MUNKEBO

Munkebo Production A/S Profile

Niels J. Assersen
Managing Director

Munkebo is mainly known as a manufacturer and supplier of vacuum units, as this has been our key product since the very beginning in 1963.

Much less known is that our product range has grown considerably over the years, and today includes turnkey products for blast and paint rooms as well as quite a number of items of special equipment.

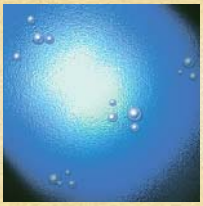
Our intention with this booklet is to introduce you as a potential customer, not only to the variety of Munkebo products but also to the core of Munkebo´s business policy.

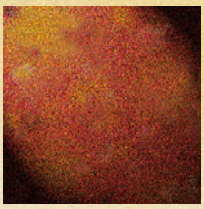
In case you have any comments – or in case you need any further information feel free to contact us by either phone, fax or e-mail.

Content

Decades of Experience

Corrosion speed can be adjusted via control of the relative humidity



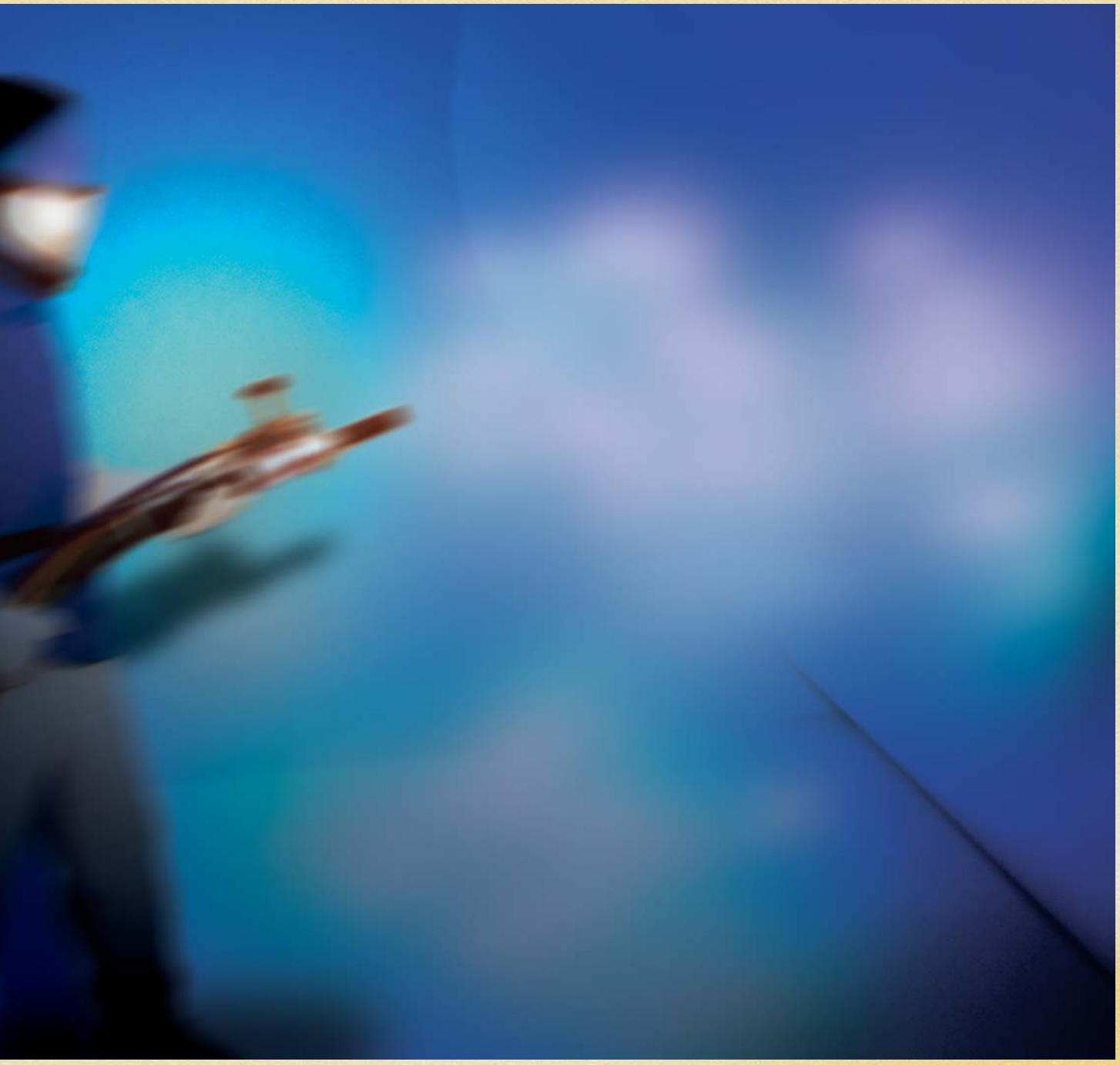


Knowledge, competence, and the ability to learn; these are the words in most companies and organisations world wide today.

But what does it actually mean? It is obvious, that you can learn a lot of things in traditional ways, like studying for instance, but this is not the entire story. We are aware that we know a lot more than what we have learned! A huge part of our knowledge is built on experience, part of our backbone so to speak – and in words called intuition.

This type of knowledge enables us to properly evaluate a situation without waste of time, and to find an answer to the questions posed. At Munkebo we use the experience and knowledge we have built up since we began in 1963 in conjunction with a solid theoretical foundation.

Decades of experience help create the solution for decades to come



Overview in every Detail

Projects are different, as companies are different. Companies are different, because markets are different, and because human beings are different. In addition to this, conditions and with that requirements, change more rapidly than ever for the individual company.

If you work together with Munkebo, you will experience that we base our work on your actual needs. If you know these precisely, we see our job to find a solution that exactly fulfils the needs – no more no less.

Should you have an idea and not know exactly what direction to go, or just a feeling that you need to improve, but do not know how, we will help to discover and define, whether you have a new project – are considering upgrading existing facilities.

Dehumidifiers: Before, during and after blasting

As control of the ambient conditions has become a very important factor for optimal surface treatment, dehumidifiers to control the relative humidity are now an increasing part of our production.

Ventilation Systems: During blasting & painting

Ventilation systems of almost every size to meet environmental regulations, health and safety regulations and not least to provide optimal visibility for the operators during operation.

Suction Units: After blasting

Powerful suction units/vacuum systems for optimal collection and cleaning of abrasive media after blasting.

Mechanical Transport Systems: After and/or during blasting

All general types of mechanical transport systems for transport of abrasive media.

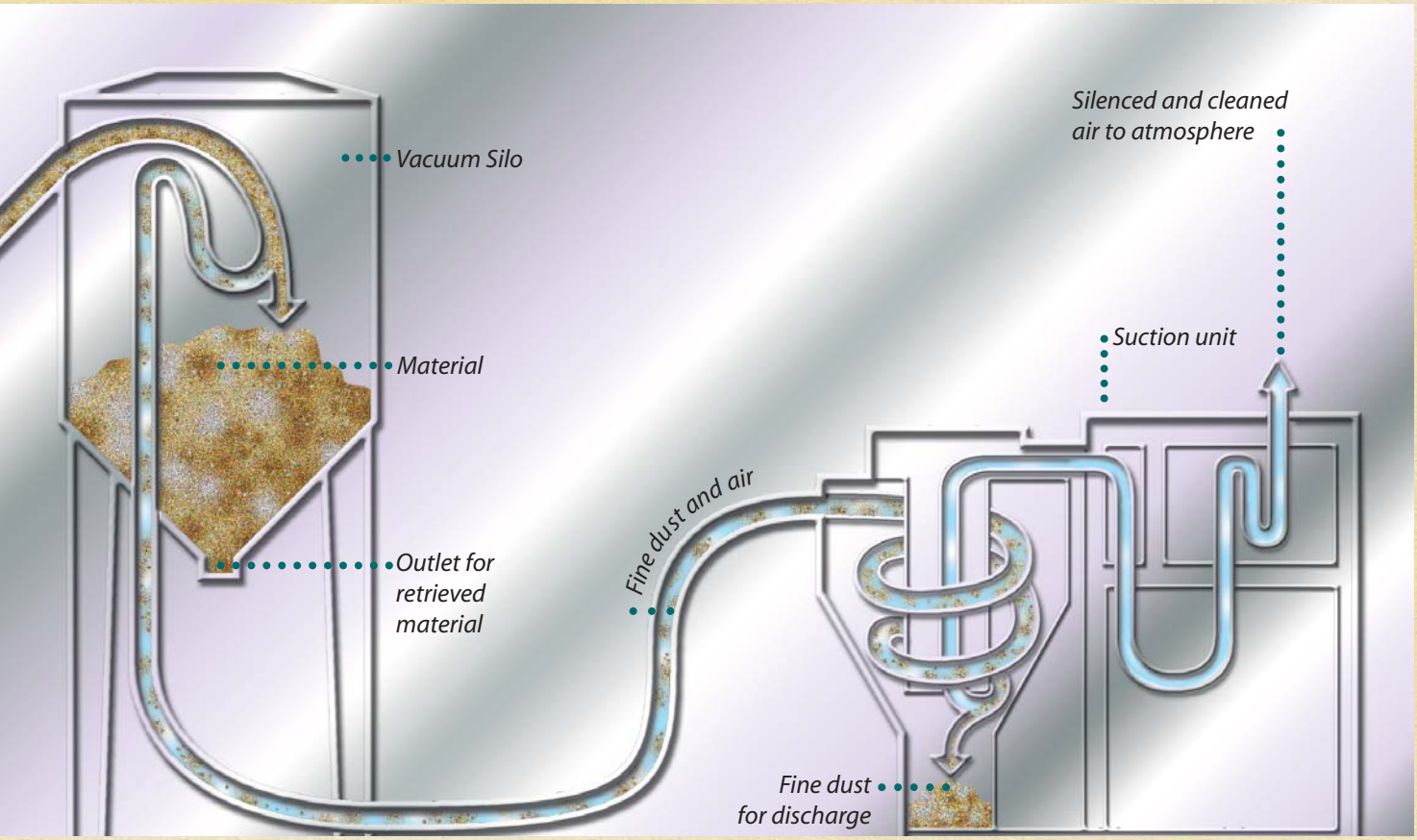
Our Vacuum Program gets Everything

Using Munkebo vacuum systems you can reach spent abrasive nearby and far away.

The systems come in standard sizes from 3 kW to 110 kW completed by a wide range of silos and pre separators.

Should you however not be able to find a suitable standard unit for your purpose our technical staff are prepared to take the challenge and customise a unit based on your requirements and using our long experience in the field.

Typically process flow when using a vacuum system



The use of flexible hoses enables access to normally impossible or hard to get at places

All Units are Transportable

Having customers throughout the entire world demands a high degree of flexibility among which the ability to understand different ways of working methods, mentality, markets and environmental regulations are essential.

But it also puts very firm demands on our equipment: It has to be easy to transport and install!

Therefore all our units are built to meet the size of standard means of transport. Alternatively it can be split into sections that can easily be assembled on site.

All units are supplied with forklift pockets and lifting eyes for crane transportation as standard.

Abrasive recovery system

Vacuum unit type MB-4000 E4

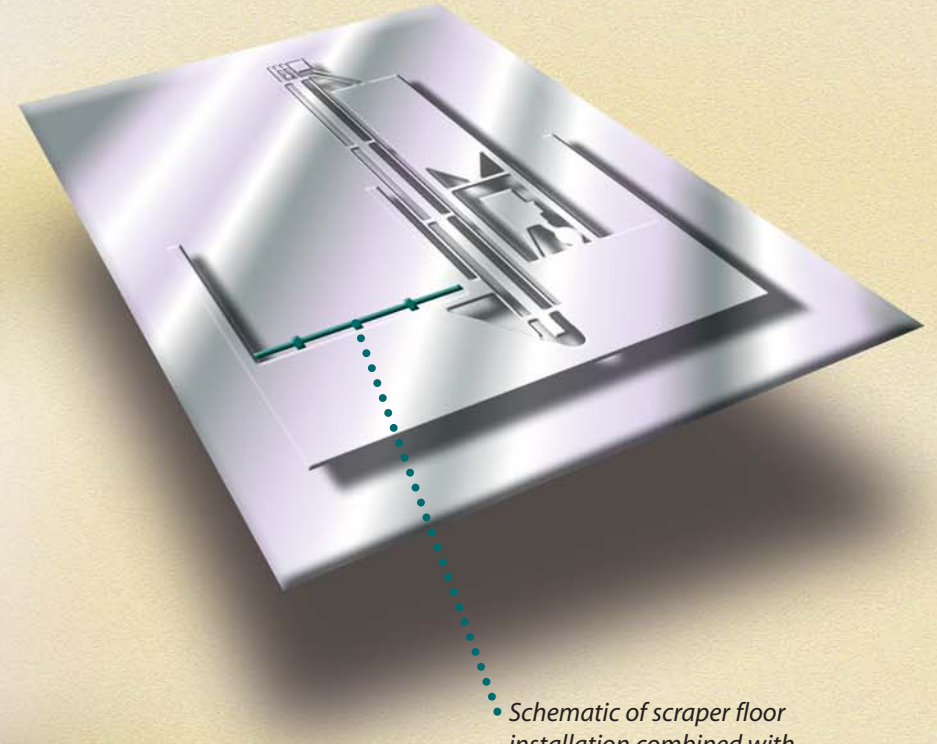
Double system which can be operated as two individual systems or alternatively as one single and very powerful system

All control panels are manufactured in-house, to secure feasibility to the sometimes very harsh site conditions

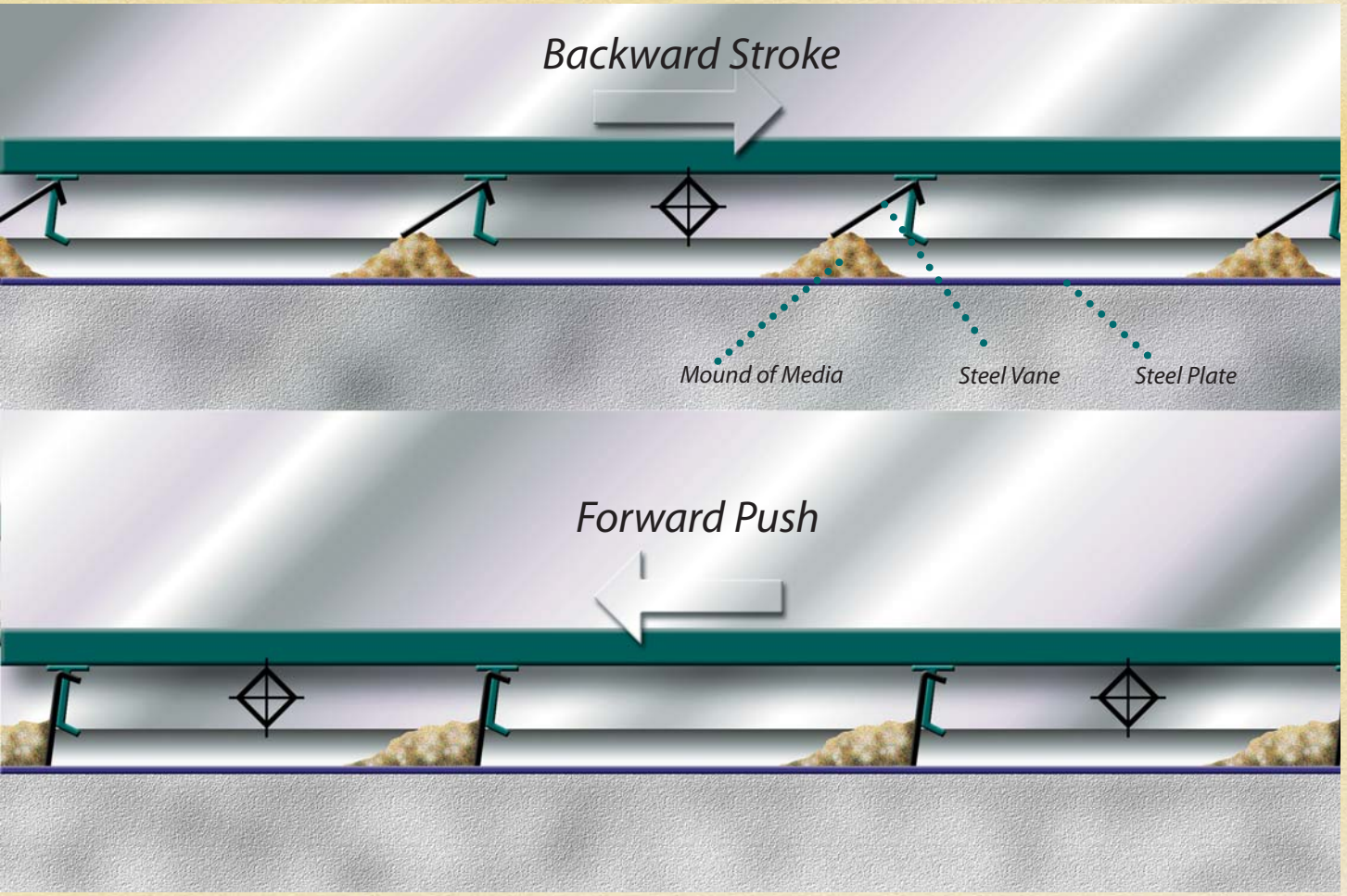
Give Efficiency a Forward Push and Costs a Backward Stroke

As we have seen an increasing demand for reliable and low maintenance full floor systems over the later years we have developed such a system.

The result is a pneumatically operated scraper floor system, which requires only little civil work to be carried out, which is easy to install and, which secures a continuous recovery of abrasive media during blasting.

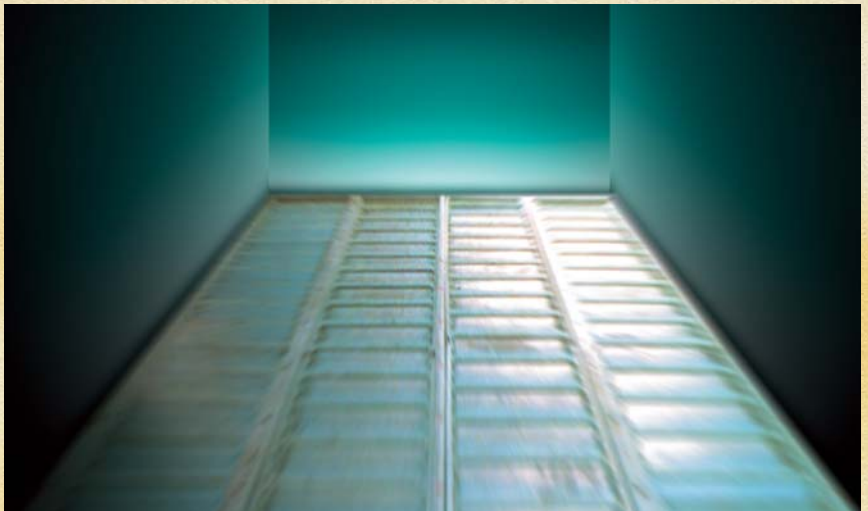


Schematic of scraper floor installation combined with bucket elevator – abrasive cleaning system and storage hopper



At just 136 mm including standard man load grating for the floor drive modules and additional 103 mm for the cross drive module the scraper floor recovery system will fit easily into any blast room, making it perfect for replacing installations in existing rooms or new rooms where excavation depth is limited

Costs to purchase, install and maintain are less than comparably sized floors on the market



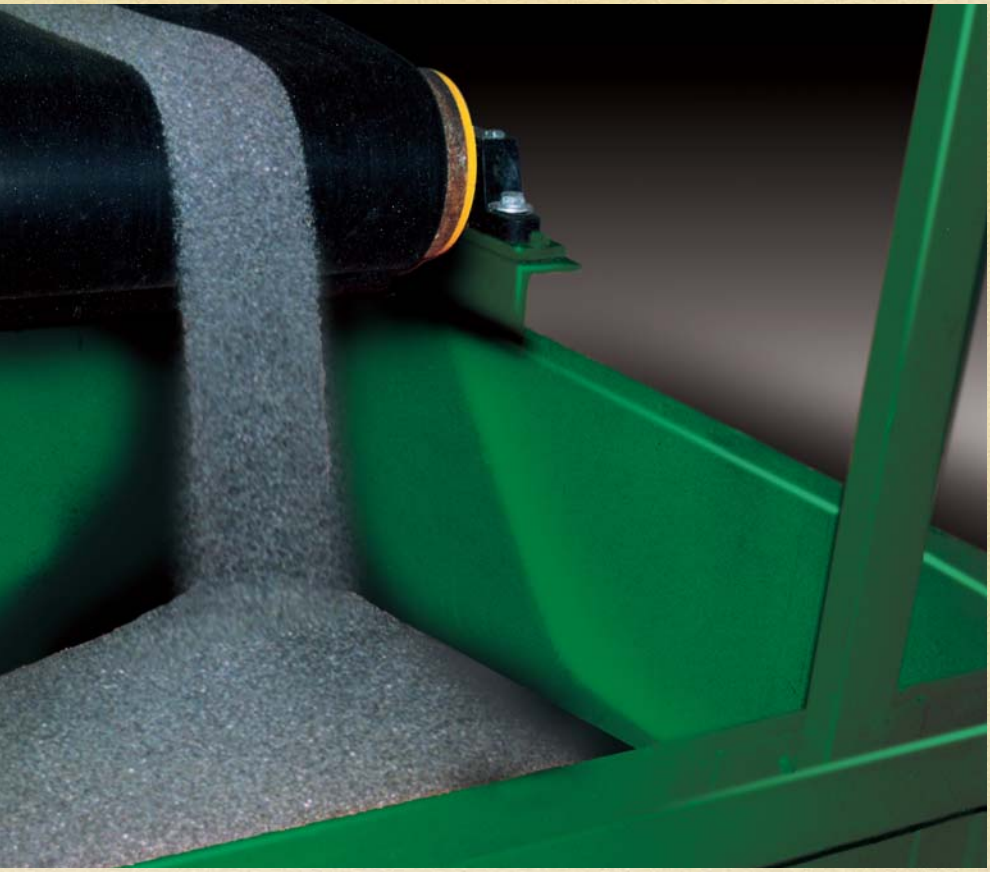
Simply made to last Longer

Not only the scraper floor system but also more common types of mechanical transport systems such as belt conveyors, bucket elevators etc. are part of the Munkebo range of equipment.

Typical use of this, fixed type of equipment is transportation of large volumes of abrasive from easy accessible areas.

Screw conveyors we use only for dust transportation, because of the high wear factor, with the screw blades moving in the material

As mechanical transport systems are typically exposed to a high wear factor we always use either very rigid or extremely wear resistant material in our products



Controlled abrasive load to our belt conveyors

Bucket elevators can easily be combined with the scraper floor system

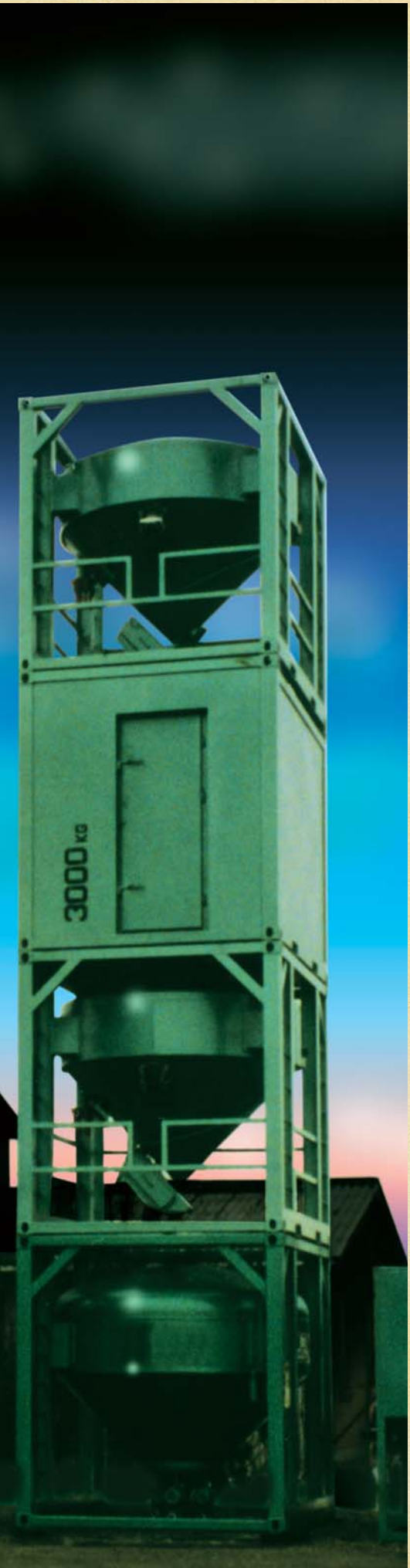
Belt conveyor units, ready for installation

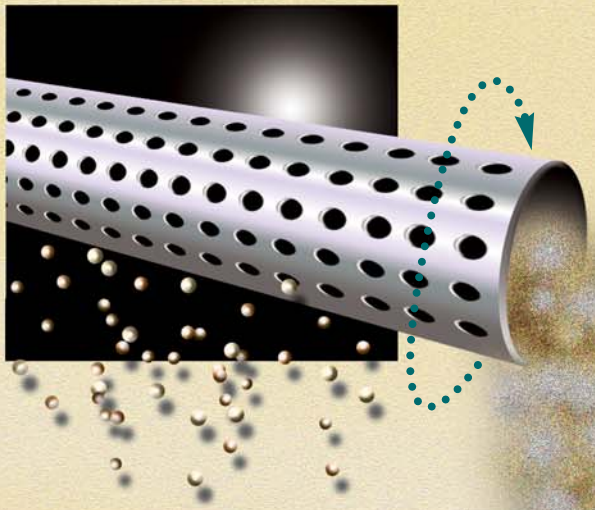
Abrasive Recovery implies Economic Recovery

The ever increasing disposal costs for spent blasting media benefit more than ever the use of reusable blasting media combined with equipment that can effectively remove all types of impurities, fines and dust before reuse.

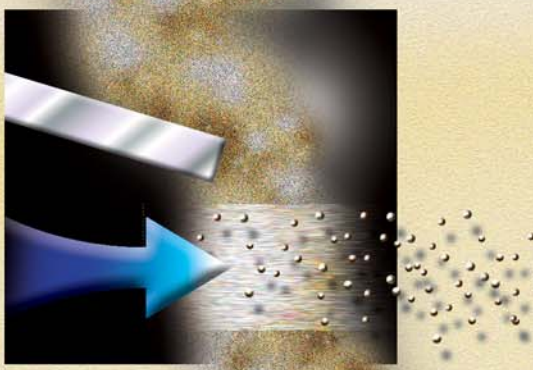
The use of this type of equipment means not only reduction of disposal costs but also reduction in abrasive media costs... and as the environment also profits from the reuse, the abrasive is not the only thing that will be clear. So will your conscience...

Innovative tower system for on site use designed with complete recycling facilities





Not only larger debris but also fines and dust must be separated to guarantee clean and reusable abrasive media



Added Visibility can increase Performance and Production Flow

Low grade of visibility

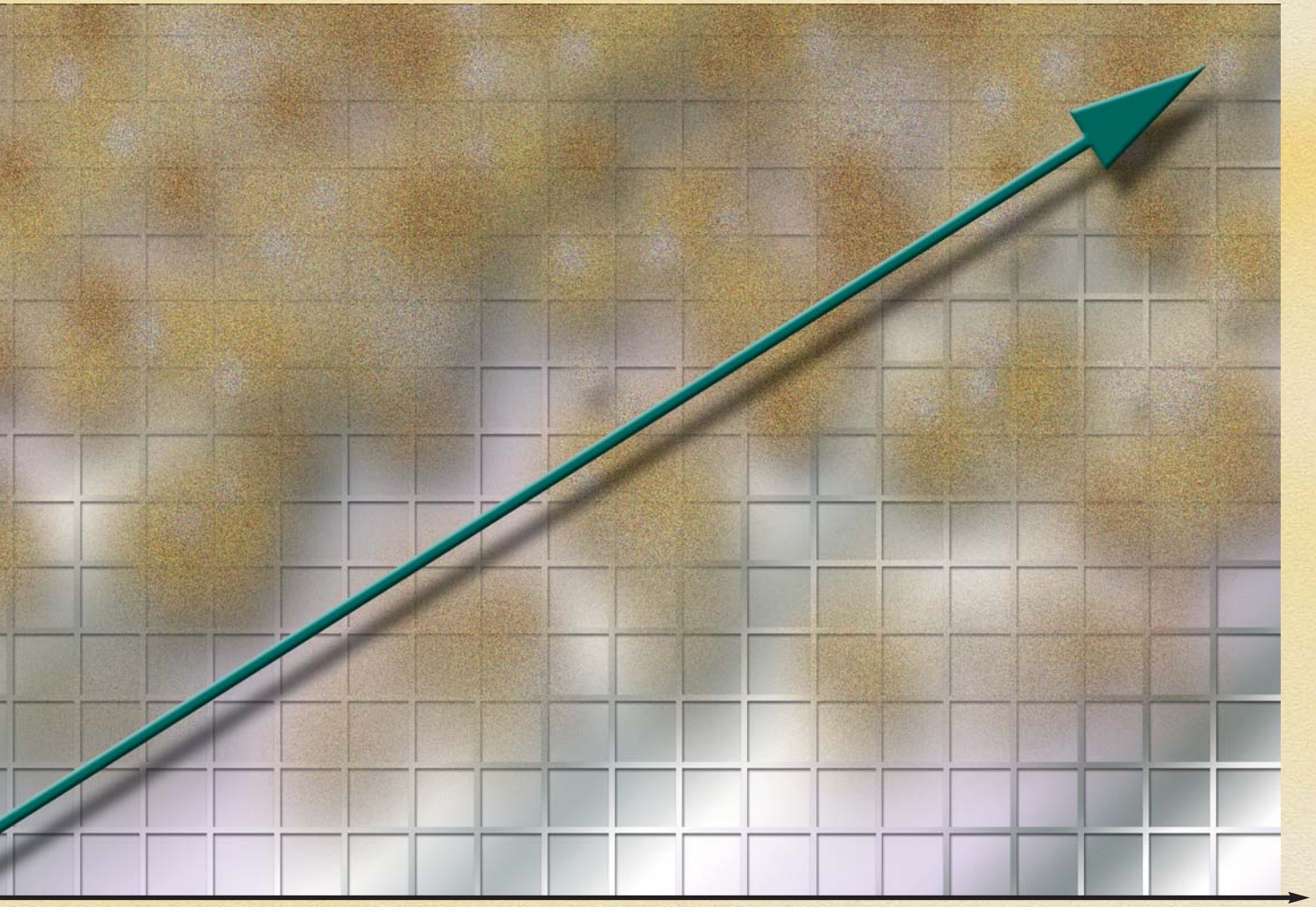
Operator visibility can be secured by adequate ventilation of the room where blasting takes place. However the latest environmental regulations and demands mean exhausted dust cannot legally be put out directly into the atmosphere. Ventilation and dust collectors must be combined.

Site dust collector

Although ventilation is not widely considered a "cost benefit" but a cost factor, this is only a half-truth. Added visibility will increase performance. And particularly if reusable abrasives are being used, the extraction of fine dust will give less contaminated abrasive for reuse.

With ventilation and dust collectors you can stop blind blasting and see the advantages of re-cyclable material as well.

Operator visibility can be secured by adequate ventilation



The diagram shows the relation between the degree of operator visibility and work time per item when blasting or painting

All Munkebo dust collectors are equipped with high quality filter cartridges

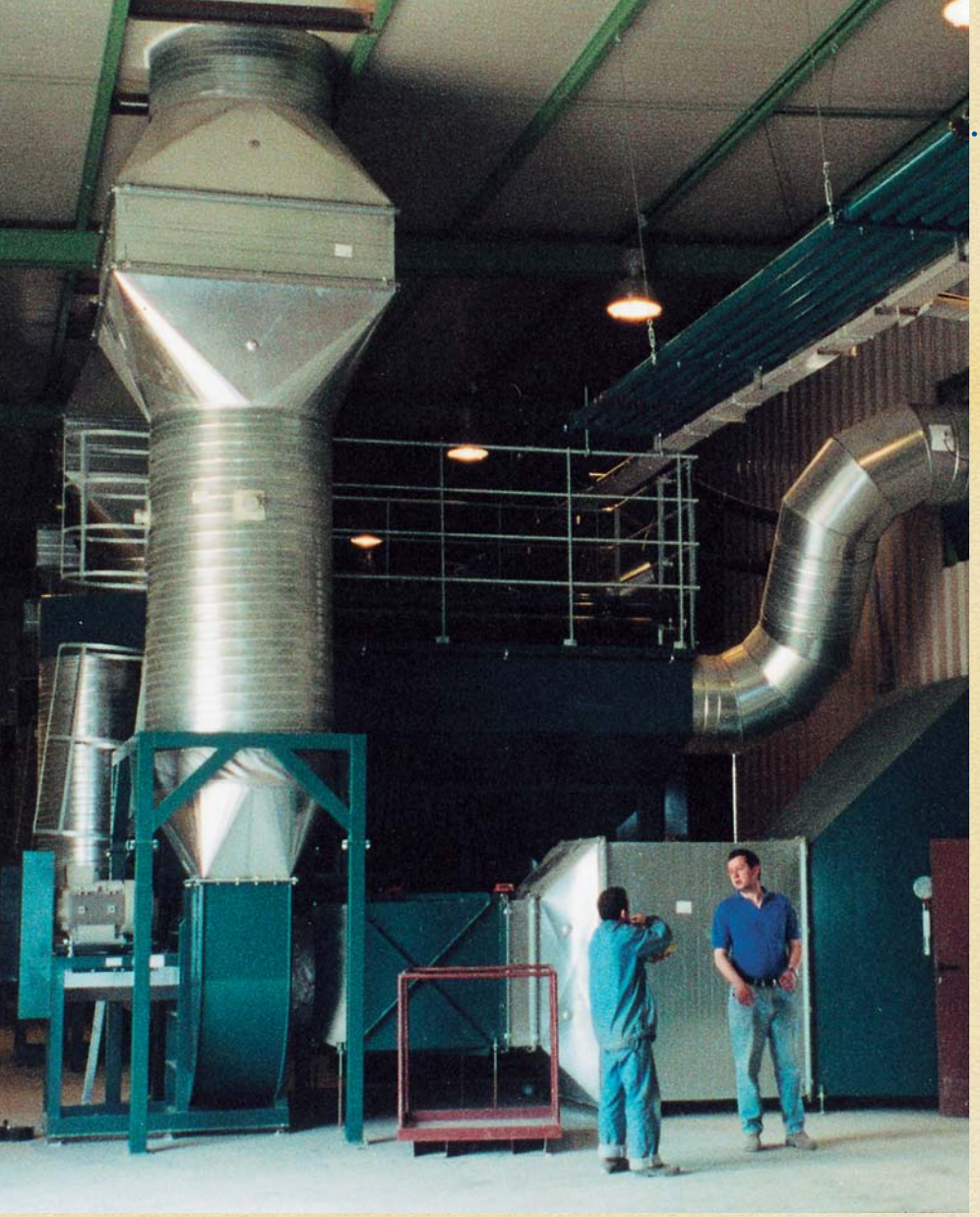
The Debris from Paint- and Metal Spraying can be freely Ventilated

If adequate ventilation is important for blasting it is no less important for painting and metal spraying.

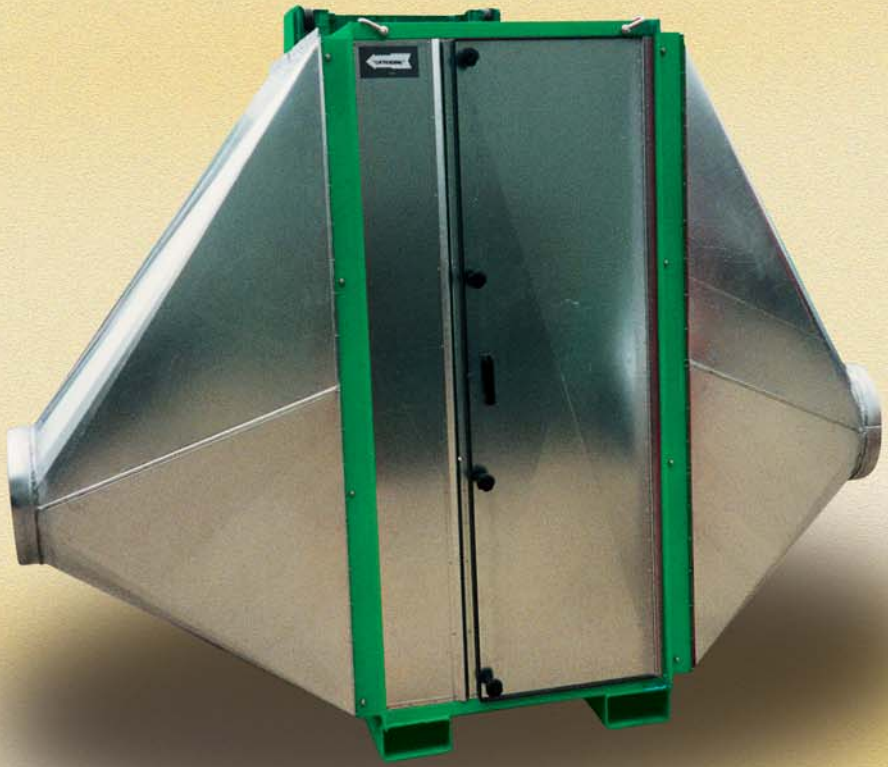
Operator visibility and operator safety along with environmental demands are obvious factors, but also the quality of a freshly treated surface can be impaired if over spray is allowed to settle.

Only highly efficient centrifugal fans are used

Exhaust labyrinths for respectively dust from blasting and from painting (upper & lower)



Combined dust and paint exhaust system seen from machine room side



Paint dust collector for on site use

Lead Time between Blasting and Painting is Essential

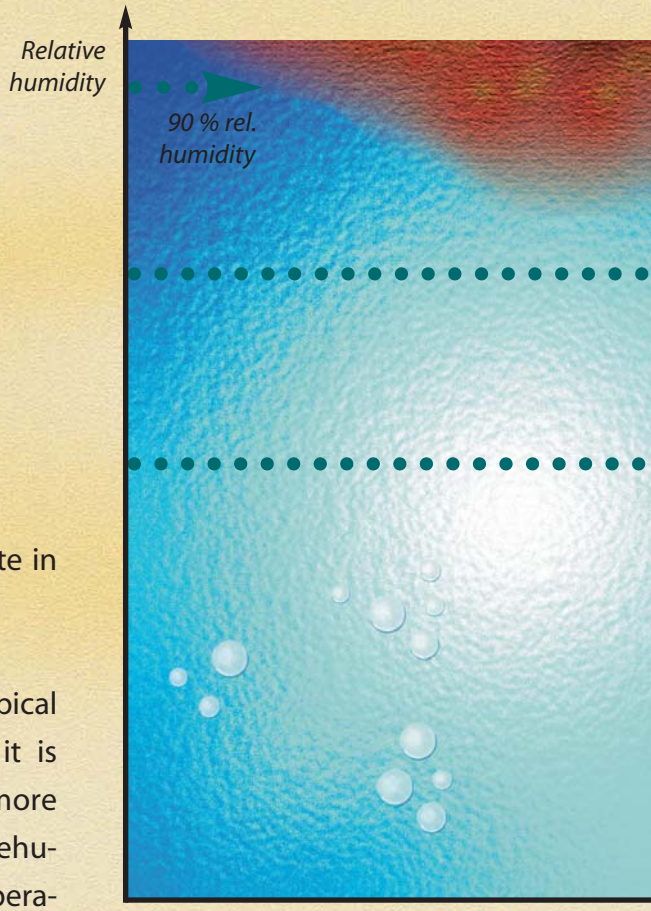


Diagram to show the relation between relative humidity and lead-time after blasting

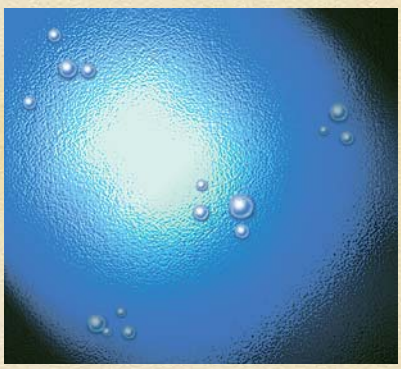
Relative humidity is a very important factor during and after blasting, as the high degree of physical and chemical cleanliness obtained by blasting is extremely vulnerable to atmospheric corrosion.

Keeping the relative humidity below the upper level for minimum corrosion is therefore, essential for the lead-time between blasting and painting.

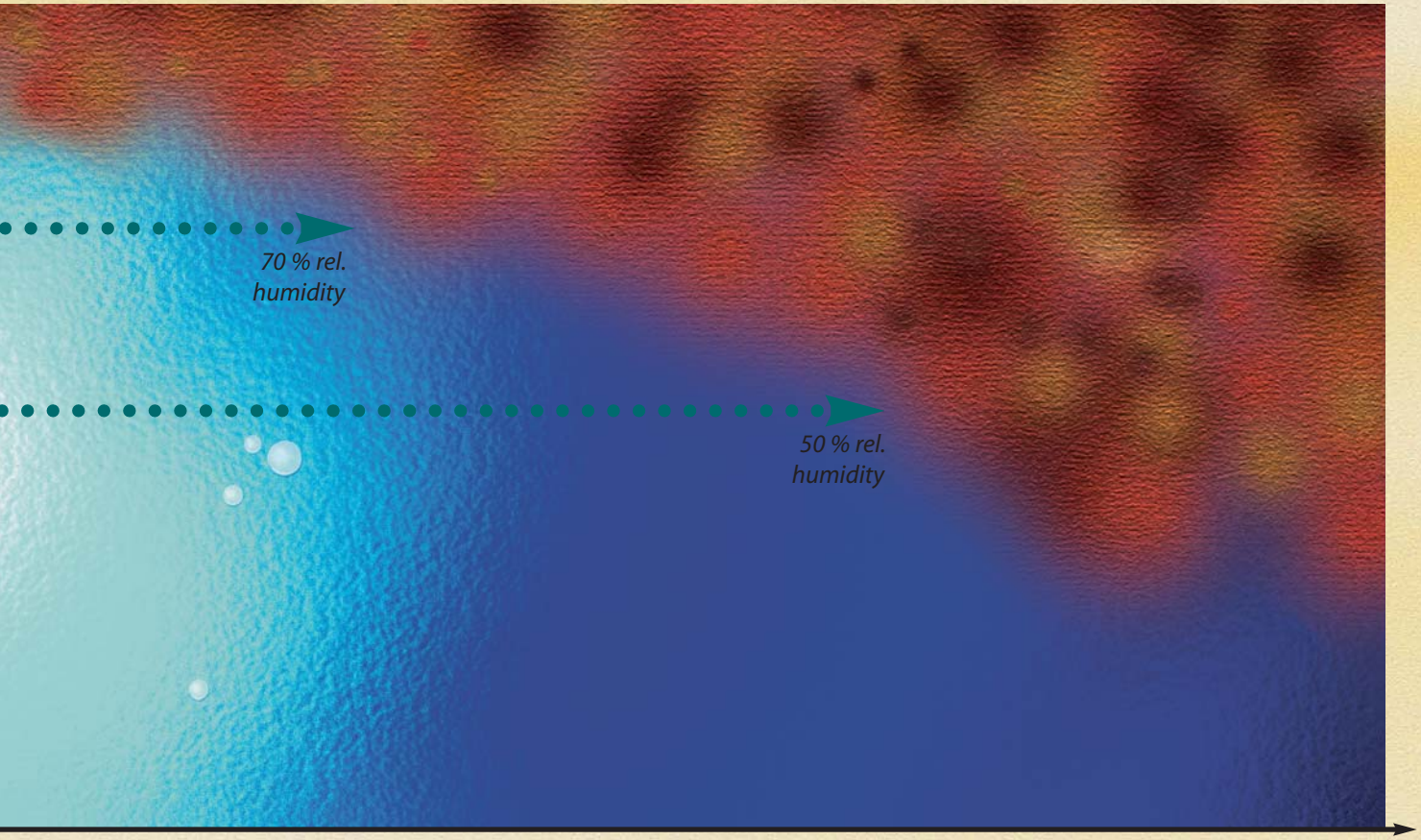
A reduction of the relative humidity can be achieved by heating, or by actual dehumidification of the air.

The two common types of dehumidifiers are adsorption dehumidifiers and refrigerated dehumidifiers. It should be noted, however, that whereas adsorption dehumidifiers offer nearly the same performance in summer and winter conditions, refrigerated dehumidifiers are unable to operate in winter conditions.

In other words, in sub-tropical and tropical conditions it is beneficial to use the more expensive refrigerated dehumidifiers, as they allow operators to work in decent conditions. Adsorption dehumidifiers will be the obvious choice almost everywhere else.

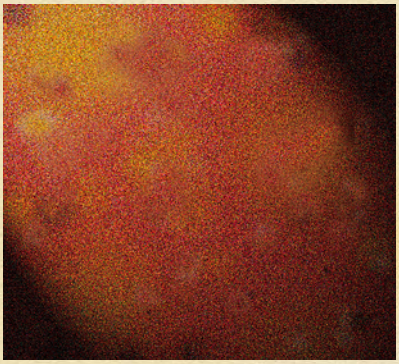


Dew on the surface will immediately start corrosion



Lead-time between blasting and painting

Principle of process air-flow, and regeneration airflow in a Munkebo adsorption dehumidifier



High humidity level unfortunately equals fast corrosion

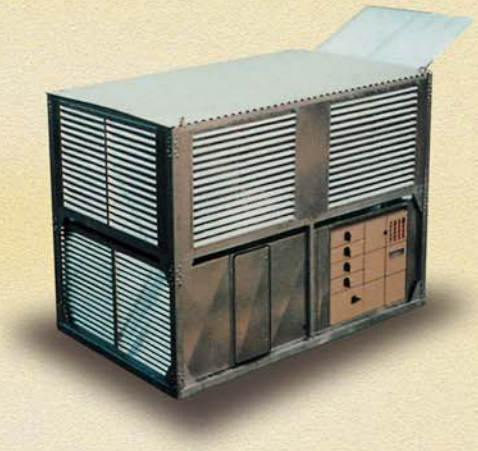
The total Range for Corrosion Protection

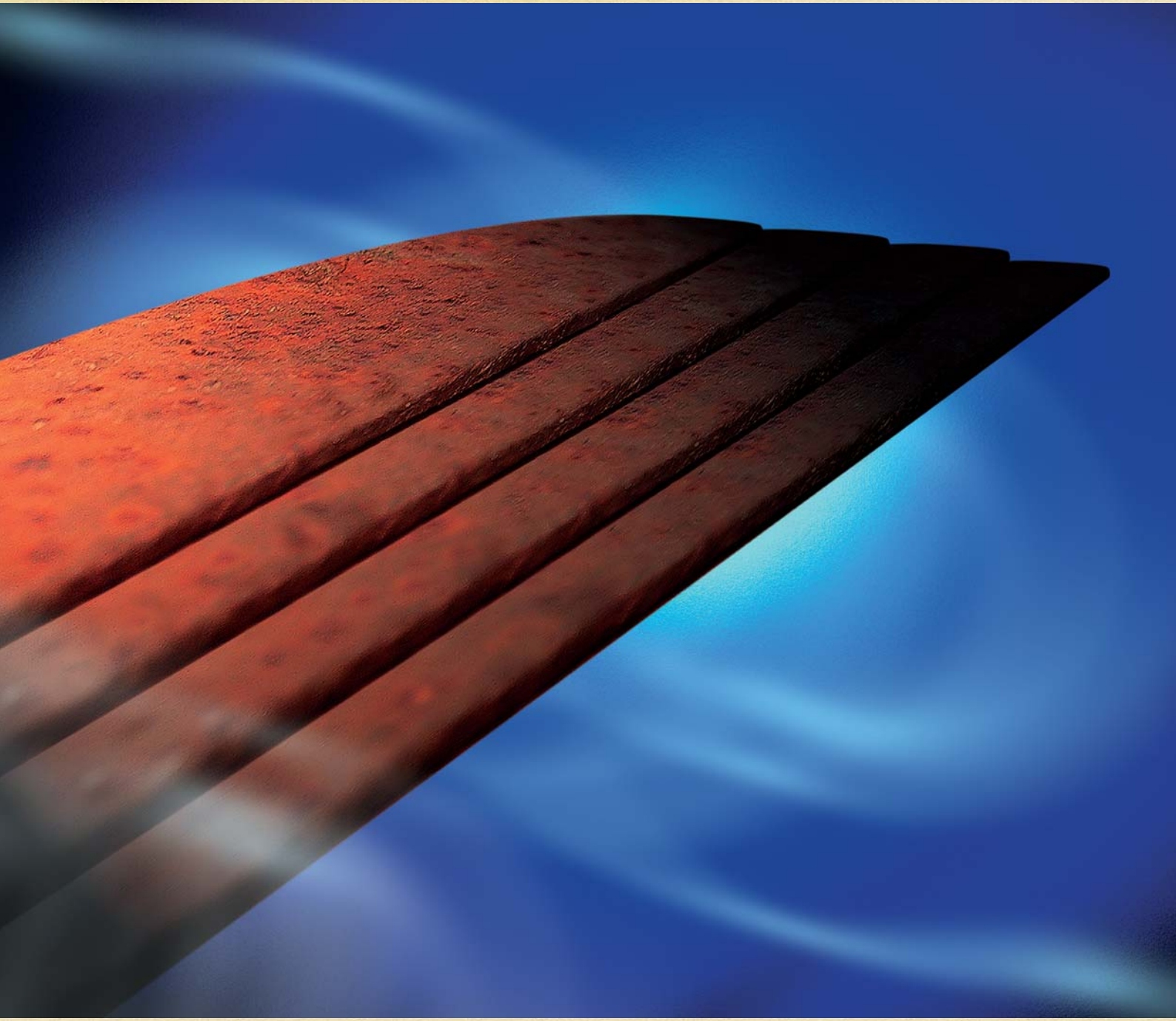
Both adsorption – and refrigerated dehumidifiers are part of our standard range of equipment. Both types are specifically designed for use during blasting and painting jobs. All units are easily portable and can be used indoor as well as outdoors.

The individual parts are of best quality and the entire unit is hot galvanized to secure maximum lifetime.

Adsorption dehumidifier type ZAM

Refrigeration dehumidifier type QAM





Relative humidity is a very important factor during and after blasting, as the high degree of physical and chemical cleanliness obtained by blasting is extremely vulnerable to atmospheric corrosion

Do not let Your Projects be lost in the Sand

Munkebo is not a consulting engineering company, and does not pretend to be.

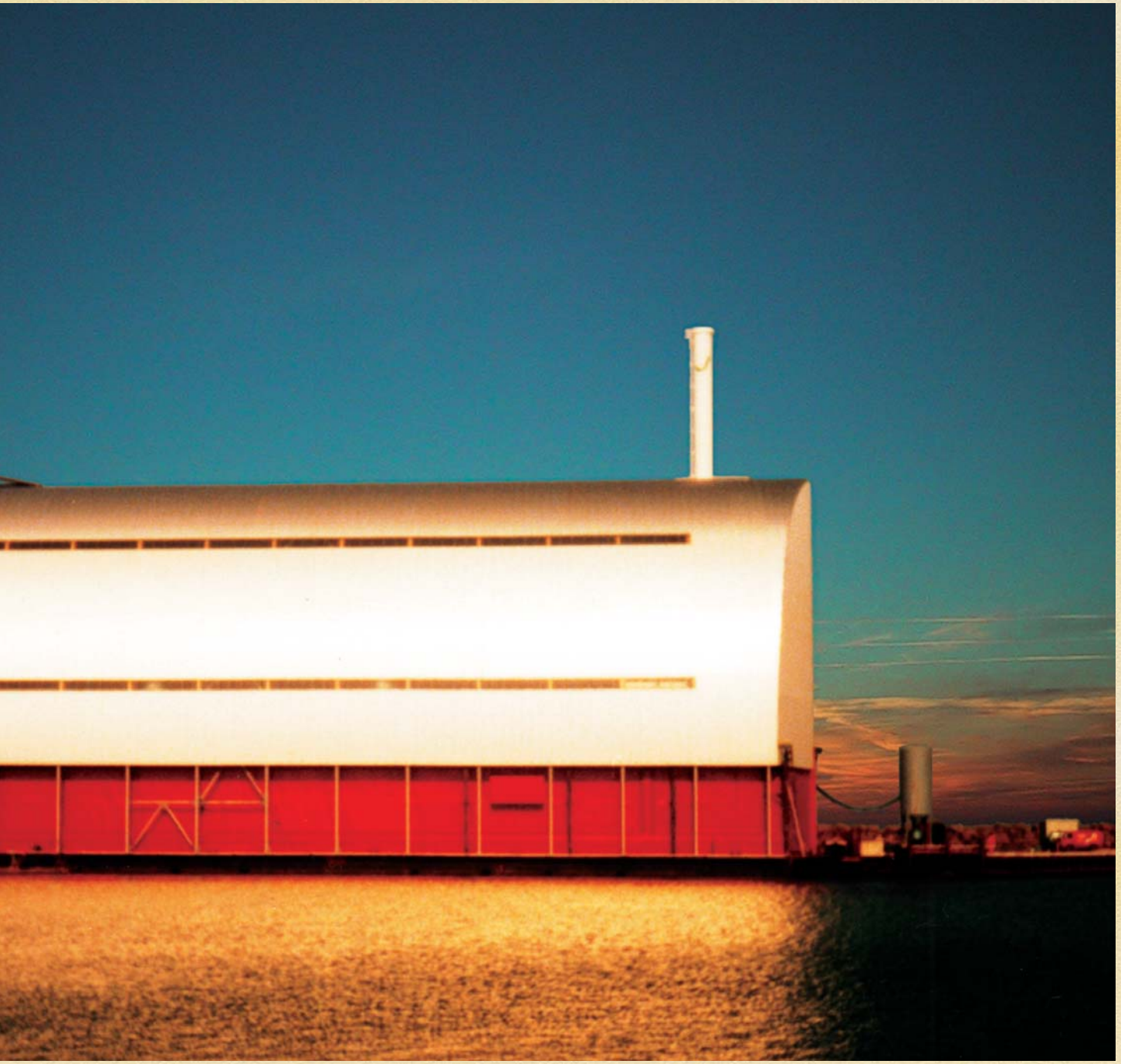
On the other hand we do know something about the processes involved in surface treatment, we also do know something about environmental regulations and certifications and this knowledge is available for you, if you are considering or projecting a new blasting and/or painting installation.

Our involvements will not only be non-committal, to you as a potential customer – it might also prove beneficial.

Different way to build a blast –and paint room

Creative solutions can be implemented in the projects.

For example when it turns out to be easier to move roofs instead of doors...



Turn-key delivery for blasting of heavy army vehicles

Blast Room Upgrading can be quite a sensible Solution

Upgrading of existing blast room facilities is a challenge, not least in relation to environmental regulations and city council/government approvals.

There are a lot of questions to consider: Will it pay off to use parts or maybe all of the old equipment? Will it be sufficient or, will it prove beneficial to install completely new equipment to secure trouble free operation and not least to avoid eventual problems with the authorities?

We do not have the answers, but we do not mind to help find them. Contact us to get non-committal advice.

Design of a very compact blast-room installation

- with room for service as well

Assembling of ventilation systems in an engine room

An integrated combination of dust- and paint-filters that consider environmental matters

During projects it helps to know that Munkebo gather all the threads in safe hands

Setting the Standard for Surface Cleaning Equipment all over the World

The combination of practical experience and theoretical knowledge has helped Munkebo to mark its footprints most places in the world, when the talk is surface treatment related equipment. A business where unusual conditions has created unusual challenges.

At Munkebo we take challenges as they come, and although every new challenge has its own process and its own result, Munkebo solutions have one thing common: They build on our own experience and knowledge.

Munkebo has the expertise, and the product, that helps you meet the environmental regulations

MUNKEBO ENVIRONMENT PROFILE

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