



The effective and friendly way of cleaning

**Synergy+**<sup>Polska</sup>

Synergy Plus Polska sp. z o.o.  
[synergyplusplus@gmail.com](mailto:synergyplusplus@gmail.com)

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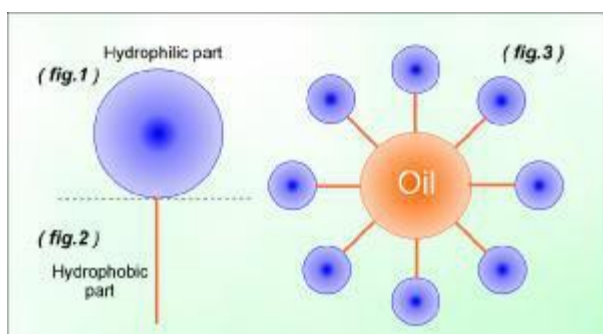
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**MANKIND AND ENVIRONMENT** have always been very dear to the company DCP, founded in 1985. Since 1995 we have succeeded to produce a new generation conservational and ecologically sound products, having both a degreasing and cleaning effect.

All products are composed of an optimized tenside mixture, consisting of a fluid mix of high-grade surface active materials, to which qualitatively high-grade builders have been added. All our products contain the same basis, which means that some of the important basic materials are being used all the time.

The tensio-active effect of our cleaning products is based on a reduction of the surface tension of the water or the liquid combined with a very powerful undermining effect which loosens, encapsulates and discharges the dirt. The quality of our cleaning product is mainly based on the quality of 1 or more surfactants.

**SURFACTANTS** : different names are used as for example : surface active materials, tensio-active materials, etc...



### **CHARACTERISTICS**

1. The hydrophilic part ( head ) is hygroscopic.  
( *fig.1* )
2. The hydrophobic part ( tale ) is water-repellent.  
( *fig.2* )

### **SURFACE TENSION**

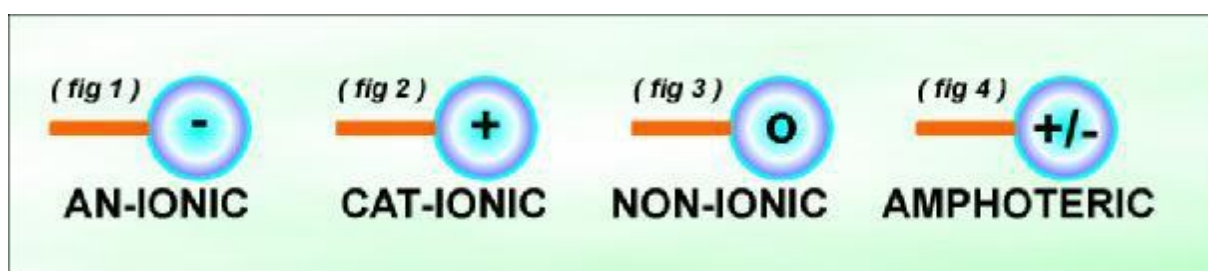
Watermolecules ( $H_2O$ ) have such a strong molecular attraction, that this immediately explains the convex form of a waterdrop. The upper molecular layer of a waterdrop nearly approaches the characteristics of a film. The hydrophilic part (head) of a tenside enters between the watermolecules, as a result of which the surface tension is broken.

(A simple test to visualize this. One fills a glass with fresh tap water and puts on top of the water a fine needle. As you see the needle will keep on floating on the water surface. Then a drop of for instance Biomex is put into the water as a result of which the needle will immediately sink to the bottom of the glass. The surface tension is broken.)

The hydrophobic part (tale) of a tenside attaches itself to e.g. oil parts or all other kinds of pollution, so that these are being encapsulated so they cannot be attached to anything else and just dissolve into the water. (fig. 3)

**4 MAIN GROUPS OF SURFACTANTS** : (fig. 1) The anionic surfactants (negatively charged) less appropriate to remove oil and grease, are sensitive to hard water and can, in combination with non-ionic surfactants disturb and weaken the effectiveness of this surfactant. (fig. 2) The cationic surfactants (positively charged) have a positive influence on non-ionic surfactants, they possess an anticorrosive effect and turn the surface anti-static. The cleaning potential is not so high.

(fig. 3) The non-ionic surfactants have a very high degreasing potential in comparison with the other sorts of surfactants, even when occurring in low concentrations and they are insensitive to hard water. (fig. 4) The amphoteric surfactants react as negatively charged ions in an acid environment and as positively charged ions in an alkaline environment; they are also insensitive to hard water.



### **DIAMOND CLEANING PRODUCTS.**

In our products an optimized mixture of powerful high-tech surfactants is being used which can be recycled. These surfactants provide an optimal reduction of the surface tension and have a very powerful undermining effect, as a result of which the molecular composition of all chemical and organic compounds will fall apart.

Thanks to the undermining effect the cleaning power increases to such an extent that all the underminable dirt will be removed and encapsulated.

A very simple test you can easily carry out yourself, is mixing a dilution of e.g. 1:10 Biomex with a synthetic oil, shake it very strongly and let it rest. The aqueous part of the liquid will divide itself from all the rest, after a few minutes you will notice that in the above-floating

layer all kinds of different layers are appearing, with on top of it the pure organic oil and underneath the synthetic additives. The oil has turned into a complete different structure.

In most cases the molecular structure of some compounds will be divided to such an extent that sometimes even an odour removing effect arises. Because of this unpleasant smells disappear during the cleaning, e.g. : cleaning after a fire, cleaning of second-hand cars of heavy smokers, cleaning of ventilation systems, cleaning of refrigerators, etc...

The surface-tension effect is therefore a very important factor of the unique character of our range of products. It takes care of a better and especially more profound cleaning in comparison to a lot of other products without having an aggressive effect on the under-soil. Because of this our products are very universal and all-round liquid detergents, with a unique combination of both cleaning and degreasing qualities. Our products can be used to remove oil, grease, soot, carbon, nicotine and all other kinds of persistent dirt. In some applications our products can even replace solvents, especially when one has to deal with an unctuous dirt with sticky soot or coloring agents.

## **THE pH-SCALE.**

This scale is gradually divided from 0 to 14. A product with a pH-value of 0 to 7 is called an acid, a product with a pH-value of 7 to 14 are bases or alkalines, pH 7 is neutral. Products beneath 4 pH and above 10 pH can, when appearing in high concentrations, have corrosive, and/or aggressive characteristics, they can affect the skin, clothes and undersoil, it is even possible that they cause dangerous scalds.

## **BASES AND ACIDS**

A very important factor in the effectiveness of our products is the structure of the pH-value. Most competing products make use of materials like NaOH (sodium hydroxide) to built up the pH-value. These dangerous materials



## **BASIC CHARACTERISTICS OF THE ALKALINE SOLUTION**

Corrosive materials or preparations are divided into 2 different groups :

- 1) the very corrosive and aggressive group, labeled with the warning symbol C (corrosive) belonging to the high-risk group R-35 (causing serious scalds).
- 2) the less corrosive and aggressive group, labeled with the warning symbol C (corrosive) belonging to the high-risk group R-34 (causing scalds).

In our products there are no materials ( *caustics* ) used of the C-type (corrosive) belonging to the high-risk group R-35, which can cause serious scalds.

The pH-value of our products is based on a combination of several products, of which the weight percentage on the one hand stays beneath the dangerous limiting concentration value, and on the other hand, thanks to the special characteristics of our formulae, form a very constructive character without aggressive qualities.

Both strong acids or alkaline products can in no time cause scalds, and affect the skin as well as the underlying tissues, although very often these products are still used, and sometimes even atomized, which is completely irresponsible.

## NEW GENERATION PRODUCTS

*With our new products, caring for mankind and the environment, times have changed completely.*

Let us take a close look at the skin to understand things better. The skin consists of three layers : the true skin, the corium and the epidermis. In the epidermis are situated the perspiratory glands (transpiration) and sebaceous glands (sebum) which form the protecting hydrolipid film of the skin.

The acidity degree of the skin is measured in pH, the pH-value of a normal, healthy skin lies between 5 and 6 (this is called the “physiological pH”). Abrupt temperature fluctuations, air pollution, air-conditioning, calcareous water and cleaning and degreasing products can disturb the acidity degree and affect the hydrolipid film, which protects the skin against dehydration.

In our range of cleaners/degreasers, you will find products with a pH-value of 12,6 of which can be expected that theoretically they should be corrosive and/or aggressive, our products however are a very favorable exception to this rule.

### **NOT IRRITANT.**

Our products are by no means irritant, in case of a direct contact with the skin, the last one will be strongly degreased, having as a result a dry skin in case of a long-term contact. It is therefore advisable to wear household gloves in case of a long-term contact to prevent dehydration of the skin.

In the cosmetic industry this problem is circumvented in the case of modern soap by means of all kinds of additives, which take care of the immediate restoring of the protecting hydrolipid film. These characteristics are of course not present in our products because of their differently directed applications.

You can compare this with the fact, that when you have been in contact for some hours with dishwater, your hands will dehydrate, because due to the long-term contact in combination with the degreasing and cleaning features the protecting greaselayer and microflora of the skin is removed. Unlike many other products, no allergic reactions have been noted up till now.

## CORROSION

A disadvantage of strong alkaline products is that they usually have a fast affect on metals. This new generation of conservational and ecologically sound products are built up in such a way that they have no negative influence to these undersoils at all.

### OVERVIEW CORROSION TESTS

#### " BIOMEX INDUSTRY "

Analysis statement LAB BELGIUM ARMY.

Test BI-CC-1530 C C1 III

Test	Max.Massaverschil (mg/cm <sup>2</sup> )	Resultaat
Zuiver koper NBN 267.01-DIN 1708	0,1 mg/cm <sup>2</sup>	0,0004 mg/cm <sup>2</sup>
Zacht koolstofstaal ( 0,1 % C )	0,1 mg/cm <sup>2</sup>	0,00001 mg/cm <sup>2</sup>
Cr/Ni Staal AISI 304L	0,1 mg/cm <sup>2</sup>	0,000008 mg/cm <sup>2</sup>

#### " BIOMEX INDUSTRY "

Analyse rapport LAB BELGIUM ARMY.

Test BI-CC-1801 A

Test	Max.Massaverschil (mg/cm <sup>2</sup> )	Resultaat
Zacht koolstofstaal (0.1 %C)	2 mg/cm <sup>2</sup>	0,000008 mg/cm <sup>2</sup>
Roestvast staal AISI 304 L	1,5 mg/cm <sup>2</sup>	0,00001 mg/cm <sup>2</sup>
Zuiver koper NBN 267.01	3 mg/cm <sup>2</sup>	0,0004 mg/cm <sup>2</sup>

#### " TENSOSTAR INDUSTRY " ( This is a not phosphate free version of Biomex Industry )

Analysis statement BOEING AMERICA .

SCIENTIFIC MATERIALS INTERNATIONAL INC. – MIAMI, FLORIDA 33144.

Test AMS 1526 A

Test Description	Conc	Dilute, 6 %
Sandwich Corrosion ( ARP 1512 )	Conform	Conform
Total Immersion Corrosion ( ASTM F 483 )	Conform	Conform
Low Embrittling Cadmium Plate ( ARP 1511 )	Conform	Conform
Hydrogen Embrittlement ( ASTM F-519,2a )	Conform	Conform
Flash Point ( ASTM D 56 )	Conform	Conform
Effect on Transparent Acrylic Plastics	Conform	Conform
( Stretched MIL-P-25690/ASTM F 484 )		
Effect on Painted Surfaces ( ASTM F 502 )	Conform	Conform
Effect on Unpainted Surfaces ( ASTM F 485 )	Conform	Conform
<b>Boeing D6-17487 , Revision H</b>	<b>Conc</b>	<b>Dilute, 6 %</b>
Sandwich Corrosion Test	Conform	Conform
Acrylic Crazeing Test ( ASTM F 484 )	Conform	Conform
Paint Softening Test ( ASTM F 502 )	Conform	Conform
Hydrogen Embrittlement Test ( ASTM F 519,2a )	Conform	Conform
<b>CSD 1 REISSUED 1-22-79</b>	<b>Conc</b>	<b>Dilute, 6 %</b>
Effect on Painted Surfaces Test ( ASTM F 502 )	Conform	Conform
Residue Test ( ASTM F-485 )	Conform	Conform
Sandwich Corrosion Test	Conform	Conform
Stress Crazeing Test on Acrylic Plastics	Conform	Conform
(ASTM F 484 )		
Cadmium Corrosion Test	Conform	Conform
		5,4 mg
Hydrogen Embrittlement Test ( ASTM F-519,2a )	Conform	Conform

## **TEST-RESULTS**

Different tests have proved that our products are completely harmless for all washable and colorfast surfaces, they do not affect metals (including aluminum) or synthetic materials, they are safe for all hardened lacquers and/or paints, they are even appropriate for removing spots from colorfast textile.

## **BIODEGRADABLE**

During the biodegradable process the surface-active materials cause most of the problems, these materials are the least biodegradable. The principal biodegradable percentage of the existing surfactant mixture amounts to more than 90 %. Therefore all D.C.P. products comply with the strongest environmental requirements according to the European legislation.

## **COLORFAST SURFACES**

To be sure of the fact that a surface is washable and colorfast, it can be advisable to do a small test on a less visible or invisible spot. In some cases it looks as if some paint or lacquer is removed of e.g. weather-stained lacquer, this is only just the pulverized or oxidized part of the lacquer which is removed.

The natural polish will return and after three or four washings the car begins to gleam again. The same effect can be caused in the case of office furniture or materials that have not been cleaned thoroughly for a long time.

The use of Biomex or Tensostar as a floor cleaner for floors with a polishing waxlayer, is only advisable in case the wax may be removed.

Biomex and Tensostar are very appropriate for the removing of old waxlayers of parquet floors, antique furniture, etc...

## **EYE CONTACT**

It cannot be excluded that the product sometimes comes into contact with the eyes, especially when atomizing for example the ceiling, this is indeed possible. Because of the degreasing effect you better avoid having too much product into your eyes, but there will be no real irritation.

This is not the case when for example during the diluting process some undiluted product comes into your eyes, then it will cause some light irritation, like when you are taking a shower and the soap or shampoo comes into your eyes. When this occurs, it is advisable to wash out the eye for just a few minutes with tepid water.

When the irritation does not stop, you better contact an ophthalmologist.



## **ENVIRONMENT**

During the last few years an enormous environmental consciousness has arisen, which for several companies is a very sensitive matter. In many cases it is not possible to maintain the quality of the product, or on the other hand the costs increase to an amount that the cost-effectiveness and therefore also the competitiveness is weakened. In the case of degreasers and cleaners the alternatives are so scarce and limited that many companies frantically look for possibilities, preferably without too much investments, and which are acceptable to be able to maintain themselves. We do not only offer products that comply with the strongest security and ecological requirements, but these products are also efficient and cost-reducing.

## **AN OIL SEPARATOR**

More and more companies are obliged to install an oil separator (whether or not combined with a micro-filtration), to clean their waste water.

There are different types of oil separators :

1. Mechanical systems by which a rust-resistant wheel or a synthetic belt is put through the upper floating oil layer, the oil sticks on it and can thereafter be scraped off or collected. Such a system cannot be used for our alkaline cleaners/degreasers because the adhesive power of the oils disappears in combination with our products.
2. When using our products it is advisable to use a deëmulsiifier or decantation system. (separating of the liquid layers)

This means that the oil and other pollution will be separated from the aqueous part.

We can distinguish three main groups :

- at the top : all materials lighter than water, e.g. : oils, greases, solvents, etc...
- in the middle : the aqueous phase.
- at the bottom : the materials or liquids heavier than water.

By means of different techniques the aqueous part is removed from between the other two layers, and in case it is not too polluted, it can be used again, or (whether or not after filtration) discharged.

The other remaining materials belong to the chemical waste and must therefore be treated and discharged as such.

It should be mentioned that degreasing products based on water have the advantage that for the most part (with the exception of the separated chemical waste) they can be discharged so you can save on the collection of chemical waste.

## **A FILTERING INSTALLATION**

There exist on the market different sorts of filtering installations that can be used for the cleaning of polluted liquids. According to the wishes of the consumer there exists a system which for that specific situation is the most efficient and cost-reducing. There is a choice between systems that are self-cleaning or installations of which the filter must be replaced regularly.

It is however very important to choose a filtering installation that is most appropriate for the specific application and purpose for which it will be used.

The following factors determine your choice :

- Maintenance of the filtering installation.
- Cost-effectiveness.
- Type of filter.
- Chosen filter opening.
- Capacity
- Efficiency.

## **DISCHARGES**

Polluted liquids may never be discharged in the environment just like that, there exist specific standards. Waste water for example may only contain a very small amount of oil or polluting material when discharged. It is therefore only a question of cleaning the waste water in such a way that it stays under the maximum standards. Following possibilities can be applied.

## **FILTRATING TILL UNDERNEATH THE DISCHARGE STANDARD**

There exist on the market filtration systems that can turn liquids into drinking-water. Fortunately the discharge standard does not lie too high, so that it is perfectly possible, dependent on the pollution, to choose a filter, which can purify the polluted product in such a way that it can be discharged. Always keep in mind the pH-value.

## **DISCHARGES AND pH-VALUE**

We have already mentioned what pH-value means and the exceptional qualities of our products with reference to this pH-value. The law forbids the discharging of strong acids and bases into the surface water, this is only permitted when the water has a pH-value in the range between 6 and 9 pH.

When, after filtration, our products still have a pH-value that is too high, although this would be very exceptional after dilution with water, the value can be decreased only in two ways :

- Adding enough water
- Adding a harmless acid (e.g. acetic acid) in small amounts

But then again, this will only happen in very exceptional cases.

As a consequence the alkalinity of our products will surely not have a negative influence on the environment.

## **FILTRATING FOR RECYCLING**

When filters are used with an opening of 0.1 micron (1/10.000 mm), then only certain materials can flow through, in particular the active parts of our products and water. All polluted parts as well as the emulsified Oil- / Diamond Cleaning Products ® - parts are stemmed. What remains is a reusable product only to be replenished with a small amount of Diamond Cleaning Products ® to replace the emulsified parts.

## **DEGREASING BATH AND SPARE PART CLEANERS**

Using Diamond Cleaning Products implies saving on manufacturing costs on a large scale because the use of the degreasing baths and spare part cleaners will be lengthened enormously compared with other products like for example solvents, petroleum based products, etc... Products that can be used 10 times longer, are not an exception.

The factors playing a very important part in this :

- *Because the dissolved oils and greases deemulsify very rapidly in our products, they can be separated very easily from the product, so that it lasts much longer.*
- *When using good filtrating systems most of the polluted parts are removed from the product.*
- *A water based product will not evaporate as easily than e.g. solvents, unless it is used under higher temperatures. In this case the evaporated part must be filled up with 80 % water and 20 % product.*

A supplementary advantage of our products is that the quality of the degreasing is much more continuous and hard-wearing, in comparison with the traditional solvents. The quality of solvents gradually decreases when the saturation increases.

## **CHARACTERISTICS**

When we talk about common qualities, then we are referring to the major characteristics we find in almost all Diamond Cleaning Products.

- **Extensive undermining power.**

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We already mentioned in this manual the function of the surface-active materials in our product. Thanks to the extensive undermining power, resulting from this, all underminable pollution is loosened from the surface. That is why our products are exceedingly all-round liquid degreasers and cleaners, which are in a very secure way extremely appropriate for the removal of oil, grease, soot, carbon, nicotine and many other kinds of persistent dirt. In some applications our products can even replace solvents, especially when one has to deal with an unctuous dirt with sticky soot or colouring agents.

- **Degreasing qualities.**

Only in practice our customers will be convinced of the tremendous degreasing qualities of our Diamond Cleaning Products. It goes without saying that, especially in the case of grease, it is best to increase the temperature of the cleaning liquid so that they rise above their solidification temperature. The degreasing will run much smoother. In extreme cases it is even advisable to remove the accumulated grease manually. However, all oils and greases are dealt with by our products in such a way that they lose their bonding strength and are easily removable.

- **Static dirt**

Static pollution can be found a lot e.g. on cars and synthetic material. Cleaning under high pressure only is not enough, unless very aggressive products are used, which can damage the lacquer, light metals, rubber or synthetic materials.

The only alternative to remove static dirt a 100 % in a safe way, is by making use of a brush, cloth or sponge.

- **Cleaning capacity.**

Only in practice one can prove the efficiency of our products. It becomes entirely clear for a customer when a comparative test is done. A convincing way can be to clean the one half of a surface with another product and the other half with an appropriate product from our range. After the cleaning, you polish the same surfaces again, but the one surface you first cleaned with the other product you now atomize again with our product and vice versa.

After 30 seconds you polish up with a clean dry white cloth the surfaces, and then show how much dirt there is on your cloth and you will be convinced. Finally compare both products on safety and aggressiveness.

## **AFFECTING PERIOD**

Knowing your products thoroughly is very important. An excellent way of learning your products is by means of experiments. What matters especially is seeing the connection of the different qualities and their effects.

*In this case the affecting period is a very important factor.*

As rule of thumb you can hereby state that : “The thicker or harder the layer of pollution, the longer the affecting period”. Next to the right temperature and the correct dilution this is of the utmost importance. Some applications go very quickly (e.g. the removal of nicotine, vapour greases, ...) Others on the other hand slower (e.g. baking ovens, graphite grease, ...).

When a certain cleaning does not have the right effect, usually this can be attributed to the affecting period which was much too short. It is also very important to guide your new customers and point this out to your clients. Very often it is only a question of changing their cleaning method, for example in some cases it is better to atomize the surface with the product in stead of diluting the product in a bucket and applying it with a sponge or cloth.

## **TEMPERATURE**

We already mentioned the fact that it is much easier to remove oils and greases when a heated liquid is used, but always keep in mind that heat becomes painful for the skin at 55°C.

In general, and then especially for degreasing baths, you can state that per 10°C of temperature rise the affecting period is halved. In other cases it is possible to heat our products even more. For example for the cleaning of a baking oven you atomize the sides of the oven with a 1:5 dilution of Biomex with water, put the baking tray back into the oven and fill it with water and a good splash of undiluted Biomex, let the oven steam vigorously for about 20 minutes and be careful that it cannot steam dry. You will be amazed by the result. Another example is the boiling down of pots and pans, baking tins, machine parts, with a dilution of 10 to 20 % Biomex or Tensostar, even baking tins that have not been cleaned for years, will be clean again. Another application is for example the removal of carbon deposit on machine parts, e.g. carbon deposit on pistons of a diesel engine.

You will be amazed by the result.

## **DILUTION**

Obviously the correct proportion of product and water is very important. For this purpose some products are delivered with a special product information card with clear instructions about the dilution. These must be considered as a guideline; with some experience you will be able yourself to find more applications, and you will learn instinctively which dilution is the most appropriate for certain applications.

For some applications (like e.g. removal of unpleasant smells) it can be necessary to use a highly concentrated product in undiluted form, for other applications this is absolutely unnecessary, and the result may even be less good because of the fact that this liquid may almost be saturated.

By adding water you can decrease the saturation point and therefore the product will be more efficient.

## **REMOVAL OF BAD SMELLS**

Biomex and Tensostar separate the molecular composition of most organic and a lot of chemical compounds. Biomex is much more powerful for this application than Tensostar. Therefore they can be used perfectly well for the removal of bad smells. Unpleasant smells disappear after the smell-causing materials have been in contact with the product, the smell will not be covered up by a certain aromatic substance, what is the case with many other products. This special quality is an excellent advantage when clearing up tires, for the cleaning of second-hand cars of smokers, even for the removal of bad smells in toilets, etc...

## **ODOURLESS.**

Most of our products are, even when atomized, practically odourless. When heated, there is a light, but surely not irritant odour. To some of our products an aromatic substance is added. Extensive study has preceded to find a perfume which is not neutralized by our product.

## **FIELD OF APPLICATION**

There exists such a wide range of applications for our products, that they can be used in many different cleaning systems. Also existing systems can very often easily switch over to our products without too much investments.

As a salesman it is however very important to guide the client so that the product comes up to his expectations.

A cleaning or degreasing product can be used in certain systems, ranging from the ordinary manual degreasing of machines to very complicated cleaning processes. Every application has it's own quality requirements and aims at a certain performance. Also the price is of great importance, not only with regard to the investment in equipment, but also to the consumption of cleaning liquid and the energy costs.

Furthermore there is also the processing and/or removing of the polluted product, which at the moment is a very vexed question for many companies. There is a common opinion that, when the quality of the degreasing process must be maintained by using alternative products based on water, this will involve a higher investment and an overall cost increase. Precisely with respect to the last- mentioned we have to think along with the client and explaining clearly that ecologically sound cleaning and degreasing does not necessarily means that the whole process

becomes more expensive. On the contrary, you can save a lot of money when you make the right choice. And our products are surely one of these. To make the right choice, one has to know what is available on the market.

Obviously it is impossible to be specialized in everything, but it is essential to broaden your knowledge as much as possible to give the right advice to your clients.

### **ULTRASONIC CLEANING.**

Belongs to the most sophisticated cleaning techniques of this moment. KWS (hydrocarbon)-containing products (are damaging products) very often could be used for the removal of dirt, oil and greases without brushing or wiping.

Because nowadays the industry is looking for alternatives to use water based products in combination with non- aggressive products (to protect the surface that must be cleaned), but still very efficient. For certain applications a mechanical support is advisable.

This can be produced by means of an ultrasonic action, more specifically by creating high-frequency electric energy in a generator which can be converted by means of transducers (a kind of loudspeakers) in high-frequency sound waves (with frequencies higher than 20.000 Hertz).

The transducers are placed in a cleaning tank filled with cleaning liquid. The ultrasonic vibrations cause microscopic vacuum cavities (steam- and air-bubbles) which explode after a short growth period. In the meantime a lot of air-bubbles have attached themselves to the pollution, so that when they implode the dirt comes along.

These implosions can have a pressure of 1.000 bar. As a result of this a very good “brush-activity” is created, also in places not easy to reach or even impossible to reach, parts can be cleaned without having to disassemble the machine or even partly taking it down.

The advantages are obvious :

- ***Fast cleaning, and therefore time-saving.***
- ***Extremely profound cleaning, very often with disassembly.***
- ***Also places difficult to reach (crevices, pores or notches) can be cleaned intensively.***
- ***Less heat and very often also lower concentrations of cleaning liquid required.***
- ***Less risk to damage vulnerable parts.***
- ***No damage to surfaces or finishing layers.***

One disadvantage could be the high investment costs. The ultrasonic cleaning is only taking place where the liquid is able to reach. That is why it is so important that the surface tension of the water is broken as much as possible, so that it can penetrate everywhere. And that is one of the most important basic qualities of our products. They will influence the ultrasonic activity in a very positive manner so that the result becomes even better. It goes without saying that our experiences with this cleaning system are therefore very positive.

## **IMMERSION BATHS.**

This is a cleaning tank, filled with a degreasing product, in which a vertically moving bottom or cage is installed. The materials that have to be cleaned are put into this cage and by means of the rising and descending movements the liquid is stirred and as a result of this the dirt comes off. The mechanical cleaning is not so powerful, but for some applications surely sufficient. For example for the removal of cooling liquids and the like. Very often with this equipment it is possible to work with different temperatures, which only shortens the cleaning time. For the removal of the static dirt this process is not so appropriate. The oil floating on the surface (remainders) has to be removed regularly.

## **SPARE PART CLEANERS.**

You will find these spare part cleaners in almost every workshop or service station. They are small tanks, some of them more sophisticated than the other, which are placed on top of a drum filled with cleaning product. In the tank there is a perforated grid through which the liquid by means of a pipe flows back to the liquid drum, together with the pollution. The cleaning itself is effected by means of a brush through which the liquid is pumped and the parts can be cleaned. Most of the liquids, used for this process, are products based on petroleum derivatives.

Besides the combustibility (and therefore dangerous), the danger threshold for the environment, the inhaling of poisonous materials through the skin, subsequently coming into the body with all possible adverse effects afterwards (allergies, cancer, etc...) these products have another disadvantage, namely the fast saturation, as a result of which they are less efficient. The cleaning quality decreases therefore very fast and will take more time.

Also in this case, many of our products offer an appropriate solution, and can, usually without much adaptations, be used in a spare part cleaner without any problem. The advantage is, that they are incombustible, not harmful to the skin, not irritant in open wounds and guarantee a permanent cleaning quality. It will take much longer before the product is saturated because the oil parts will be separated from the aqueous phase of the product.

Take special care to the fact that the suction pipe of the spare part cleaner must be inserted deep enough into the cleaning liquid as to prevent that at a certain moment the pollution will be sucked in by means of the liquid brush.

## **SCRUBBING MACHINES**

Most common scrubbing machines work according to the following principle : atomizing, scrubbing and sucking dry. The built- in brush mechanism loosens the dirt extremely well. First the floor is atomized and brushed, after a few minutes the floor is brushed again and the fluid is soaked up. After a profound cleaning the concentration of our cleaning products can be reduced when the next cleaning takes place, for some scrubbing machines it is necessary to use a low-foaming product or a foam inhibitor.



## **INDUSTRIAL WASHING MACHINES**

This equipment is best compared with large industrial dishwashers, and there exist two different systems :

- The products to be cleaned are lying in a rotating basket and the sprinklers are fixed.
- The products to be cleaned are lying fixed in a basket or tank and the moving sprinklers atomize the products along the different sides.

The spray pressure varies from 2 to 8 bar. In this system it is necessary to add a foam reducing product, as to prevent an excessive foam production. It would be perfect (as in most machines) to built in an oil separator as to prevent that the oil is atomized over the product again. A disadvantage that may appear is that the cleaning quality decreases in places where a direct atomizing of the products is not possible or where the products are lying against each other .

## **TUNNEL WASHING MACHINES**

In this case the products to be cleaned are put on a conveyer belt and pass through a tunnel in which a certain amount of fixed sprinklers are installed. During the first phase the cleaning product is atomized under a certain pressure (2 à 3 bar) on to the products. Then they pass through a rinsing phase and optionally a drying phase will follow (the water is then blown off). In this case it is also possible to use heated liquids and the product is re-used several times. An oil separator is again advisable. An enormous advantage of this system is that the sprinklers can be directed according to the products that need to be cleaned as a result of which the cleaning will be as effective as possible. Experience teaches us that for this application our products may often be diluted to a very large scale.

## **HIGH PRESSURE CLEANERS**

This system is nowadays a very established system, even for the private sector. We talk about high pressure when a pressure of 45 to 60 bar is used. By spraying a liquid under high pressure against a surface a mechanical effect arises which (partly) replaces the wiping with e.g. a brush.

Different factors will have an influence on the result :

- *Thanks to the mechanical effect all the dirt is being sprayed away by means of high pressure, except for the static dirt. For the last-mentioned you still need a sweeping movement.*
- *The temperature (the warmer the better) will influence the result, especially in the case of greases and heavy oils.*
- *The cleaning products reduce the surface tension of the water so that dirt and grease can be removed better.*

The high pressure cleaners are easy to operate and fasten the cleaning process.

One disadvantage may be that under a too high pressure certain surfaces may be damaged.

## **LOW PRESSURE CLEANING.**

The basic principle can be compared with the high pressure cleaning, but there are some differences which are brought into prominence by the suppliers of low pressure cleaners. Following a survey of these differences :

- The rapidity of the water under high pressure measured at the spray nozzle can easily rise to  $\pm 600$  km/h. In this case the air is being mixed with the water and the drops are getting so small, that they hardly have an impact and which makes the temperature of the liquid decrease considerably. Under low pressure (25 bar) the rapidity only runs up to  $\pm 150$  km/h. In this case the impact of the water is much higher (larger drops) and the temperature differences are marginal.
- Measurements show us that the impact of the liquid on the surface would be higher with low pressure. With high pressure (120 bar) it amounts up to  $1600 \text{ g/cm}^2$ , with low pressure up to  $2200 \text{ g/cm}^2$ , measured at a distance of 20 cm.
- The temperature loss at a pressure of 160 bar decreases after 100 cm from  $65^\circ\text{C}$  to  $32^\circ\text{C}$ , at a pressure of 25 bar from  $65^\circ\text{C}$  to  $55^\circ\text{C}$ .

Low pressure systems are therefore very efficient and durable systems as well as economical, also the chance that materials will be damaged is zero.

## **MANUAL DEGREASING.**

The manual degreasing of machines e.g. is an application where our products score points. The operating procedure differs in a certain way with for example dry-cleaning naphtha, petroleum, aliphatic hydrocarbons, etc...

The procedure to get the best result is the following :

- *First prepare the product in the right mixture. Preferably in an atomizer which can be brought under a pressure of 1 to 3 bar so that a very equal vapour can be sprayed on to the surface to be cleaned.*
- *Let it act upon the surface. The affecting period depends on the thickness and hardness of the pollution. Then wipe it away with a very absorbing cloth or wash down with water.*

## **NOT APPROPRIATE APPLICATIONS.**

There are few applications for which we do not have a solution in our range of products. When a client informs us about a negative influence, please let us know, usually there has been a mistake in the application : e.g. dilution too strong or not enough, affecting period too short, wrong operation, the temperature, etc...

We can offer you the right advice to adjust the application so you will not lose your client.

Usually for commercial, but also for practical reasons, we have extended our range of products. Most products have, as we already mentioned, the same basic characteristics, but are adapted to certain applications so that they :

- Became cheaper.
- Were easier to apply.
- Became better.
- Got supplementary qualities.
- Could wear a specific label.
- Became appropriate for the retail trade.

Following a survey where the specific features of the different products are amplified.

# **APPLICATIONS**

- 1 Fuel suppliers / petrol stations
- 2 Fire service
- 3 Car-washes
- 4 Retailers ; Car shops
- 5 DIY
- 6 Garages
- 7 Catering
- 8 Industry ; General
- 9 Industry ; Chemistry
- 10 Industry ; Plastic processing
- 11 Industry ; Metal processing
- 12 Agriculture / livestock breeding
- 13 Aviation
- 14 Government institutions ; Local authorities, intercommunales
- 15 Government institutions ; Armed forces
- 16 Government institutions ; Schools
- 17 Government institutions ; Hospitals
- 18 Shipping boating
- 19 Painting companies
- 20 Cleaning companies general
- 21 Specific
- 22 Industrial
- 23 Tent hire companies
- 24 Road hauliers, Coaches, trams, trains, taxis, HGVs
- 25 Food industry General
- 26 Meat processing ; Abattoirs
- 27 Meat processing ; Butchers
- 28 Fish processing
- 29 Vegetable processing
- 30 Bakeries