Coating • Washing • Drying • To conserve

**Treatment systems for mass-produced parts**

- De-oiling / Oil recovery
- Cleaning / Drying
- Coating
- Post-electroplating
Experience and know-how

Forplan delivers solutions and provides turn-key systems for a wide variety of tasks in surface treatment and conditioning.

The following methods are mostly used: centrifuge technology, washing technology and treatment baths.

Gentle handling, low operating costs and an ecological process are the focal points of our project development.

Additional expertise includes installing back-up systems in existing facilities, also as a replacement for installations in existing systems.

Forplan is always a reliable and experienced partner.

Task

Removal or recovery
- Oils
- Water
- Dirt
- Phosphate

Application or coating
- Zinc flake coating
- Oils
- Corrosion protection
- Parting agents
- Plastics (e.g. Teflon)
- Passivation
- Phosphating
- Paints
Target groups
• Manufacturers of screws, nuts and mass-produced parts
• Spring manufacturers
• Pressrooms
• Hardening shops
• Electroplating establishments
• Surface finishers
• Injection moulding factories
• Plastic injection moulding factories
• Contract coaters

Many customers have trusted in Forplan systems and services for many years. Here is an excerpt from the reference list:

Drying centrifuges

Drying centrifuges with hot-air blower and partial air renewal

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<thead>
<tr>
<th>Model / basket-Ø (mm)</th>
<th>270</th>
<th>360</th>
<th>480</th>
<th>550</th>
<th>660</th>
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<td>150</td>
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De-oiling centrifuges

De-oiling centrifuges have significantly higher speeds and therefore have a different support system

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Tilting centrifuges

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Accessories

The centrifuges can be equipped with various add-on modules:

- Various baskets
- Hoisting crane
- Special mountings
- Explosion protection
- Manufactured completely in stainless steel
- Spray washing
- etc.
Coating centrifuges

With internal tank
Allows very quick product change without cleaning

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With external tank
The coating medium is stored in an external container. When the tank is lifted, the medium is conveyed into the centrifuge by means of gravitational force or pump

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De-oiling with oil recovery

Prices for cooling and lubricating oils and for energy are constantly increasing. As a result, the treatment and disposal of cleaning liquids is becoming ever more expensive. The endeavour to keep these costs low and to produce ecologically makes the oil recovery system an extremely attractive investment with a short amortisation period.

Oil recovery systems can be installed directly after production systems (roller systems, presses), between hardening and tempering processes (after the oil-quenching bath) or in central process lines (e.g. in front of cleaning systems). Depending on the range of parts, continuous de-oiling centrifuges or automated large-scale systems are used.

Fields of application
- De-oiling after pressing
- De-oiling after rolling
- De-oiling before washing, e.g. between hardening and tempering
- Chip de-oiling

Automatic de-oiling system after a high-performance press.
Capacity up to 50 kg per minute

De-oiling centrifuge Ø 660 mm. Stable three-point support for high speeds

Continuous de-oiling centrifuge
Drying

Coating processes, galvanic finishes and thermal treatment lines require subsequent drying of the relevant parts. Forplan offers both integrated fully-automatic drying systems and manually operated dryers.

Drying after coating
Slide coatings, lacquers and Teflon solutions in particular must be dried after coating. Such parts must not present either contact points or spots after drying. This requires restacking of the parts during the drying cycle. Forplan offers appropriate solutions.

Post-electroplating
The modular design of Forplan systems makes it possible to integrate an optimal post-treatment system into practically any electroplating process. The parts are automatically transferred from the electroplating drum into a centrifuge basket, dried and extracted again, or subjected to a coating process.
Coating systems

Forplan’s coating systems are mainly centrifuge-based dip-spin systems. Coating is carried out either directly with the transfer robot in coating baths, or in coating centrifuges. For solvent-containing coating media, explosion-proof systems in accordance with ATEX are used.

Forplan possesses extensive know-how in integrated quality assurance systems such as weighing cells, bath monitoring devices, concentration measurements, etc. Batch monitoring with barcode, data exchange with higher-level operating systems, such as SAP and production data monitoring, present challenges which are met with state-of-the-art solutions.

Innovation

Coating system using dip-spin method.
- Centrifuging with the transfer unit directly above the coating bath.
- Change of coating medium in just a few minutes.
Coating tasks

- Top-coating
- Zinc flake coatings
- Parting agent application
- Oiling / Preservation
- Lacquering
- Special coatings such as e.g. Teflon

The following requirements present a constant development challenge:

- Drop height minimisation
- Uniform application, even for driving recesses
- Quick product change
- Explosion protection
- Integrated quality inspections
- Space conditions
- Ergonomics
- Safety
- Minimal noise emissions
- Software

Tiltable transfer robot

Dipping of coating basket directly with the transfer robot

Treatment baths

- Washing / Degreasing
- Passivation
- Activation
- Phosphating / Dephosphating
- After-treatments for galvanizing

Tilting to enable uniform coating
Dripping off/centrifuging
After transmission of the program data, the transfer container moves via roller conveyor to a two-storey intermediate storage unit with 10 storage locations. It is put into intermediate storage here in accordance with the FIFO (First In–First Out) logistical system.

If the coating application quantity is within the preset tolerance, the container is conveyed to the extraction station by the «Good parts» conveyor belt. The production papers are printed out automatically and attached to the container.

Containers that are outside the coating tolerances are automatically ejected from the process.
Material feeding
Barcode identification of employee and coating parts. This barcode information causes the ERP system to send the correct program data to the machine.
- Coating program
- Drying program
- Weight of individual part
- Maximum coating volume in micrograms
- Minimum coating volume in micrograms
- Maximum filling weight of container
- Container dimensions
- SAP connection

Coating centrifuge with external tank
Flooding of the centrifuge for coating the parts. As a result of the gravitational force, the coating medium enters the centrifuge and returns to the external tank. Optimal restacking of the parts; tilt angle of 50°. The application quantity is defined by the centrifuging cycle.

Basket cleaning system
Cleaning of the coating basket possible after every coating cycle. The baskets are spray-washed at approx. 150 bar.

Drying centrifuge
50° tilt angle for uniform, gentle drying of the coated parts.
Cleaning systems

Forplan has a broad product range for cleaning mass-produced parts. The most appropriate methods are used depending on the range of parts, the required flow volumes, the soiling and the desired level of cleanliness.

Cleaning systems and their combinations:
- Drum-type flow washing machines
- Belt-type flow washing machines
- Centrifuge-type washing machines
- Cabin washing machines
- Baths
- With charging and disposal
Degreasing and dephosphating are mostly carried out in spray and dip processes. Multiple-stage rinsing processes in a cascade circuit reduce water consumption. If required, preservative agents can be added to the rinsing processes, to protect the surfaces from corrosion after cleaning.

Forplan’s extensive know-how is based on many years of experience. We will be happy to advise you in the selection of cleaning media, water conditioning and other issues in connection with cleaning processes.
Fresh water, waste water, water circuits

Quality standards as well as ecological and economical considerations require good water treatment solutions. Forplan is well versed in both water supply conditioning and in waste water purification. In many cases, complete water circuit systems can be used.
Coating systems

Automatic charging of production machines

Forplan has dealt with automatic simultaneous charging of production machines since 1992. Screws, nuts, washers, rivets and other mass-produced parts are fed to rolling machines, sorting machines, automatic assembly machines, automatic packaging machines, hardening furnaces, washing plants and other systems.

Magnetic coating systems

The Forplan Multi and Forplan Profi magnetic coating systems transfer the parts for processing – primarily bulk materials – out of large containers into further processing systems. The electromagnet is lowered carefully into the large container, where it attracts a defined quantity of magnetizable parts. These are lifted and conveyed to the various feed pots via a chute. Sensors monitor the positions to be charged, so that each machine is supplied with new raw parts in good time.

Systems for non-magnetizable parts

For non-magnetizable parts, the Forplan multiBAC system or the Forplan Allmat lifting and tilting device is used. With both of these types, the contents of the large containers are tipped out in instalments into downstream intermediate bins.

Important advantages of Forplan systems

- Gentle extraction and feeding
- Low drop heights
- No transfer
- Charging quantity can be individually adapted for each position
- Small space requirement
- Minimal maintenance requirement
- High flexibility and good accessibility
With foresight into the future

Forplan AG is a committed family company. Together with our long-standing partner LM Finishing Systems Srl and CABER Impianti Srl we offer tailored and process-oriented solutions. We help to secure and optimise the work processes in production and make them more efficient.

Projects realised to date impress thanks to their extremely low failure rate and minimum maintenance. If you plan with Forplan AG, it will be with foresight into the future.

Forplan offers the following product groups:

- Automatic magnetic charging systems for the infeed of mass parts
- Charging systems for the application of liquid coating media, such as oils, lacquers or zinc-flake coating
- Water-based cleaning systems for the cleaning and degreasing of mechanical parts
- Centrifuging
- Vibro-finishing systems

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