



Presents

**Cleaning solutions that
make a difference**



Tentative Agenda

- **Presentation of Customer - Company, products and markets**
- **Presentation of Lagafors**
- **Presentation and discussion of suitable products**
- **Sales support material**
- **Technical Training and support**
- **Prices**





We never compromise our Cornerstones



**... ultimate
hygiene**



**... at reduced
cost**



**... with reduced
environmental impact**



**... in an improved
working setting**

.. that harmonize with demands



Society

- Safe food
- Reduced cost
- Environmental impact
- Ergonomics & sick leave



Industry

- Safe food
- Reduced cost
- Environmental impact
- Ergonomics & sick leave



Supporting Trends

- **Water is scarce!**
- **Water is expensive!**
- **Energy is expensive!**
- **Chemicals are needed!**
- **Waste is a costly problem!**
- **Work related illnesses are unnecessary!**
- **Time is money!**



Legislation - a Friend or Foe?

A Guiding Star to R&D

Keeps the Industry Honest

- **Hygiene standards**
 - HACCP, BRC, GMP, ISO 2200
 - Audits
- **Environment**
- **Energy and water consumption**
- **Ergonomical solutions and working environment**



 **LAGAFORS**

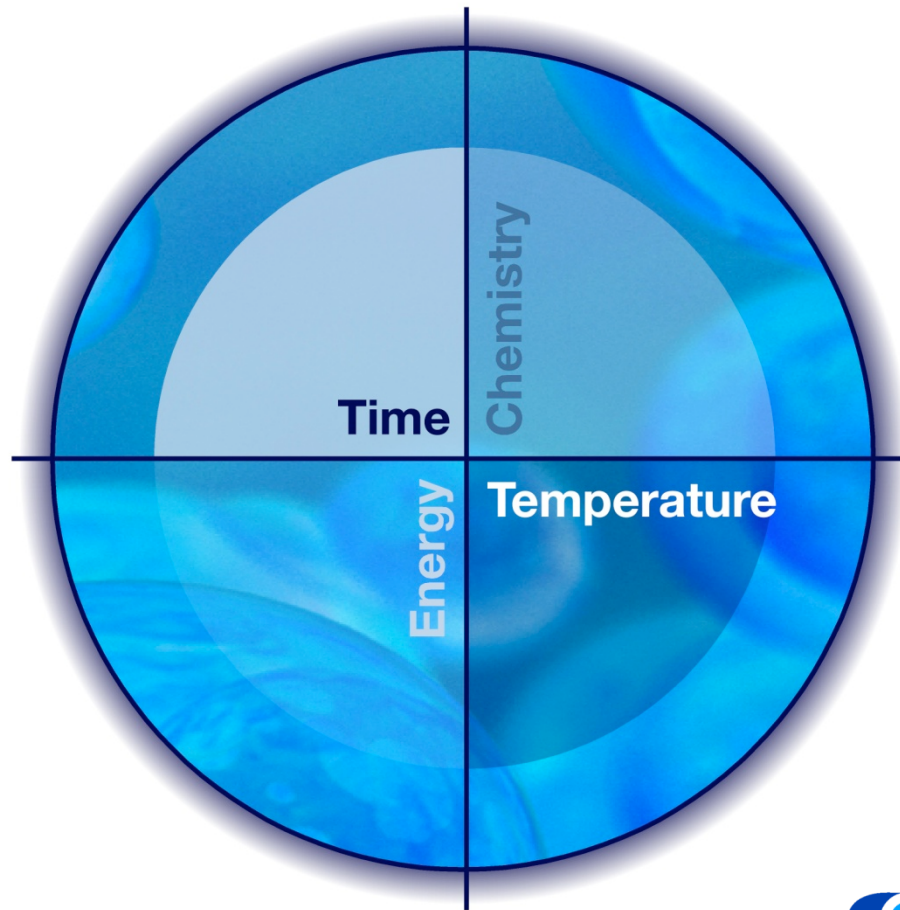
EFSA Says....

10/11/2006 - Food processors should be monitored to ensure they apply proper manufacturing and hygienic practices throughout their plants says an EU food safety panel.

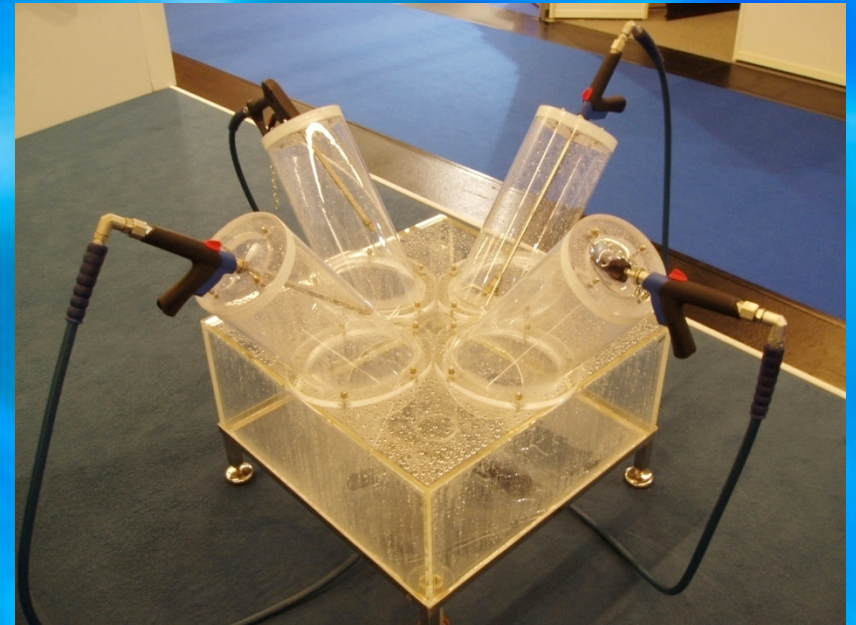
The recommendation is one of a series of opinions published yesterday by the European Food Safety Authority (EFSA) as part of the bloc's programme to prevent and reduce animal diseases that can be transmitted to humans. Such foodborne zoonoses, such as *Salmonella enteritidis*, *Campylobacter* spp. and *Listeria monocytogenes*, cause about 380,000 EU residents to fall sick each year.

The recommendations, some of which deal with in-plant processes, are sent to the European Commission and the bloc's legislative bodies, and if approved, could result in new regulations for the food industry.

Lagafors = Clean with Optimized Parameters



At Anuga FoodTech and IFFA



Benchmarking

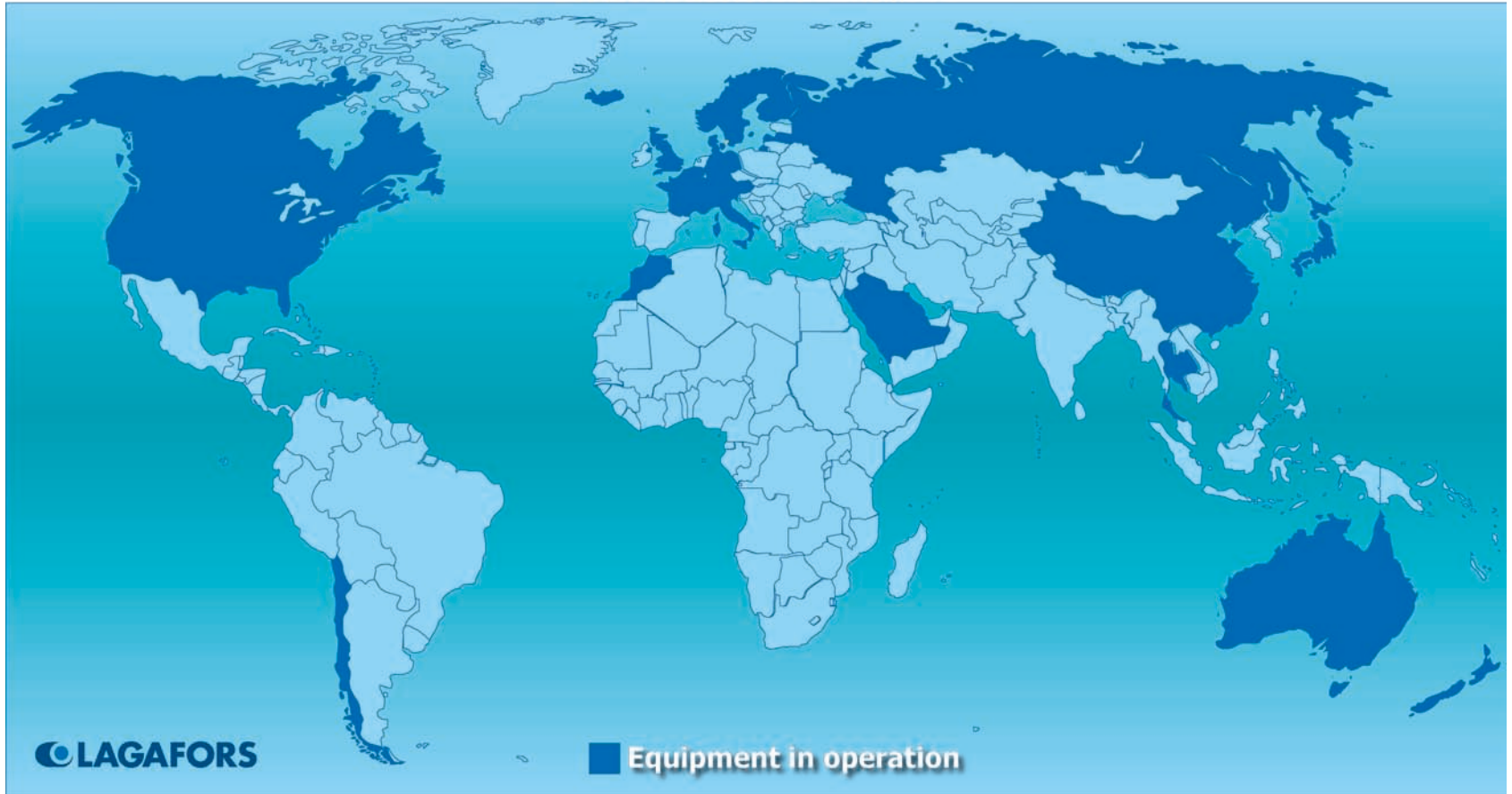


 cube

 LAGAFORS

Lagafors around the world

Lagafors in the World



Reference Installations

e.g.

Arla Foods

Skåne Mejerier

BBH, Baltika Beverage Holding (St Petersburg, Tuula, Rostov, Samara)

Carlsberg Breweries

Procordia

Sardus

Atria Lithells

Scan (Swedish Meats)

Findus

Kronfågel

Dafgårds

Konsum Värmland

Danish Crown

SBAG, Carna Gallo

Pharmacia, Astra Zeneca

Swedish Match, Philip Morris

Central Hospital, Växjö



Our Cleaning Philosophy

As little as possible
As much as necessary

Introduction: External Cleaning



The Lagafors Method

1 Pre wash

- wash away large particles and soaking of areas to be cleaned using low to medium pressure of water (~ 30 l/min) at $\sim 45^\circ\text{C}$. Long distance from nozzle to surface!

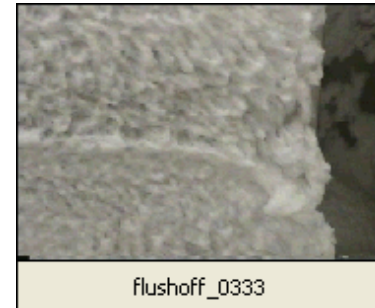


1

2

Apply Chemical Foam

- Dissolving grease, protein and other unwanted substances using automatic dosing for optimized concentration. Temperature $\sim 15^\circ\text{C}$, time to work ~ 15 minutes



3

3

Pressure Washing

- Wash away chemicals using medium to high pressure water at $\sim 45^\circ\text{C}$. The bio-film is broken! Short distance from nozzle to surface!

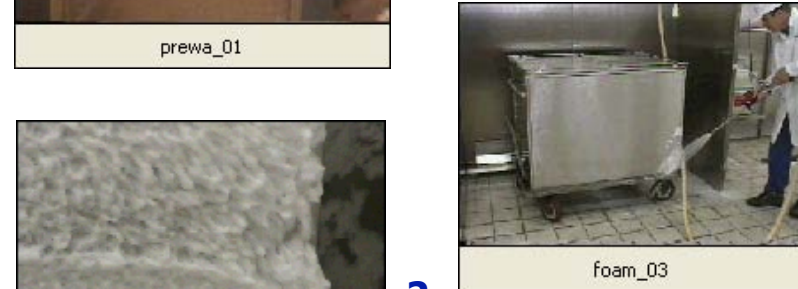


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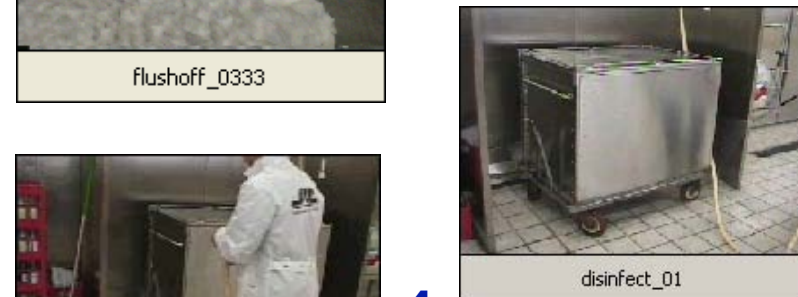
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Disinfecting

- Apply desired disinfection agent using automated dosing for optimized concentration. Remaining micro organisms are extinguished



2



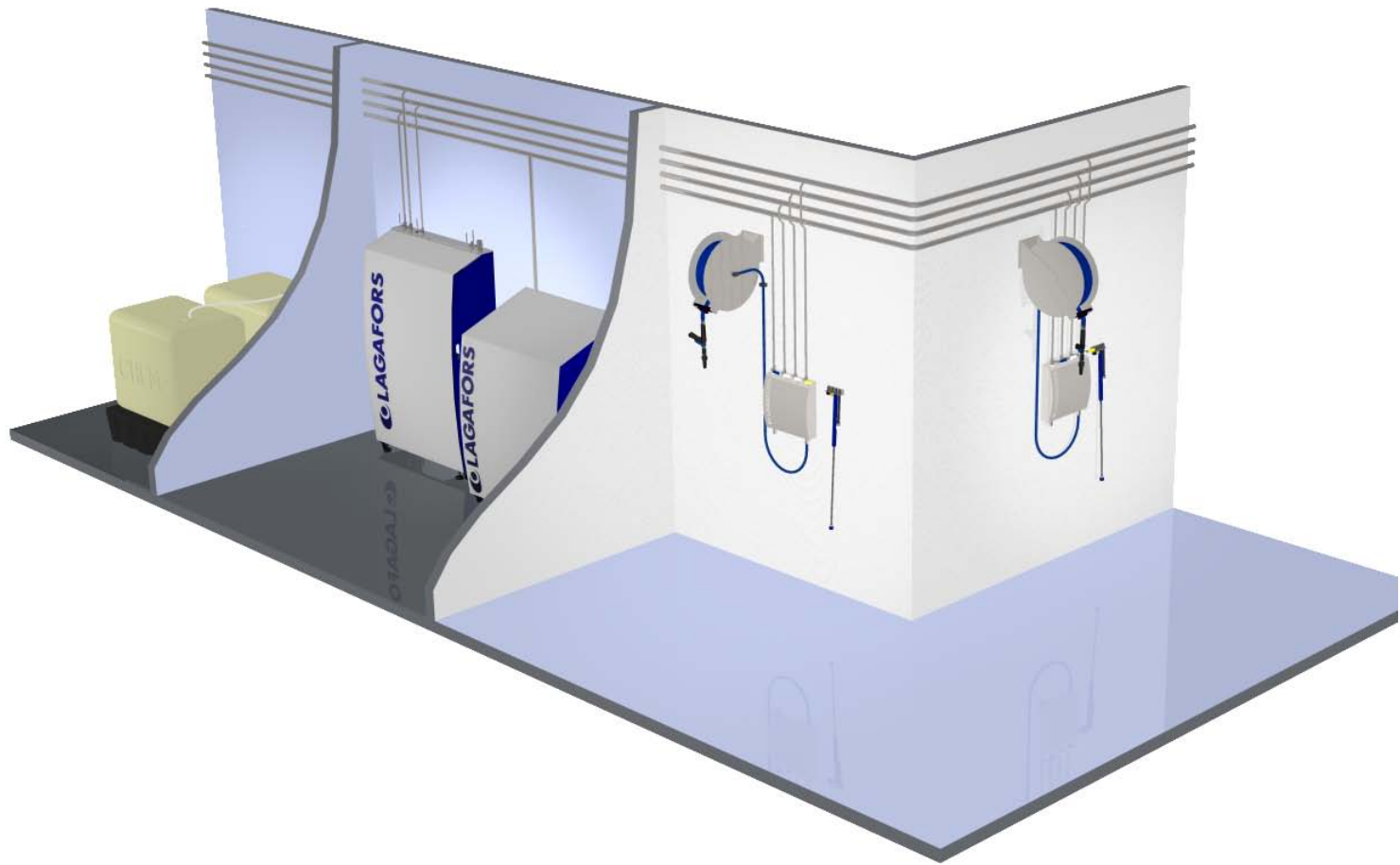
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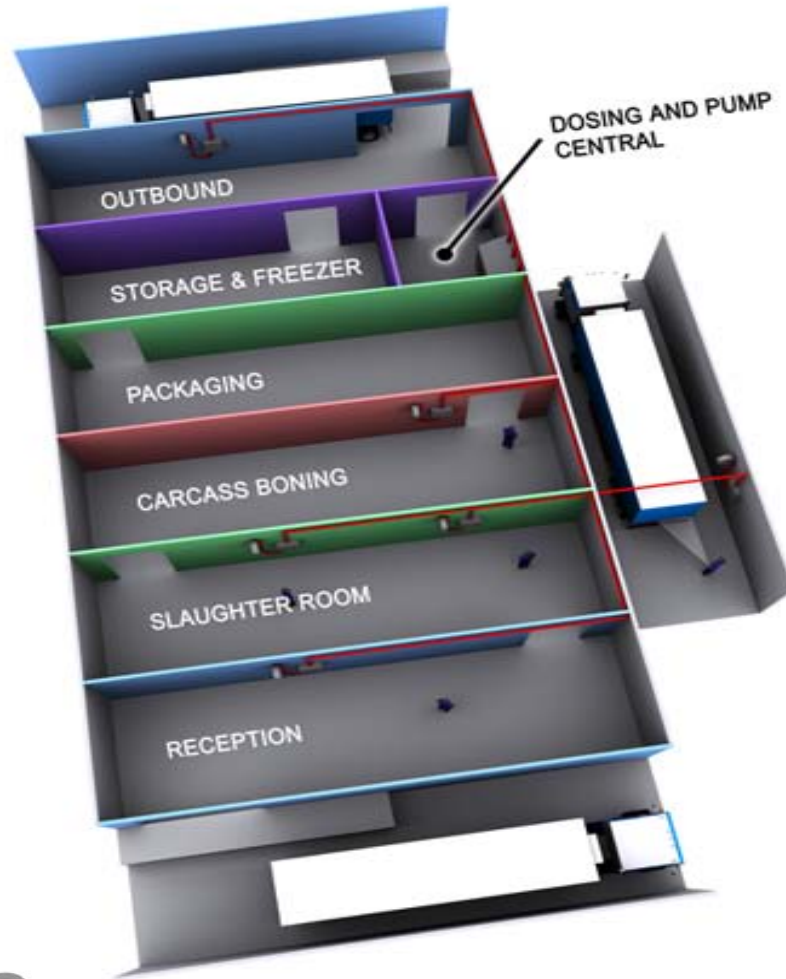
Rinse

- Wash away disinfection agent with water

Advantages of the CCS concept (Central Cleaning System)



Sampeel of an Abattoir



+ / - Chemical dosing

+ De-central chemical system

- Flexibility in choice of chemicals.
- If one satellite fails, the others will function.

- De-central chemical system

- If the water system fails, the whole hygiene system will fail.
- Flexibility with choice of chemical => a higher risk for dangerous mixtures of chemicals when changing the containers.
- Higher maintenance costs with de-central satellite stations.
- Low dosing accuracy $\pm 1,0\%$ => high chemical consumption.
- E.g. 4% foam concentrate in 12 l/min compared with 7 l/min => 40% higher chemical consumption.
- Concentrate container 25 litres => higher cost/litre
- Manual handling of concentrate containers => inefficient and dangerous.
- Warm water for all chemicals increases the condensate (Increased consumption/worse working environment - respiratory tract, reduced impact of chemicals), increased energy costs and corrosion risks.
- Increased application pressure => increased risk that warm chemicals penetrate the machines.
- Chemical concentrates are not allowed in production areas during production. (Will probably be banned altogether)

+ Variable Chemical Centre, VCC

- High dosing accuracy, $\pm 0,1\%$ => reduced consumption of chemicals
- E.g. 4% chemical concentration in 7 l/min compared with 12 l/min => -40% chemical consumption
- Concentrate containers 200 – 1000 litres => lower cost/Litre
- No wasted time replacing smaller containers
- Cold water is used in VCC => lower energy costs, improved impact of chemical cleaning, reduced risk for corrosion and a better working environment.
- Low application pressure => Reduced risk that chemicals will penetrate machines.
- Safe handling of concentrated chemicals.
- No chemical concentrate in production areas.
- Hygiene staff can not adjust the settings for concentrate %.
- If one system, water or chemicals, fails the other one will function.

Easy and efficient maintenance work in a central place.
At approx. 15 satellite stations less investment/station.

- Variable Chemical Ce

+ / - Pressurized water systems

+ Low pressure systems, LWP

(Recommended for the beverage industry and for some applications in the fish and prepared food industries)

- Competitively priced
- Reliable

- Low pressure systems, LWP

- High costs/consumption of water
- High costs/consumption of waste water
- Very limited possibility to change pressure/flow
- High costs for stainless steel pipes (large dimensions).
- Much higher maintenance costs with de-central satellite stations.
- Increased application pressure => increases the risk of water penetrating the machine.

+ Medium pressure system, VPP

(Recommended for the meat processing industries and most applications in the fish, animal food and waste destruction industries)

- VPP compared with hose => 22 - 35% lower costs/consumption of water, electricity and waste water.
- VPP compared with LWP => 13 - 25% lower costs/consumption of water, electricity and waste water.
- Variable pressure and water flow => optimized costs for desired cleaning energy.
- Lower maintenance costs compared with other medium pressure systems.
- Lower costs for pipes (smaller dimensions)
- Less chemical use with optimized removal of biofilm.
- Less water
 - => less condensate
 - => reduced areas for bacterial growth

- Medium pressure system, VPP

- Increased application pressure => increases the risk of water penetrating the machine.
- Increased investment.

+ / - Pressurized water systems

+ Medium pressure, Multi Pump System, MWP

(Recommended for the meat processing industries and most applications in the fish, animal food and waste destruction industries)

- Competitively prized
- If one pump fails, the other will function
- Reliable

- Medium pressure, Multi Pump System, MWP

- Limited flexibility in pressure and water flow.
- Strong (dangerous) pressure peaks and pressure variations
 - increases wear and tear on entire system,
 - increases muscles strain on operator

+ Medium pressure system, VPP

(Recommended for the meat processing industries and most applications in the fish, animal food and waste destruction industries)

- Variable pressure and water flow => optimized costs for desired cleaning energy.
- Lower maintenance costs compared with other medium pressure systems.
- No pressure peaks or pressure variations, even with many users.
- Very reliable.

- Medium pressure system, VPP

- Increased investment

Specific examples

Project description	Torsåsen AB Sweden Poultry slaughterhouse Complete hygiene solution	BBH Group Russia Brewery Hygiene solution i.e. tanks, brewery and waste handling	Procordia Food Sweden Largest food manufacturer in Scandinavia Complete hygiene solutions
Location	Falkenberg, Sweden	5 factories i.e. St Petersburg, Tula, Rostov, Samara, Chabarovsk	4 factories in Sweden i.e. Eslöv, Örebro, Kumla, Vansbro
Equipment	VPP 8090 2xVCC-D 35 VMS Satellite stations Crate dishwasher	12 x CCS plants for water and chemicals 300 VMS Satellite stations	9 x CCS plants for water and chemicals 150 VMS Satellite stations Crate dishwasher
Production area (m²)	10,000	Approx. 50,000	Approx. 4 x 10,000

Delivering savings

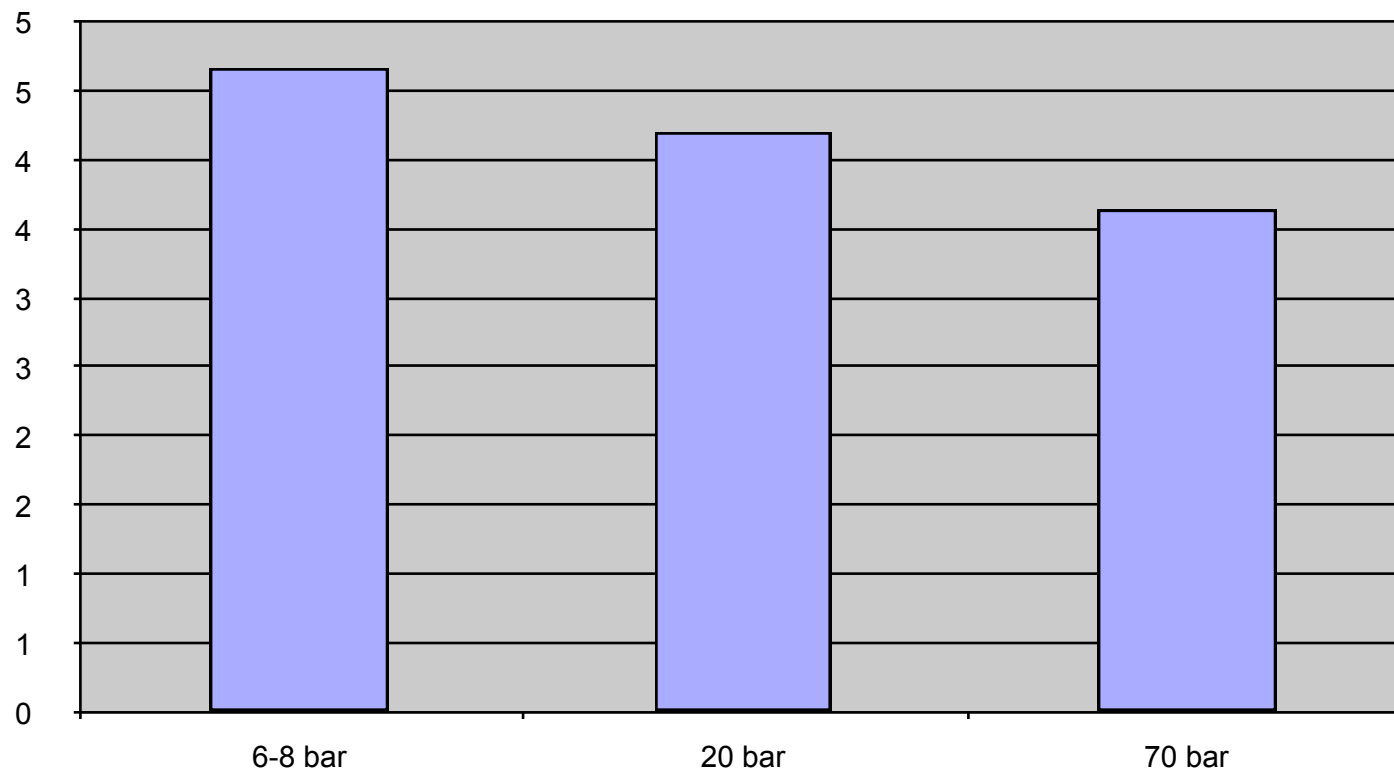
Objective

- To verify water consumption based on technology during cleaning with VPP 8090 and PCN Vs “hose” and low pressure/high flow system
- To verify potential savings by optimizing method and technology

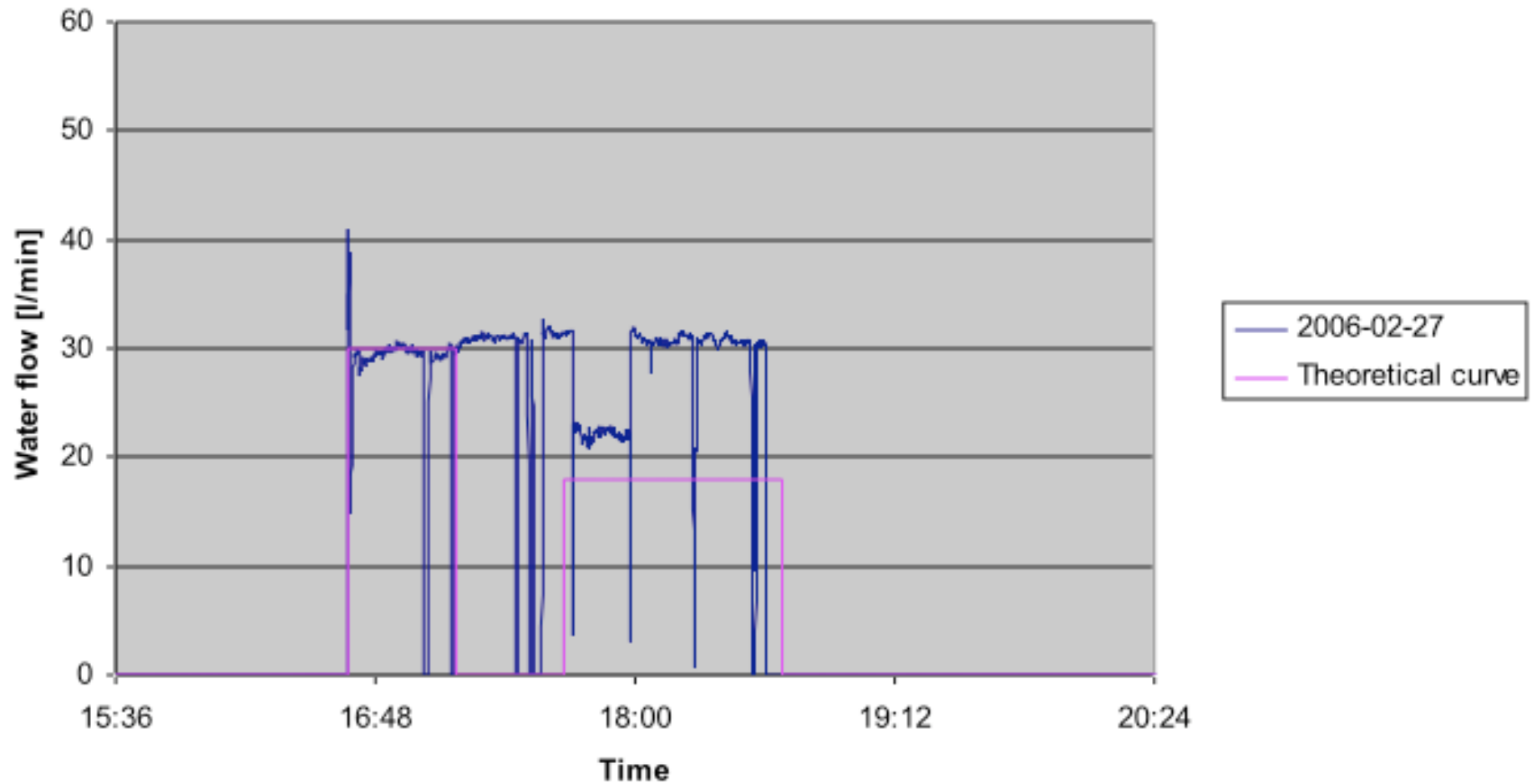
Method

- Verified time- and water consumption for three 9 day periods where all parameters where equal e.g. production area and output.
- Digital logging unit measuring flow every 5 seconds
- Pre training of staff for each technology used.

Water consumption



Actual usage - method



Facts and Figures

Pressure	Time	Average Consumption/ shift
6-8 bar	2:04:09	4,666 m ³
20 bar	2:08:26	4,205 m ³
70 bar	2:06:24	3,650 m ³

Conclusions

- VPP Vs "Hose" -21.8% - -37%
- VPP Vs LWP -13.2% - -25.3%
- Time consumption ~equal
- Tool verifies cleaning method
- Tool can be used to cost optimize

Product Range

We offer

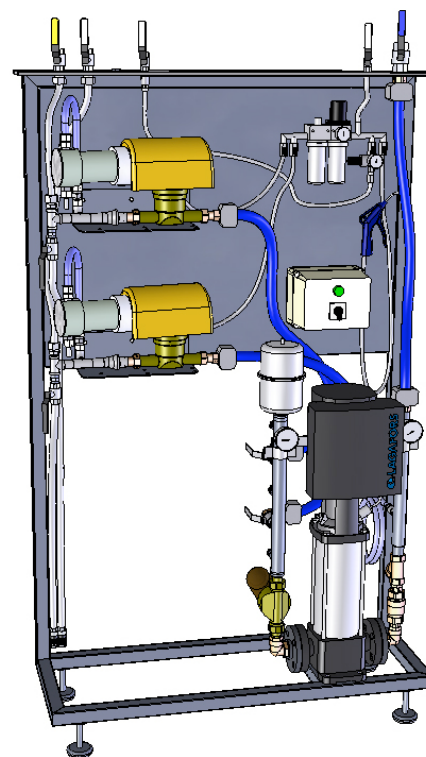
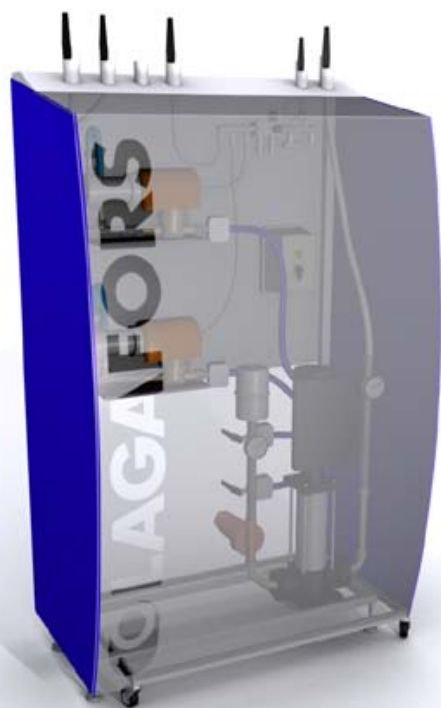
- **Idea generation, trouble shooting**
- **Component based cleaning solutions**
- **Automatic washing systems**
- **Installation/Service/Maintenance**
- **Unique accessories**
- **Spare parts**
- **Training**



Product Groups

- **Central Systems**
- **Satellite Stations**
- **Automatic Systems**
- **Automatic Washers**
- **Accessories, e.g. Spray Guns & Nozzles**

Central Systems Variable Chemical Center

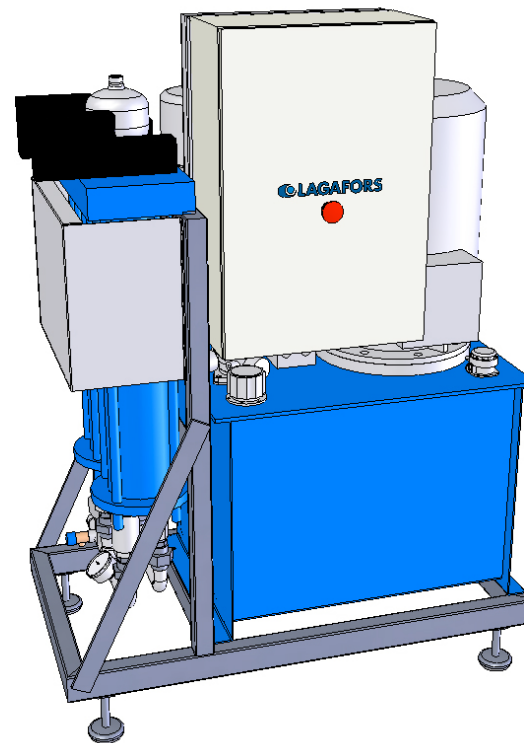
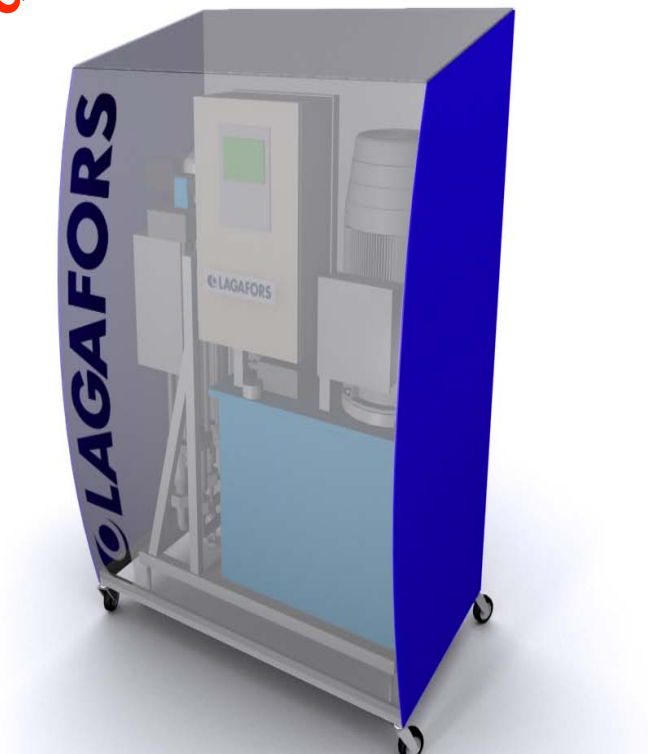


 **cube** VCC, Variable Chemical Center

 **LAGAFORS**

Central Systems

Patented



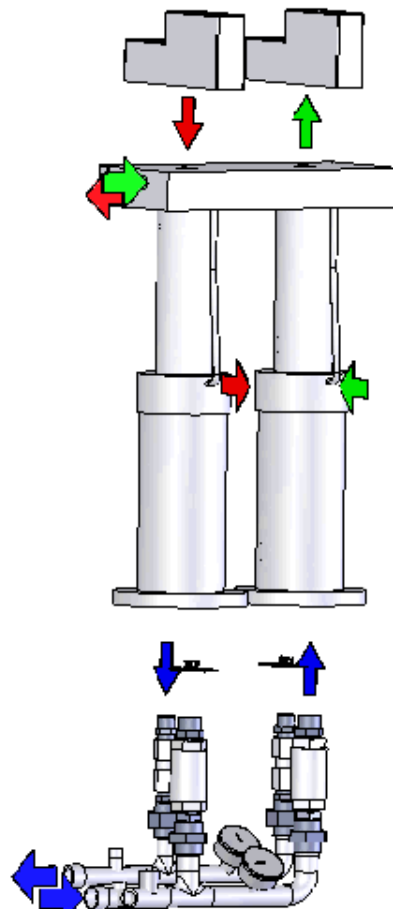
Variable Pressure Pump

VPP 8090



Central Systems

Patented



Cylinder movie



Variable Pressure Pump
VPP 8090



The most modern Norwegian Trawler uses **VPP**



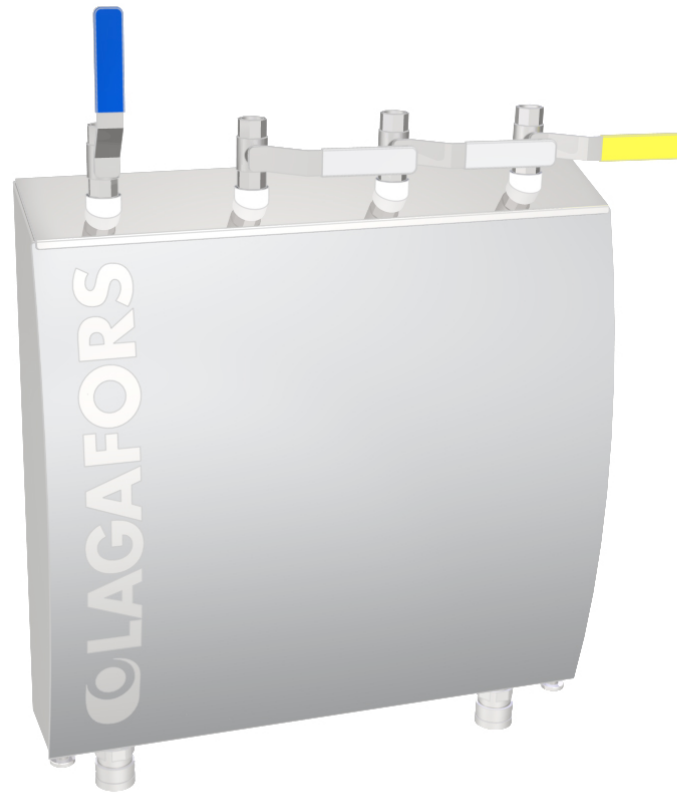
Satellite Stations



Norwegian Salmon processing plant, 10 year warranty on parts in VMS

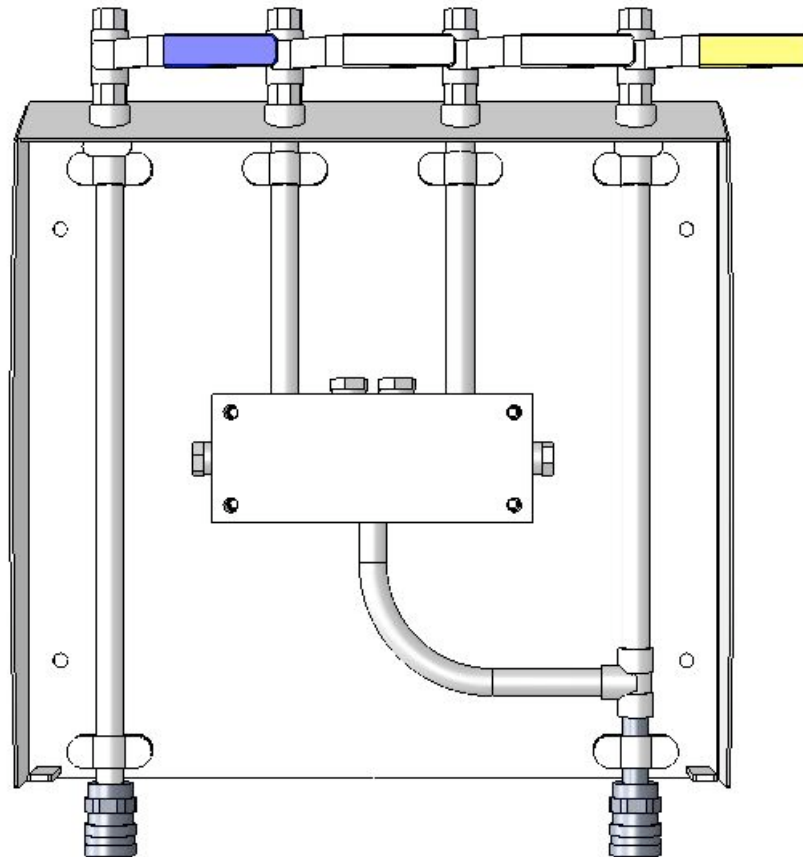
Satellite Station

Variable Media Satellite - VMS



Satellite Station

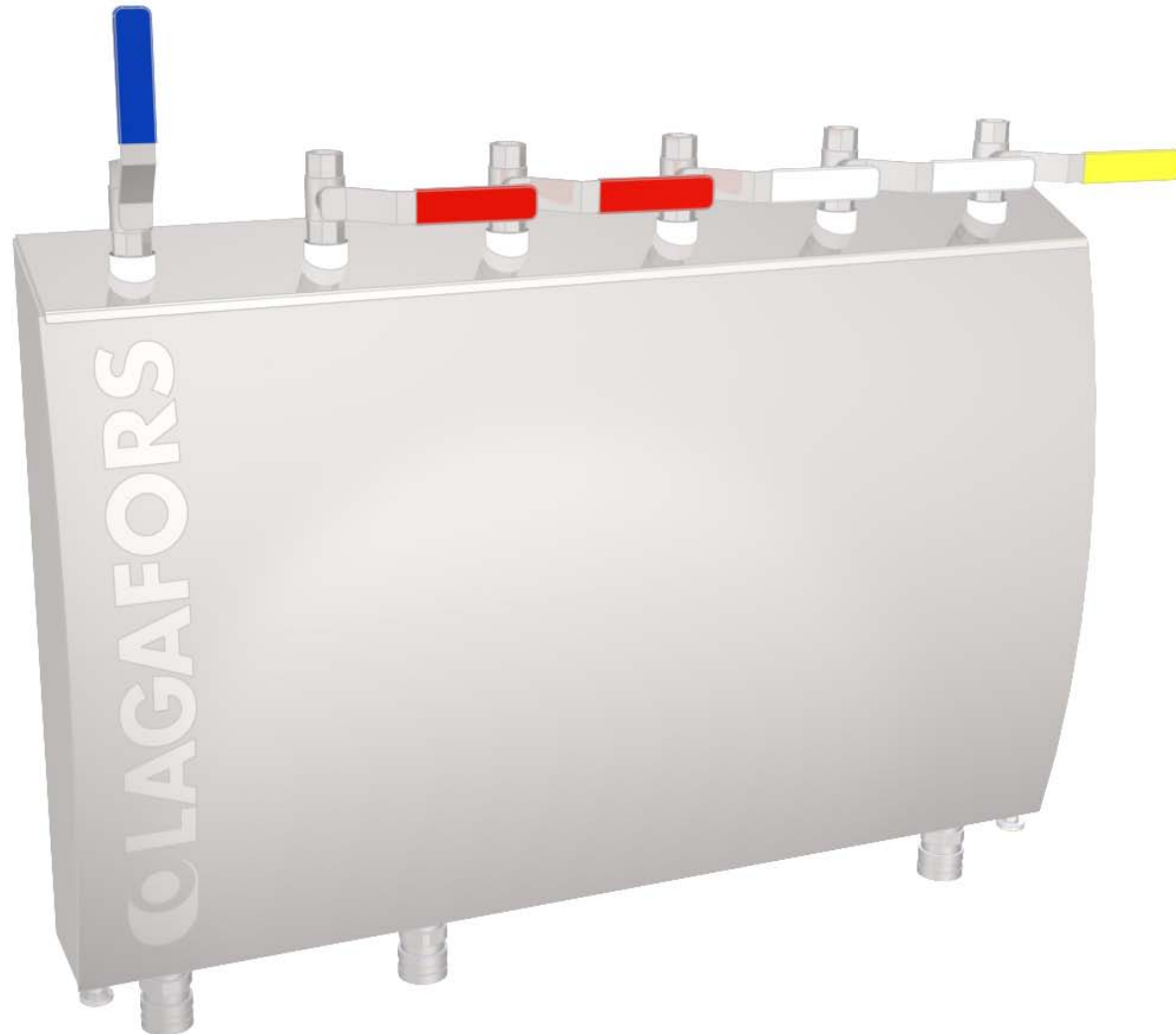
VMS – Variable Media Station



VMS-D for water and 2 chemicals, central dosing

Satellite Station

Variable Media Satellite – VMS-T



VMS-T for water and 3 chemicals, central dosing

Central Systems HRC



HRC 2090S e.g. Hotel, Restaurant & Catering System

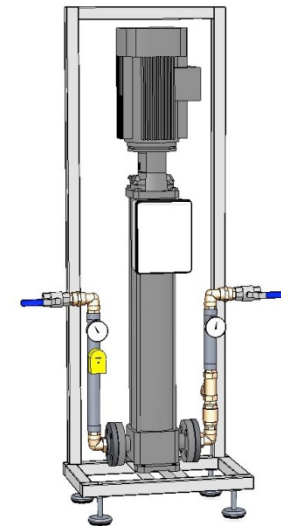
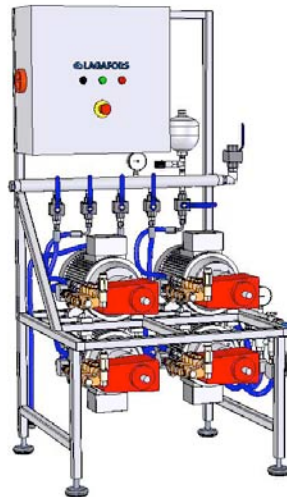
Water booster systems for



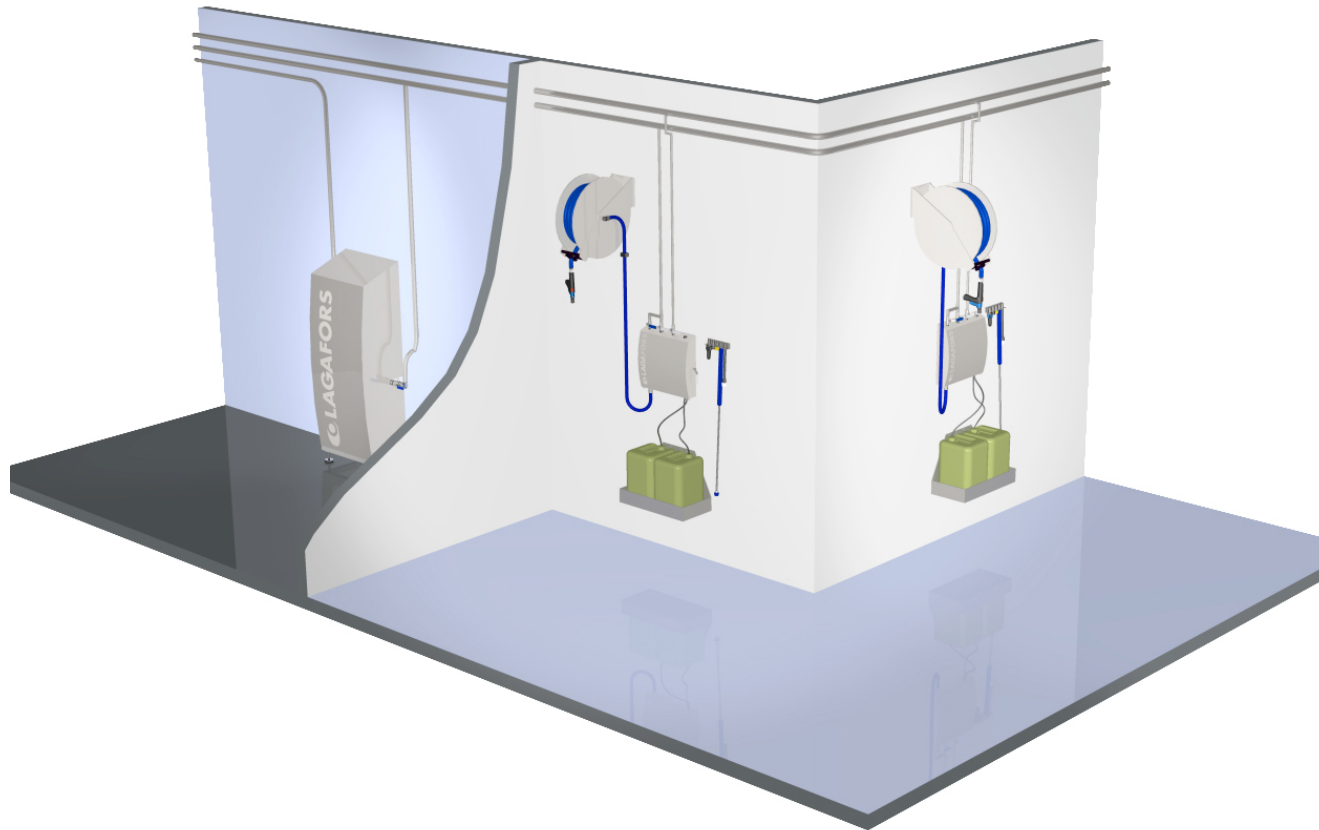
MWP, Multi Water Pump



LWP, Low Water Pressure

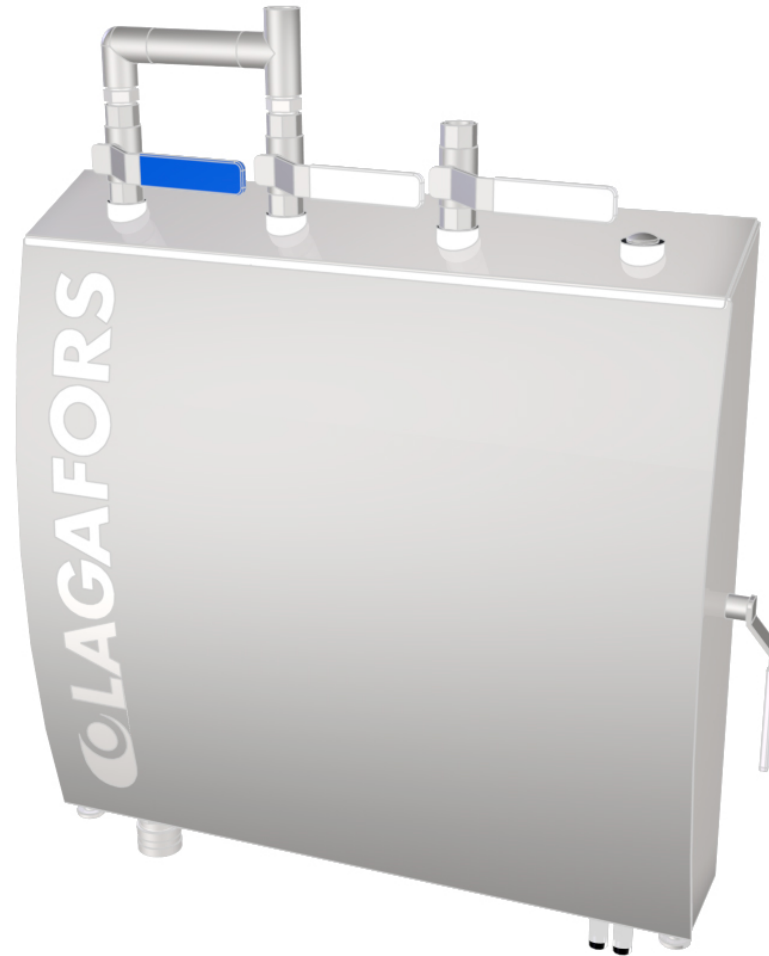


De-Central Systems



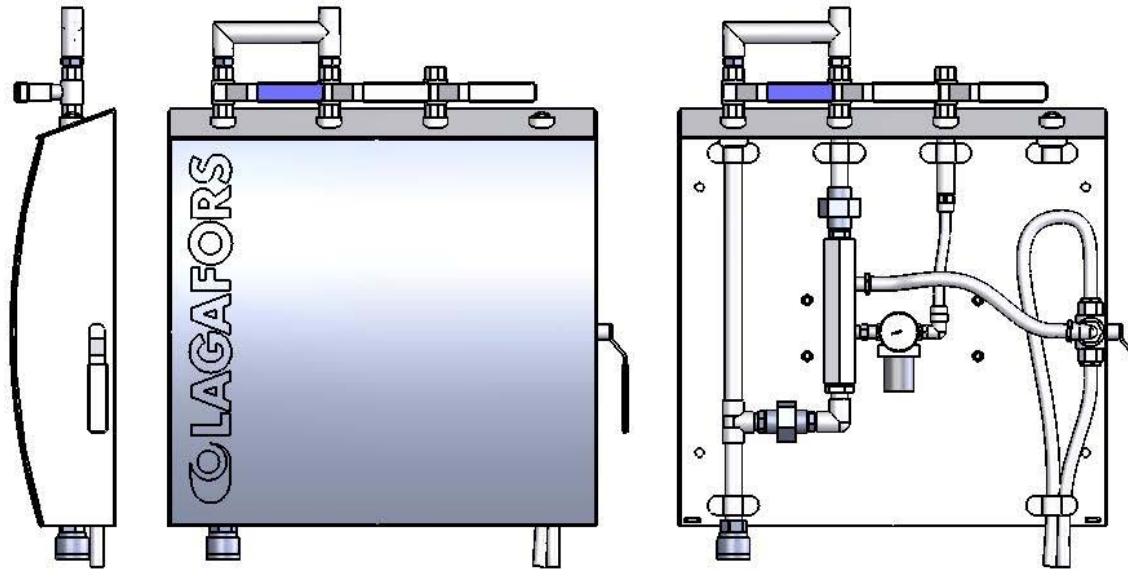
Satellite Station

Variable Media Satellite – VMS- DC

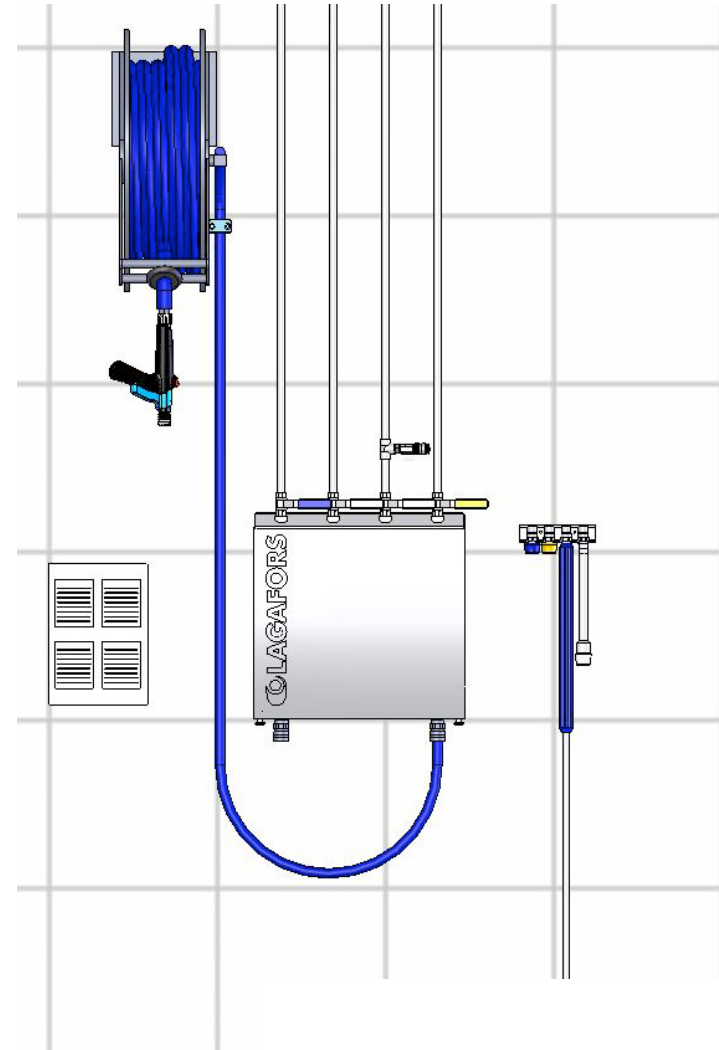


VMS-DC for water and 2 chemicals, de-central dosing

VMS DC, De-Central



Accessories



Triggless II



- Up to 200 bar
- No Handle => Good ergonomics
=> reduced work related sick leave
- Multiple grip positions => longer work periods
- Simplified handling => shorter cleaning periods
=> increased efficiency
- Launch March 2006

 **LAGAFORS**

Triggless II



Pre Cleaning Nozzle PCN

Patent
Pend.



 **LAGAFORS**

Lances and Nozzles



LAGAFORS

Nozzle pouch



Services

- **Service**

- **Complete service program**
- **Idea generation and trouble shooting**

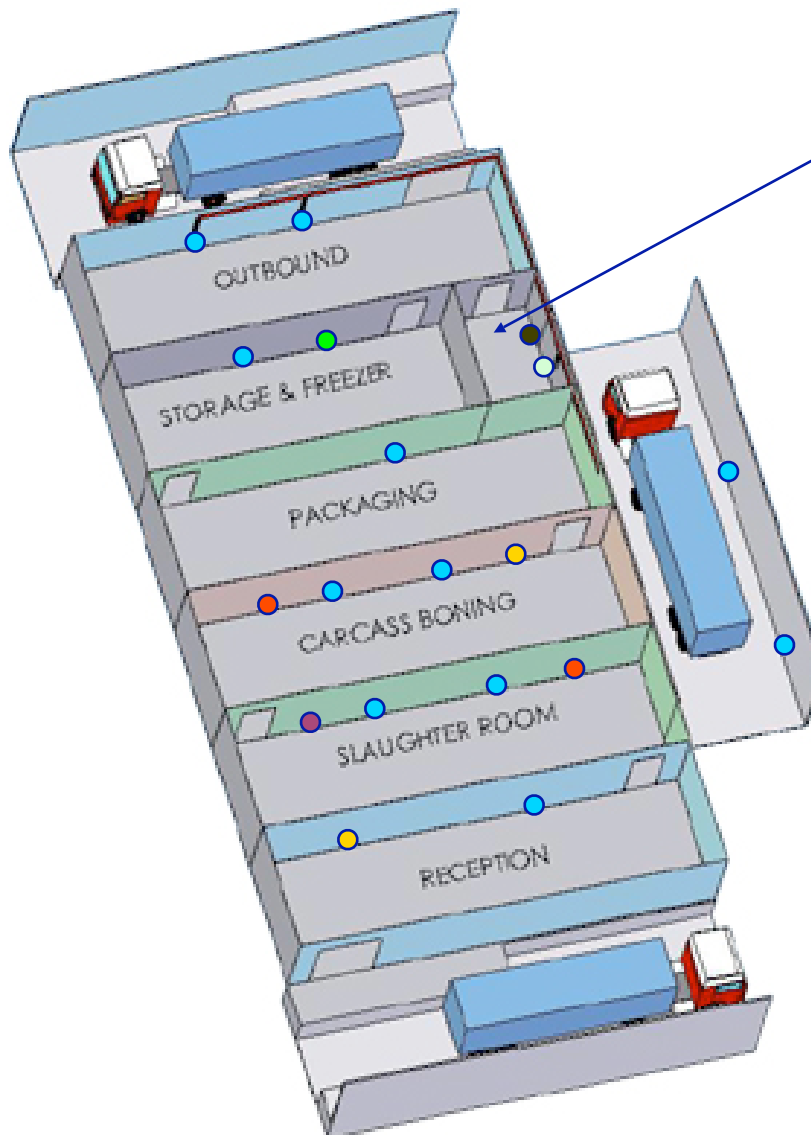
- **Training**

- **On site training and production adjustments with every system sale**
- **Customized 1-2 days training and University lectures**



Sample cleaning solution

Product Portfolio at Work



Lagafors Central Room

Product description

- Variable Pressure Pump
- Variable Chemical Centre

● Satellite Station

Product description

● Crate Dishwasher

Product description

● Tub Trolley Dishwasher

Product description

● Hook Dishwasher

Product description

● Freezer Cleaning

Product description

Lagafors product matrix

More information

"Best in Class Suppliers"

CHALMERS



Mastec

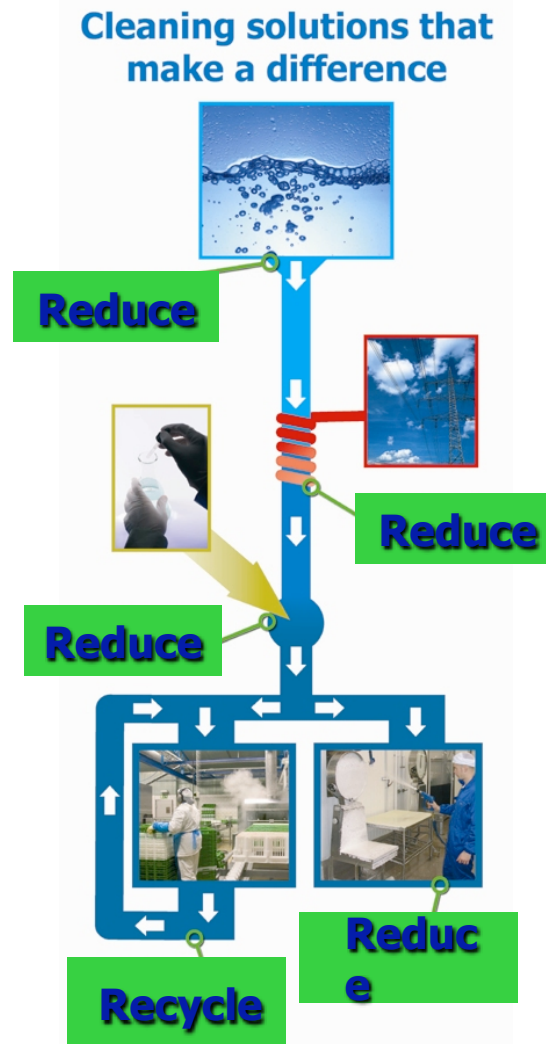
HydraulSyd



We take a "Farm to Fork" approach to hygiene



We mean "Clean and Lean"



Vision

Relentless Reduction



... ultimate
hygiene



... at reduced
cost



... with reduced
environmental impact



... in an improved
working setting



Safer Food!
-
Better Business!

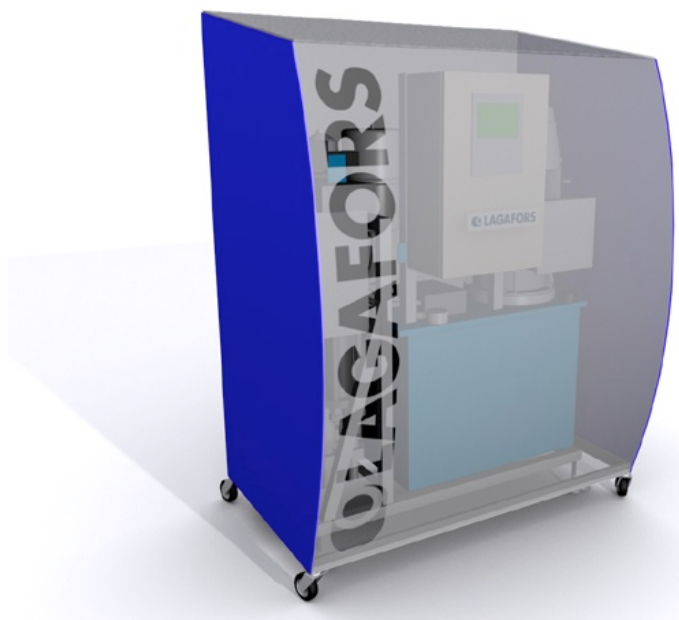
Summary

- **We are well positioned to serve and support:**
 - **Hygiene, environmental, ergonomical and cost related demands**
 - **Customers seeking innovation, customization, differentiation and complete hygiene solutions**
 - **Knowledge related issues**
- **...based on 35 years of experience and a solid technical service support**

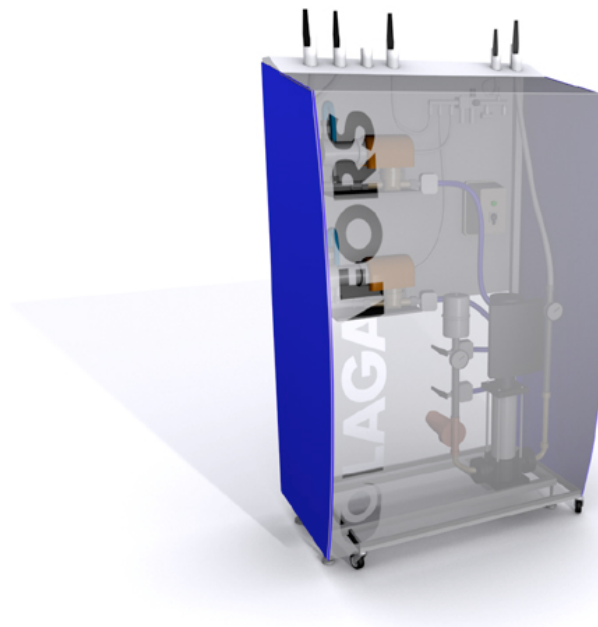


Lagafors Central Room

This room holds a **variable pressure pump**, a **variable chemical centre** and sometimes even a disinfectant system. Pipes and hoses then run throughout the factory to all the satellite stations.



Variable Pressure Pump, VPP
Product description



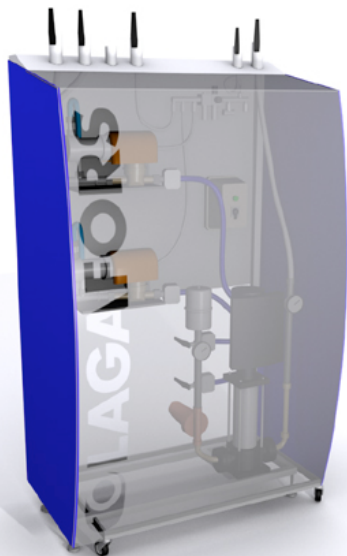
Variable Chemical Centre, VCC
Product description



[Back to Abattoir](#)



Variable Chemical Centre



Technical Description

Pump pressure:	7 bar
Water consumption:	7-60 liters/min
Capacity:	8-10 users
Connection water:	3/4"
Water flow connection:	60 liters/min
Electricity:	3x400 V
Power:	1,5 kW
Outgoing connection:	18 mm

The VCC or Variable Chemical Centre is **designed for foam cleaning**. It is made up of a chemical system, a chemical module and a number of chemical valves. The system and module consist of a pressure building pump, a dosage pump and a controller.

Very high dosage precision (+ /- 0.1%), which **guarantees low chemical consumption**. Saves up to 50 %.

Chemicals are stored safely in the Lagafors Central Room next to the Chemical Centre.

Less service costs and time, on one central unit.

Clean and appealing design.

[Back to Lagafors Central Room](#)

[Back to Abattoir](#)

 **LAGAFORS**

Satellite Station



- Each satellite station consists of a hose reel or a hose holder with hose for water, chemicals and disinfectant. Attached are the Triggless[®] spray guns, lances and pre-cleaning nozzles.
- Mixer block mixes **chemicals and pressured air** to foam. The hardness of the foam can be adjusted at every satellite station.

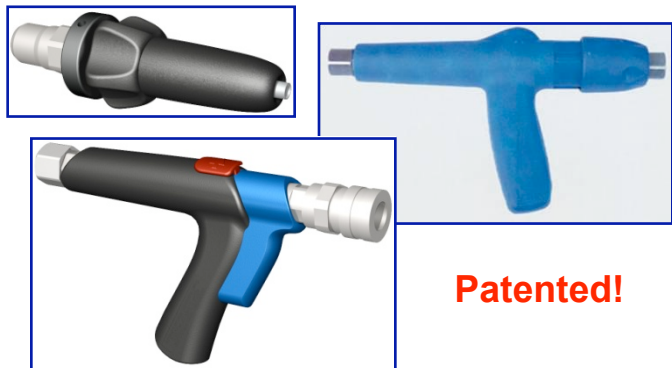


Unique ergonomic Spray Gun with no trigger, **minimizes muscle tension and stress** on the user.



Pre-cleaning nozzle for high pressure, makes pre-cleaning more effective which **reduces the water consumption**.

[Back to Abattoir](#)



Patented!

 **LAGAFORS**

Hook Dishwashing



Automated cleaning for **conveyor hooks**.

Continuous machine, a cabinet, that can be placed anywhere along the production line.

Cleaning process according to the **Lagafors Method**. Pre-wash, foam, flush off, disinfectant and rinse.

Automated machine with a **controlled consumption** of water and detergent.

Optimized cleaning procedure, **saves time** compared to manual cleaning.

Product Matrix

**Visit our website
www.lagafors.se for further
information.**

**Try the product matrix/
catalogue to see recommend or
possible equipment for your
specific branch.**