surveillance and distance measurement
- High performance compressor
- Pivoting range: horizontal 360 degree; vertical -15 degree up to + 75 degree
- Operable temperature range: -10°C to + 45°C (basic configuration)
- Operable temperature range: < -10°C und > 45°C (special-purpose solutions)
- Protected against dust and sand



FOR INTERNAL SECURITY

The AS2D is a new operational tool that considerably extends the 'instrument box' of the police. The use of it is substantially less harmful than the use of firearms and thus it is an instrument particularly suitable to the requirements made of the state to use appropriate force. Equipping the security authorities with the AS2D will clearly increase and improve the operating options in difficult situations and lead to an improvement of the quality of police ability to control situations.



FOR THE USE IN VIOLENT CONFRONTATIONS, PLUNDERING AND RIOTS

A phenomenon that is well known in many cities: On certain days of the year or on the occasion of certain political events there can be violent demonstrations that are associated with equally violent affrays, riots and looting. This then leads to violent confrontations between security forces and the rioters. Non-participants are often involved in these confrontations, the consequences of which can be severe physical injuries, including death, and extensive material damage. In these situations the police often use water cannons in order to keep the rioters at a distance. The use of the AS2D is a clear alternative to the use of water cannons. Unlike the water cannon the AS2D does not require 'time out' to refill and is continuously ready for operation. The use of the AS2D thus serves to clear the streets and public places and keep them clear of rioters and criminals as well as keeping both at a distance.



The effect on violent troublemakers from the use of several AS2D, as with water cannons, can be increased according to operating conditions.



FOR THE USE IN HOSTAGE-TAKING, THREAT SITUATIONS AND RAMPAGE

Another alternative is the use of the AS2D in hostage and threatening situations in enclosed spaces or out in the open.

With the help of the portable variant it is possible to set up a AS2D in the immediate vicinity of the hostage takers.

Unlike with the use of the Herbertzhorn in the case of the previously mentioned violent affrays, the use of the AS2D in close proximity will come as a complete surprise to the hostage takers. The sound and the volume of the sound will cause shock and disorientation and incapacitate them. This effect can be used by special units of the police for an assault on the hostage taker without killing him.



The sound and volume induce shock, disorientation and inability to act. The effect of this may enable special units of the police to intervene in a hostage situation without any loss of life.

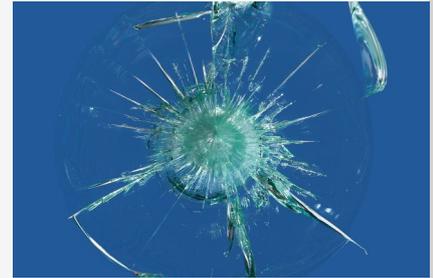
In hostage and threatening situations the unexpected use of the AS2D compels perpetrators in the vicinity to stop their activities or at least makes it very difficult for them to continue these activities, as they may be disoriented, in a state of panic, confused or distracted.

CABIN PROTECTION AGAINST GUNFIRE

We can also, on request, equip the vehicle with VR4 or VR 4+ (Euro Standard DIN EN 1522-1; ballistic level) to protect it from handguns and other small weapons and explosives of a certain size. The protected area of the cabin: roof, floor, windscreen, side doors. Possible weak points in the doors are reinforced with overlapping protective material. .

OPTIONS

We deliver the AS2D complete systems (incl. vehicle) or partial systems (without vehicle). In the latter case the complete system can be delivered and mounted on-site on the desired vehicle.



PROTECTION OF CRITICAL INFRASTRUCTURES AND BORDER PROTECTION

The current worldwide security situation requires national and international observation and planning guidelines in order to protect critical infrastructures and border protection.

Especially in times of international crises it is important for the joint elaboration to ensure the proper functioning and protection of important government and private institutions.

For example, nuclear power plants may be mentioned here, together with oil refineries and other energy and water provision facilities. Other potential targets include numerous state and private political, economic and social institutions. It is precisely in times of numerous international crises that undisturbed functioning of important state and private institutions is important for working out national and International solutions. In this sense protection of such property becomes increasingly important.

With our AS2D we are also able to protect objects far before the use of firearms. "Sound walls" are initiated around the jeopardized objects by manual operation or by means of electronic monitoring systems to prevent a planned attack circular around the object to be protected.

Strategically the AS2D fulfils a dual function in property protection. It has a considerable effect on the perpetrator (see above), foils, disturbs, interrupts and complicates communication among the criminals and enables the security forces to take appropriate counter-measures.

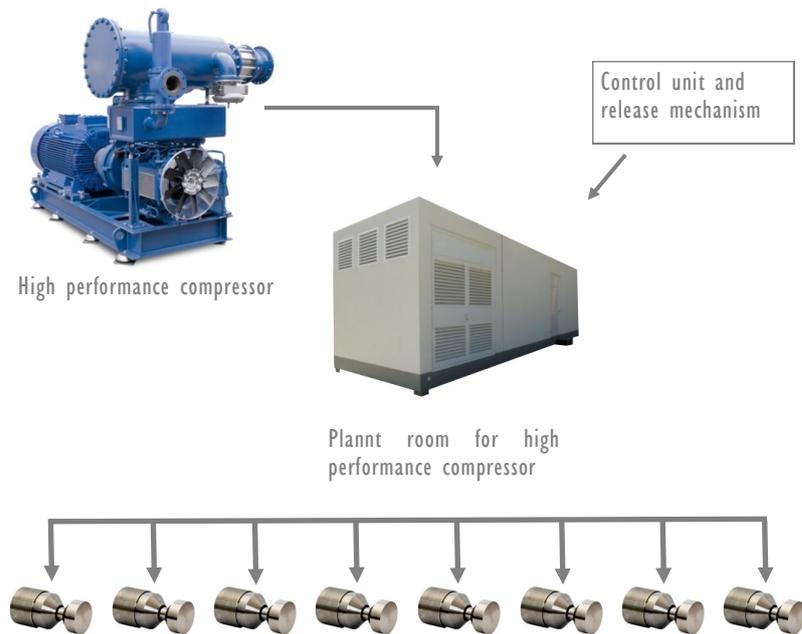
At the same time the AS2D has come to the attention of the people and is thus developing a warning and protection function.

EXAMPLES OF APPLICATIONS:

- Facilities in the energy industry. e.g. nuclear power plants, hydroelectric plants, refineries, oil platforms.
- Critical entry points at airports
- Public buildings, such as government and embassy buildings in crisis countries
- Military installations
- Complete border control in combination with other systems (on this see www.eusa-security.com)
- Protection against terrorist attacks
- Coastal protection



COSTRUCTION STRUCTURE:



The basic protection consists of at least 2 AS2D. e.g. to secure a checkpoint with an acoustic power of at least 27,000W.

Per high performance compressor-unit up to 8 AS2D with an acoustic power of 108,000W can be operated on a defence line of approx. 250 m. Per plant room up to 4 high performance compressor-units can be built in, with a max. acoustic power of 432,000W and a defence line of approx. 1,000m.

ASSOCIATION OF BORDER PROTECTION

For the protection of long border sections, we provide our acoustic defense system in combination with the most modern and economical methods of air surveillance.

Further information: info@huegin.de



MARITIME PIRACY

With this system the AS2D is firmly attached to a vessel. e.g. speedboat, coastal patrol vessel, corvette or frigate. Instead of a AS2D several defence systems are combined and controlled from the bridge of the ship.

OPTIONS:

As module systems (20ft containers) on the Abeking & Rasmussen 25 M SWATH@A&R with at least 3 AS2D:

- Sound power 40,500 Watt
- Air consumption 900 l/sec.

As additional installations on marine vessels, e.g. corvettes, frigates etc. with up to at least 8 AS2D:

- Sound power 67,500 Watt
- Air consumption 1,500 l/sec.

PROTECTION OF BUILDINGS AND AGAINST BURGLARY

- Protecting schools and shopping malls etc. by supporting the defence system within the structure of the building
- Protection against burglary in buildings, e.g. industrial facilities, public institutions
- The AS2D strategically has a dual function in protecting buildings:
- Its effect on the perpetrator (see above) is to frustrate, disrupt, interrupt and impede communication of the perpetrators and enable the security forces to take appropriate counter-measures.
- At the same time, as the Herberthorn becomes familiar to members of the public, it develops a warning and protection function



TRAINING

This training is carried out by highly qualified and experienced trainers of good standing from the police, the military and the field of technology.

We will train your specialists either on-site or in our training centre in Kassel. Where various application techniques of the AS2D will be presented and practised.

The training consists of a theoretical and practical part, including maintenance of the entire AS2D.

TRAINING CONTENT:

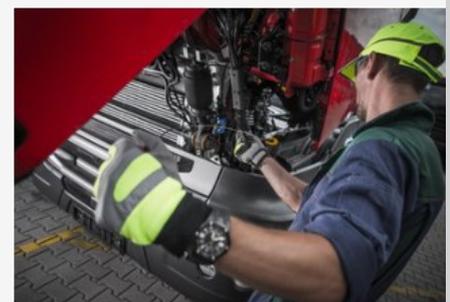
- General physical principles of the sound
- Tactical principles for the use of the system
- Basic training in the use of the AS2D (vehicle)
- Basic training in the use of the mobile AS2D
- Exercises in various operational scenarios of the AS2D
- Maintenance of the system and vehicle

MAINTENANCE AND EMERGENCY SERVICE

Routine maintenance work can be carried out by the customer's own trained staff. Local specialist operatives, also trained by us, carry out regular inspections.

Moreover, our specialist engineers, technicians and police trainers can be contacted via the central emergency service of the Hügin Group International at any time.

Our specialist are usually on-site within 24 hours.





„The AS2D has been tested under precisely controlled conditions on human subjects. This test was performed and documented by the head of ENT of Klinikum Frankfurt Höchst, private lecturer Dr. med. Carsten Dalchow. The results of the scientific evaluation gave no detectable, significant hints for health risk on the probants.“



Further Information:

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