

Spray Pattern Lubrication System

SAGOMA



1. GENERAL DESCRIPTION

The scope of supply for this quotation consists in the detailed design, procurement, fabrication and assembly of auxiliary elements related to the below description of material and in-house testing. The Machine is suitable for the installation on coil feeding line after the feeder or between 2 conveyors in case of application from blanks.

In case of Coil application, the system is synchronized with feed material to spray during the movement of the material.

In case of Blank application, the blanks pass through the oiler keeping the correct movement by upper crush less wheels that grip the material. This system is designed to precisely know (using an encoder on the motorization) the exact position of the lubrication area, in feed direction. The superior control provides the signal for the belt speed.

While the blanks or coil are running through the spray box the upper and lower side can be sprayed with most of kind of oil with 8 programmable quantities on the same blank and minimum pattern of **50x50 mm**.

No special programming knowledge is required to draw up the spray programs from the panel thanks to also the shape and size automatic teaching of the blanks or coil width.

The special design of the suction system will prevent contaminated air from escaping through infeed and outfeed slot and the oil collected return back into the oil reservoir.

For easy maintenance, the upper and bottom spray heads are extractable from the side of the machine.

2. TECHNICAL DATA

Strip Width depending on machine model:	
SAGOMA 1200	Min 278 mm – Max 1200 mm
Material length Front to Back	Coil Application
Material thickness	To be communicated
Material	Steel, Uncoated steel, Galvanised steel, Aluminium, Stainless steel
Line speed	From 25 to 100 m/min
Standard Passing height	See Preliminary lay out
Total installed power approx.	From 6 to 8 kW
Electric equipment	380V, 50 Hz, 3 phases, N, PE (multiple voltages are available)
Valve voltage	12 V DC
Control voltage	24 V DC
Oiler air consumption	From 1600 to 4000 NI/min minimum 5 bar
Communication	Profinet/Profibus
Number of oils	2
Oil type	FexiSol oil BONDERITE

Lubrication System Specification	
Number of spray nozzles	1 spray valve every 50 mm
Smallest single spray grid	50 x 50 mm
Spray oil quantity	0.5 – 5 g/m ² on each side
Number of freely programmable intensities upper and lower sides [g/m²]	8 programs, at the same time
Oil Tank	40 lt tank with heating system
Additional tank for water-based oils	40 lt with automatic mixing unit
Cleaning Unit	Additional 40 lt tank
High efficiency suction filters	N°1 0.35 kW each; 2500 m ³ /h with analogic pressure gauge
Oil filter	Included 10 µm, single cartridge filter
Spray nozzles bar heating	Included - upper/lower side max 60° C
Extraction of the spray heads	From the side of the machine
Manual nozzles check	Included
Up & Down system upper spray head	Application from coil over 3 mm thickness
Coil transportation	No driven rollers

The machine is supplied with all mechanical, electrical, hydraulic and pneumatic equipment.
The lubricant is NOT included.

ELECTRIC COMPONENTS

PLC	Siemens 1500 series, Point I/O
HMI	Siemens Comfort Panel 19"
Power supply	Murr/Cabur
Cabinet carpentry	DKC/Rittal
Protection	Siemens/Murr/Pilz
Plugs	Harting
Sensors	Ifm/Electrotech/Turck
Safety relais	Siemens/Pilz
Motor	Motovario
Pneumatic part list	Smc
Oil devices part list	Dietronic/Omal/Debem/Ufi filter

3. MAIN HOUSING

Structure

The machine's main housing is a solid and waterproof welded steel construction, standard color RAL 2004.

Control Unit

The control cabinet can be placed on the structure of the machine or separately with standard length of cable 20 m included.

The machine operating panel is placed on the machine or separately according to the line layout.

The control is equipped by Siemens CPU 1516 which is placed in the control cabinet. Spray Visualization is programmed in WIN CC-Flexibel in English language. (Optional other languages).

For easy programming of the spray areas, the blank shape is detected and shown on the screen. There is no need for sketch uploading.

The HMI is a 19" Siemens TP1900 client touch screen.

The PLC-I/O's are Siemens ET 200S. The Safety circuit is done by Siemens safety relays.

All the motor are Motovario.

Spray synchronization

For blank application the machine uses the same sensor of the automatic teaching of the shape and size of the blanks detect the front of the material and by an encoder on the transport conveyor inside the lubrication system the nozzles are activated according to the program selected.

4. SPRAY SECTORIAL OILER

The machine is created to apply lubricant onto blanks of uncoated or zink-coated steel, stainless steel as well as aluminum blanks.

The sheet metal passes through the spray box and the top and bottom side of the sheet metal can be sprayed with most types of oil according to the programmed spray pattern.

Spray Head Composition

Inside the spray box there are an upper and a lower extractable and isolated spray head that contains the Modular Manifolds. The extraction of the spray heads is from the front of the machine and the bottom one is also routable for very easy maintenance.



The inside of the spray box is designed to prevent spray-oil mist drops depositing on the inside walls of the spray box from dropping onto the passing blank.

The Modular Manifold is Patent Module with 4 nozzles, where each nozzle covers 50 mm, with a perfect quality of spray application and minimum overspray, due to the minimum distance from the blank (just 50 mm).

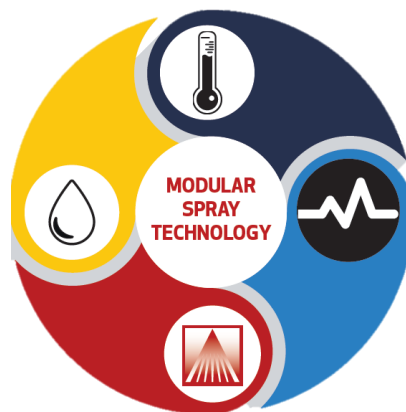
Instead of a conventional spray machine that uses 100 or 125 mm distance, there is a substantial reduction of spray-oil mist area to control.

Each Manifold covers 200 mm surface so the number of manifolds depends on the size of the machine.

The Modular manifold is also equipped with HFV (High frequency Valve) for each nozzle to control the intensity for each nozzle, Heating system to control the temperature and the viscosity of the oil and sensors to detect, in TEST MODE any clogging of the flow through the nozzles.

The “**Patent Registered**” functions of the Dietronic Manifold

- **DT SENSOR® CONTROL** Test function to ensure the performance of each nozzle
- **DT AIR® CONTROL** Air spray control valve integrated in each manifold with electronic adjustment
- **DT TEMP® CONTROL** Heating System integrated with temperature control for each manifold
- **DT HFV® CONTROL** High Frequency valves to control the volume of lubricant for the single nozzle

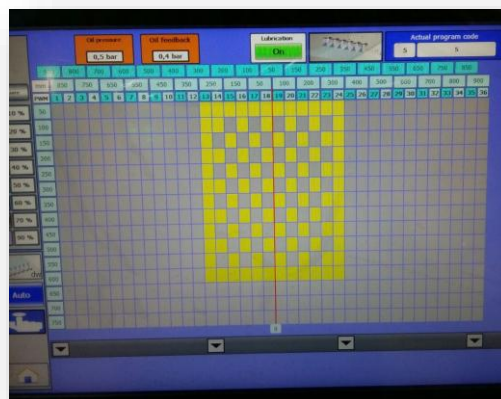


Oil Quantity Programmability and Spray Intensity

The usual intensity application of most of kind of oil in a approx. quantity of $< 0.5 - 5 \text{ g/m}^2$.

This variation is connected to the electronic signal (PWM) that allows, for each single $50 \times 50 \text{ mm}$ area, to apply up to 8 different quantities on the same blank sheet.

The quantity in g/m^2 has to be determined according to the type of lubricant by a calibration of the machine; from there, an algorithm is created to calculate the exact values.



Air Pressure Control

The air pressure is completely automatic, no manual action is needed, adjustable from the operator panel.

Oil Tank and Oil Pressure Control

The machine, for every oil used, is equipped with 40 lt oil tank with heating system and by a pneumatic pump an accumulator of 2 litres is automatically refilled and maintained at constant fix level.

With air pressure on this accumulator automatically controlled from the HMI is possible to set a very constant oil pressure to the spray heads.

The oil recovered from the machine and suction system goes to the Recovery Tank controlled by a maximum level switch to avoid the overflow.

Automatic Mixer for water-based products

The machine can be equipped with an additional 40-liter tank for the water-based oil which needs to be emulsified.

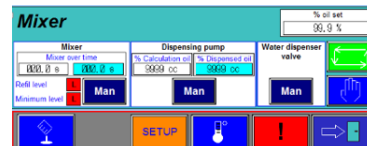
This tank is equipped with electrical and visual level.

Through the demineralized water line (to be supplied by the customer) the % of oil to be mixed can be set at the panel so that it will be prepared automatically.

- Automatic preparation of the desired oil mixture from panel through filling with distilled water (at customer charge) of a fixed volume tank, and oil injection according to the programmed % through a volumetric pump controlled by motor and encoder
- Recirculating emulsion holding system
- Automatic emptying of emulsion at oil change



- Automatic washing of the spray heads with product of our recommended cleaning liquid DI Wash
- Compressed air drying of the spray heads
- Automatic filling with new oil



Cleaning Unit

The machine can be equipped with an additional 40-liter tank with an electrical and visual level dedicated to the cleaning product from the circuit before the oil change.

This function is fully automatic and takes only a few minutes.

Three 20-liter drums of the Dietronic washing product, DI Wash, are included.

Oil Mist Extraction System

The suction systems are mounted on the top or on the side of the machine.

Air is extracted from the machine housing by a fan. Oil-mist separators clean the extracted air and return the oil back into the reservoir.

A high efficiency filter (the combination of polyester fabric and Teflon) allows the removal of smokes and vapors, providing filtration efficiencies reaching the remarkable value of 99,9%, IFA-BGIA Certification.

All models are equipped with a differential pressure gauge to monitor the filter life.

Upper spray head lifting system

In case of coil application and in case of material thickness exceeding 3 mm, this device, which moves up and down, prevents any risk of material collision with the spraying head during material passage.

Waste Tank

Plastic tank for collecting the oil that comes from the suction system and the spray box. The system is equipped with a level control that alerts the operator if the maximum level is reached.

5. GENERAL SPECIFICATIONS INCLUDED IN THE QUOTE

Certifications:	QUASI MACHINE 2006/42/EC Machine Directive
Labelling:	Standard DieTronic
Circuit Diagrams	Supplied in PDF version
Notes:	The software will be supplied with comments in English. Until the warranty expires, only a reading copy will be provided. The intellectual property of some key-blocks is password-protected.
Machine colour:	RAL 2004 and RAL 7035 for electrical cabinet
Standard length of cables and hoses:	Cable length between EC oiler and cleaner to the HMI 20 m

NOT Included:

- Downloading from truck
- Positioning of the machine. DieTronic is not responsible about condition and alignment.
- Re-assembling of parts dismounted for transportation (DieTronic supervision included)
- All the activities that require to fix on the concrete
- Communication devices and cable for software interface between our machine and the line including cable channels
- Software integration to the line
- Positioning of IBS or Barrel holder
- Channels and installation for flexible pipes to connect the Antistatic liquid from the IBC or Barrel holder to the connection box (flexible pipes included)
- Channels and installation for cables to connect the machine from connection box to the HMI pulpit (cables included)
- Power supply and cable from the line to the machine
- Piping for air supply from line to the machine

Warranty Conditions

The Warranty goes into effect after maximum 60 days from when the new Dietronic unit has been delivered to the customer premises and expires at the end of the Warranty Period specified above.

The Warranty covers repairs to correct any unit defects related to materials or workmanship existing at the time of purchase. All requests must be approved by Dietronic prior to any work being performed during the Warranty Period. Specific exceptions to the Warranty are listed in the Exclusions section.

Dietronic will provide repairs to the unit during the Warranty Period in accordance with the Terms, Limitations, and Conditions. This is the sole Warranty provided by Dietronic.

Exclusions

Unit components subject to normal wear during the Warranty Period are not covered by Warranty and include the following items:

1. Filters (Oil tank, oiler suction systems filters)
2. Other wear parts

Component failure caused by customer misuse/abuse of the unit (e.g. incorrect modification of machine parameters that cause damages or the usage of incompatible materials), voids the Warranty.

Machine rupture caused by part handling/misuse or damages due to exposure to elements or incorrect storage of the equipment, voids the Warranty.

Standard Equipment Warranty Coverage

All unit components are warranted for 1-Years, except the items listed in the Exclusions section and workmanship.

Dietronic will supply new or remanufactured component of equal or better quality to replace the failed component, the works to complete the replacement of the faulty items are at customer's charge unless differently decided by Dietronic; it is the sole discretion of Dietronic to determine best method of replacement. The replaced component will be covered for the remainder of the Warranty Period or 90 days, whichever is longer.

The faulty material should be returned to Dietronic for check, unless differently specified by Dietronic, the costs incurred to return the material are solely at customer charge, if the items are not returned within 30 days from the reception on the replacement material they might be charged to the customer.

Commissioning Conditions

Please schedule a possible installation date with our Service Department (service@dietronic.eu)

The following preconditions need to be met for a successful commissioning:

- 1) The Machine has to be mounted and aligned
- 2) The electrical, pneumatic and liquid connections must have been installed
- 3) Electricity and compressed air should be available according to Dietronic specification
- 4) Free access to 230 V.
- 5) Customer must provide necessary safety training and access cards
- 6) Customer must guarantee working time without interruptions for Dietronic technicians
- 7) Commissioning will take place only once in Customer Plant
- 8) Working time 7 am to 5 pm; if technicians need to work extra hours, we will charge surpluses for night shifts or work during the weekends.

Scope of commissioning:

- 1) Functional control of the installation
- 2) Initial start-up of the system

Not included in the above price are the following items:

- 1) All sorts of mounting and installations works
- 2) Correcting mounting errors or deviations from Dietronic specifications

All waiting periods that go back to external factors or to non-compliance with the preconditions for a successful

commissioning will be invoiced according to the Dietronic pricelist for technicians.

An authorized person of the customer will have to confirm that the above services have been rendered directly after the end of the commissioning.

This must be done on the Dietronic form "confirmation commissioning". This confirmation ends the commissioning, the risk for running the machine will pass on to the customer.

A separate trip of the technicians to receive the customer's or end-customer's final acceptance is not included in this quotation/ order confirmation.

All additional services or items, that are not included in this quotation/ order confirmation will be charged according to the Dietronic pricelist for technicians.

See our video

