EISENMANN

Dip Painting

Competence and Know-How: Dip Painting Systems by EISENMANN

EISENMANN is one of the leading suppliers in the world for turnkey automotive paint lines. We employ the newest technologies and expertise gained from years of experience having built several hundred systems.

For all areas of industrial painting, from the contract coater to the automobile industry, EISENMANN is an able partner for advanced surface finishing technologies.

Small teams of engineers, working with specialists in environmental, material handling and control technologies, develop individual system concepts.

EISENMANN's ability does not stop with the manufacture of paint lines. As operators of complete automotive painting facilities, our personnel is responsible for running a system economically and achieving the highest surface quality.

Contents:

Programmable hoist dip lines allow individual processes for small batches and large work pieces.

The Benefits of Tailor-Made Concepts:
Waterborne, Conventional or E-Coat

Know-How from a Single Source

EISENMANN offers a complete line of dip painting concepts including indexing systems for conventional or waterborne paint and continuous flow electrophoretic systems (anodic/cathodic E-coat). This is why EISENMANN is considered one of the leading international manufacturers in this area.

Dip coating is an economical and environmentally-friendly painting process. The key areas of application are automotive components, agricultural machinery, household appliances, metal furniture, construction equipment, electrical devices, automobiles and many others.

Perfect Coordination

A turnkey facility. Your new EISENMANN dip-coating line has all components in the plant perfectly coordinated with one another: water-saving pretreatment, indexing and continuous dip-coating systems, energy-conserving ovens, rational material flow systems, and comprehensive PC controls as well as all-inclusive service or operation of the entire system by EISENMANN personnel.

To help protect the environment, exhaust air and wastewater purification programs are economically integrated into the design.

EISENMANN has specialists for all of these disciplines under one roof. You need only one partner to answer all of your questions regarding the implementation of your new coating facility.

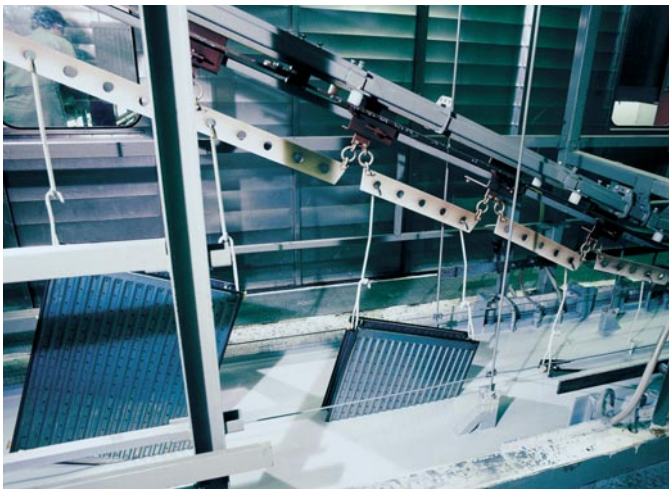


Photo left: Continuous E-coat system using a pendulum conveyor in the automotive industry.

Photo right: Heating elements and radiators nowadays are primed by E-coat and then powder-coated.

For the Best in Corrosion Protection:
E-Coat

Workpieces to be coated are dipped into a water-soluble paint using a low concentration of paint solids.

By applying a DC power field between the workpiece and the counter electrode, the solid particles in the paint deposit on the workpiece.

In the process, an extraordinarily uniform film of paint with outstanding adhesion forms in corners, on edges, and in hard to get to areas.

Photo right: Cathodic E-coat system for automotive parts using a 10-stage pretreatment.

The Benefits of E-Coat

- Highest quality with best corrosion protection.
- Uniform, controllable coating thicknesses.
- Excellent coverage in corners and on edges or in difficult to reach areas due to good throw power.
- No runs or drips; rework not required.
- Highly cost effective through practically loss-free coating in a closed loop system using ultrafiltration.
- Can be fully automated for medium or large production runs.
- Environmentally friendly because paint is practically solvent-free and no paint sludge forms.

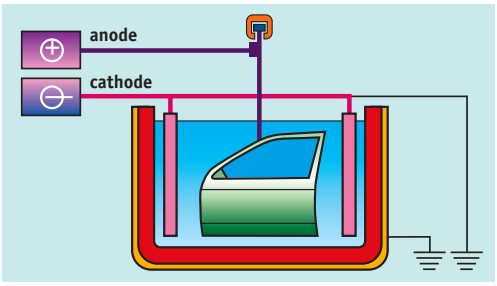


Diagram of an anaphoretic E-coat system.

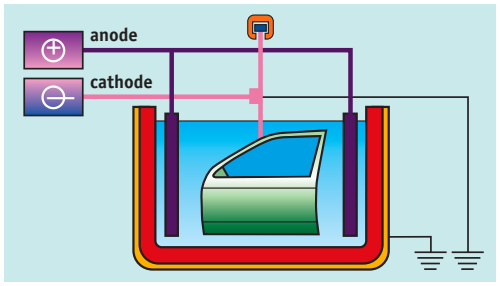


Diagram of cataphoretic E-coat system.

Anodic or Cathodic E-coat: For Every Application, The Appropriate Process.

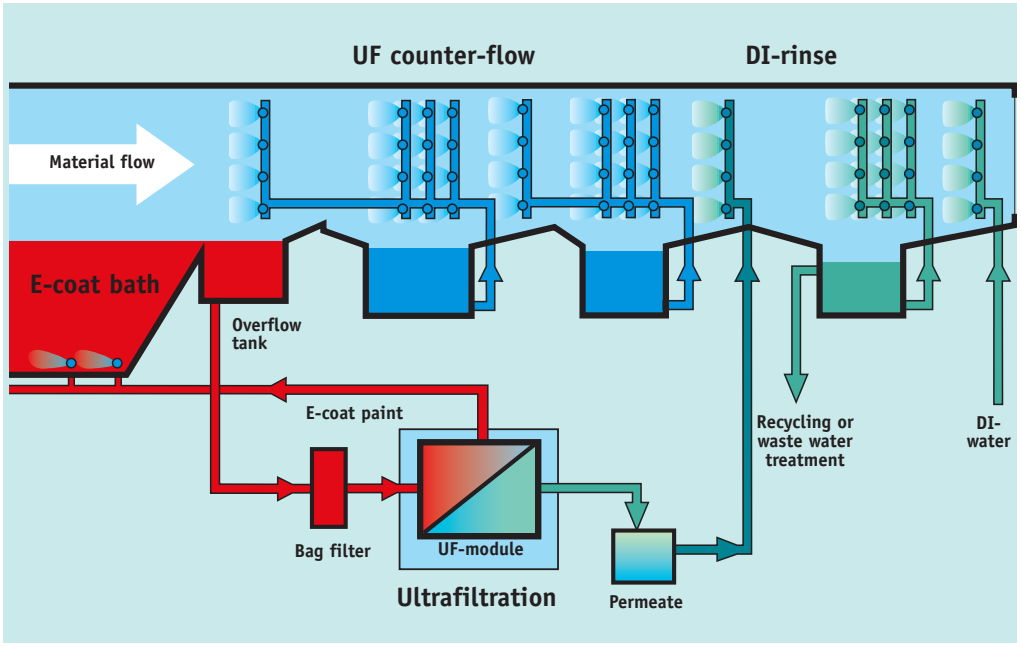
Depending on your requirements, EISENMANN recommends either a continuous flow or indexing systems for anodic or cathodic dip-coating.

Cathodic E-coat is outstanding for providing excellent coverage in cavities as well as for wrap-around edges. Today it is considered the standard for high quality products, other than within the automotive industry.

Cathodic E-coat with programmable hoist for automotive components.

Continuous flow E-coat system for control panels.

Ultrafiltration:
Bath Maintenance and Paint Recycling



Multi-stage rinse with final DI-rinse.

A partial stream of the paint is continuously removed from the E-coat tank and fed through the ultrafiltration system. There the solids are retained and returned to be mixed into the bath again. The pigment-free ultrafiltrate is used for rinsing loose paint material, still present after coating, from the workpiece. UF rinsing typically is a multi-stage counter-flow process.

Economical and Flexible, also for Small Production Runs:

Indexing Systems with Power & Free Conveyor

When selecting a dip coating process for specific applications, a series of important parameters have to be considered, all of which are important in terms of economy and surface quality.

EISENMANN builds all types of paint dip systems, and based on our experience can always recommend the most applicable one.

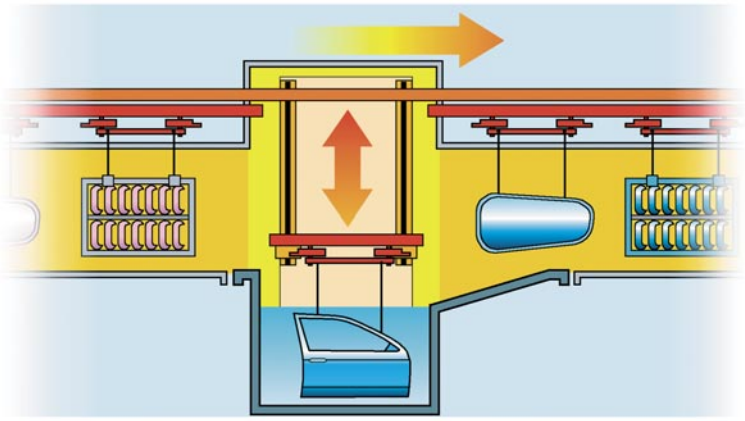


Diagram of an indexing system with power & free conveyor.

Indexing systems are used for relatively low overall throughput as well as for larger workpieces of the same type. They are characterized by a compact design with small dip tank volumes.

This type of system is particularly economical because the lift and lowering stations can be integrated into the otherwise continuous material flow system (overhead power & free or chain conveyor) and transfer to other conveyors is not required.

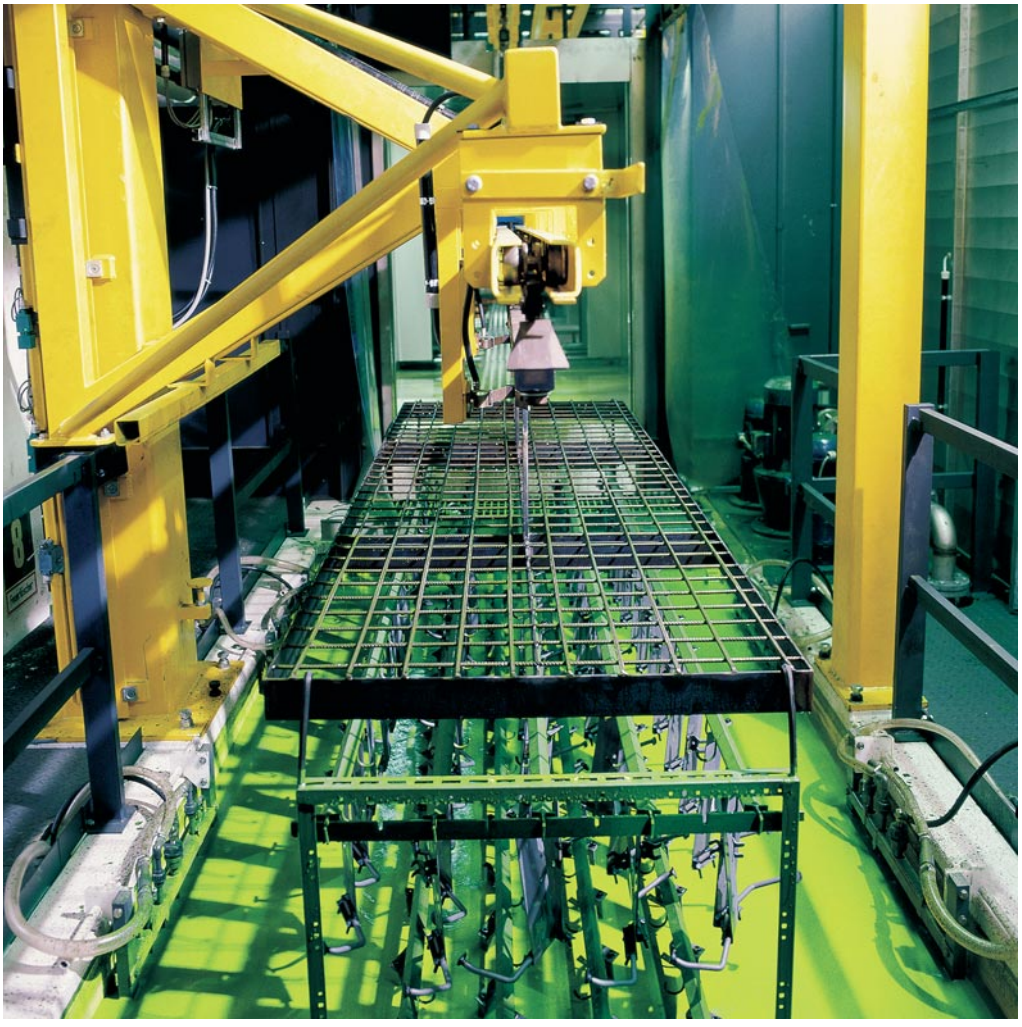


Photo right: Indexing dip coating system for the farm implement industry.

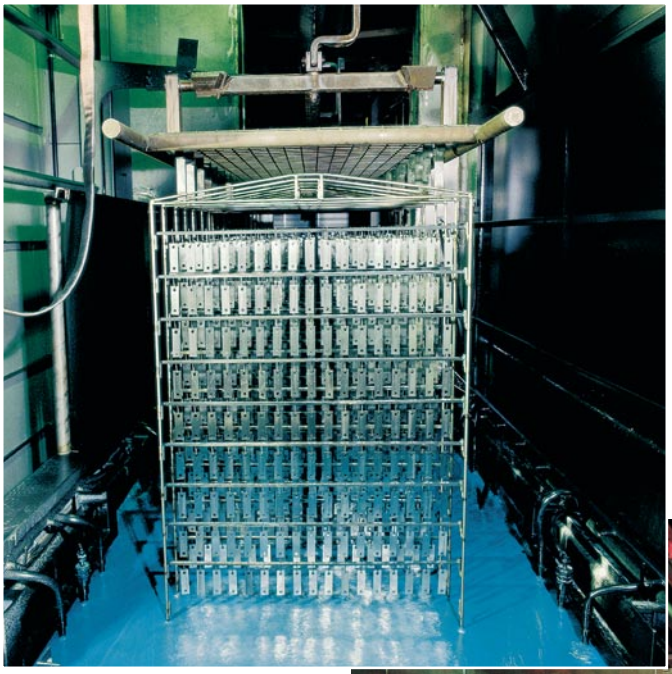


Photo left: Cathodic E-coat system with overhead chain conveyor and special lift station for truck cabins.

Photo above: This custom coating business uses the advantages of an indexing cathodic E-coat system for individual batches.

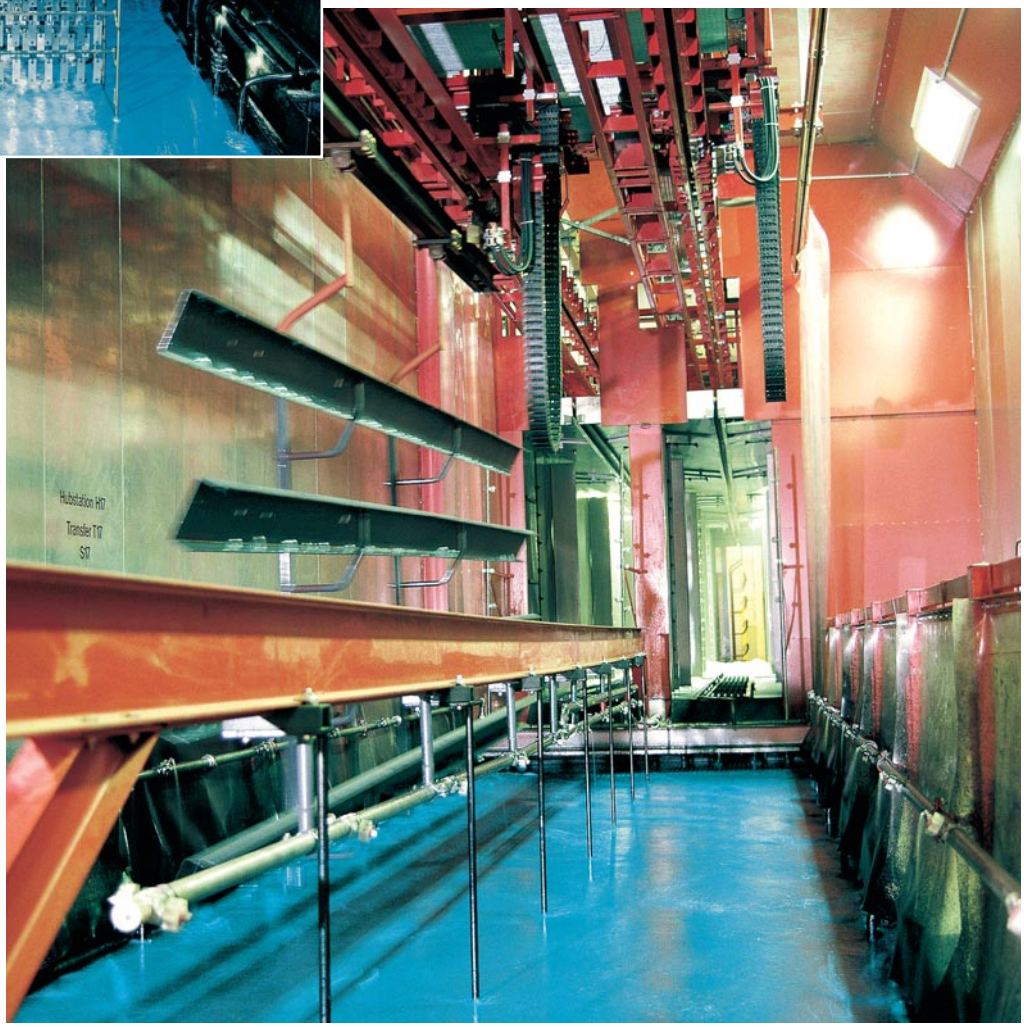


Photo right: Side rails for trucks as long as 12 meters are handled by a power & free conveyor through the zinc phosphate process and are then lowered into the E-coat tank by a lift station.

Variable and Versatile for all Shapes and Sizes:

Programmable Hoist Systems

Programmable hoist systems are used whenever workpieces of varying materials, shapes and sizes are to be painted. These systems are valued for their high flexibility and multi-task programming possibilities.

The cleaning, pretreatment and E-coat stages are serviced by one or more programmable hoists. Computer controls allow flexible sequences and treatment times in the tanks depending on workpiece and material.

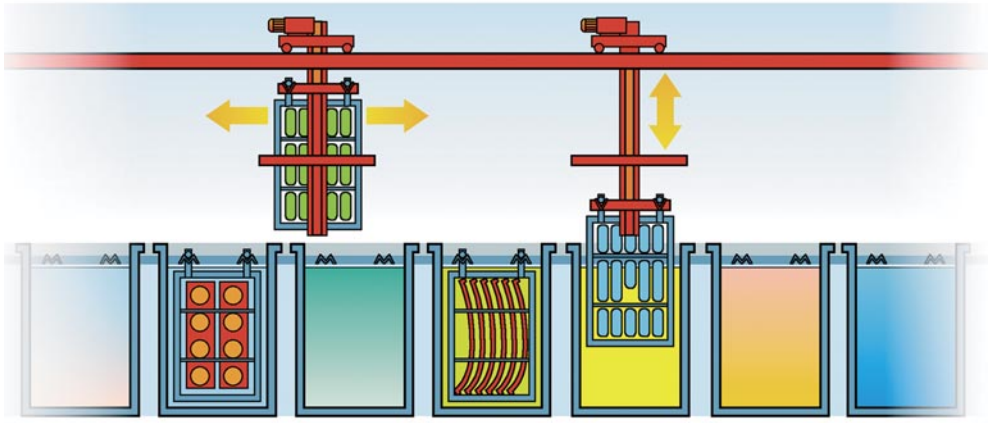


Diagram of a programmable hoist system.

Programmable hoist systems are especially useful for large workpieces with relatively low production volumes such as the truck frames in a dip painting line as shown.

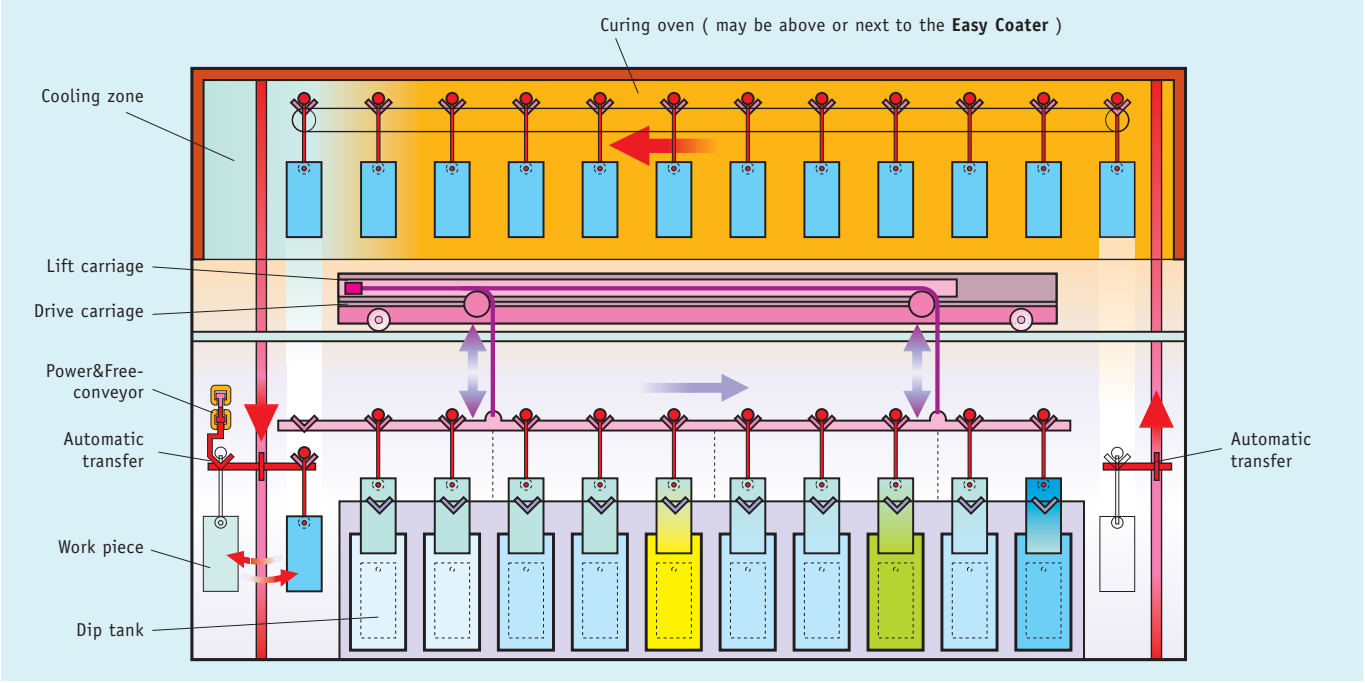
A variety of automotive components are cleaned, pretreated and painted in this cathodic one-coat E-coat system.

Cathodic E-coat system with flexible programming at a custom coating house.

Cathodic E-coat with programmable hoist for automotive parts.

Economic and compact:

The „Easy Coater“ Square Transfer System



Easy Coater systems are used for the electro coating of a variety of work pieces where an all-immersion process is desirable and space is at a premium.

All work pieces are processed in a synchronized square transfer pattern based on a fixed cycle. The paint curing oven is arranged above the process tanks reducing the floor space requirements substantially.

Loading and unloading the **Easy Coater** is usually performed by a Power&Free conveyor. The Power&Free conveyor can also transport parts through the cure oven in plants not high enough to accept a top mounted oven. Another feature of the Power&Free conveyor is the integration of your coating process into other processes and your overall plant operation.

Easy Coater System E-coating parts for a heavy truck manufacturer

High Volume Production with Uniform Workpieces:
Continuous Dip Coating Systems

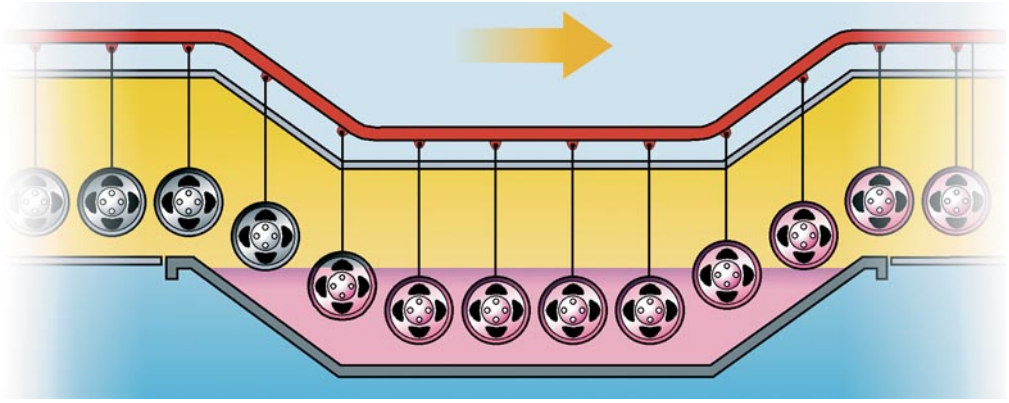


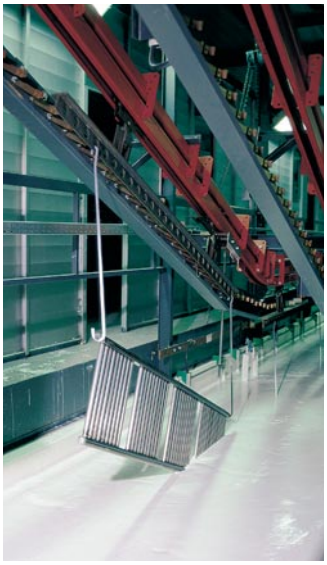
Diagram of a continuous dip-coating system.

Continuous systems are well suited for high rates of production and uniform loads; but not for oversized workpiece dimensions.

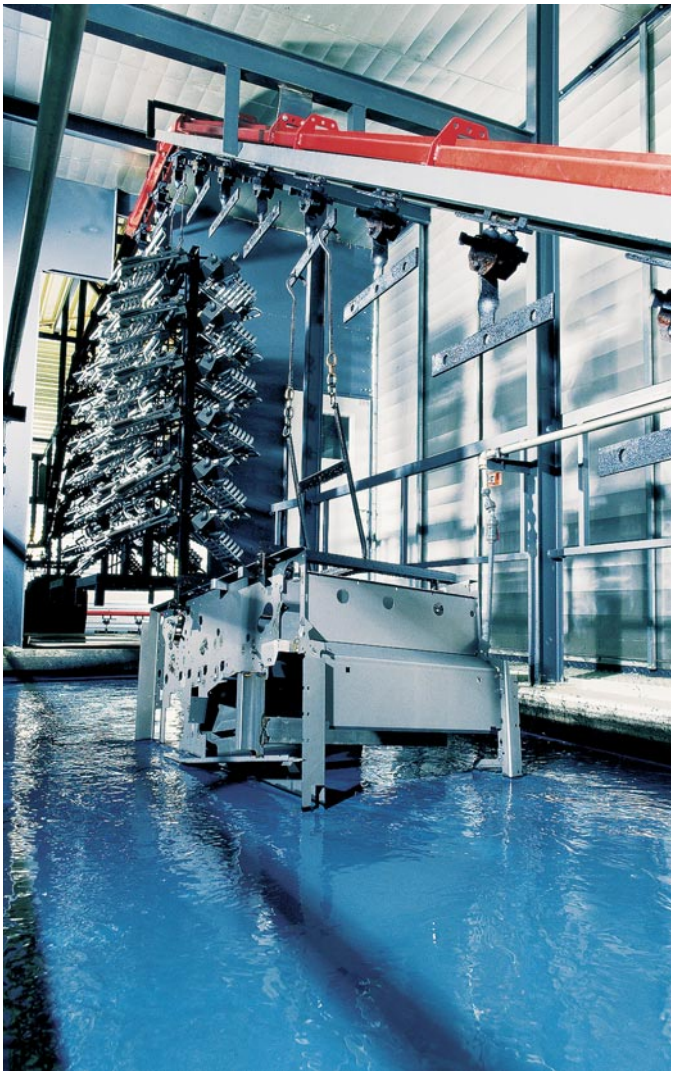
Required dwell times in pre-treatment, dip tanks and curing ovens result at times in a larger system layout than is common with indexing systems with hoist technology.

However, they have the relative advantage that workpieces flow directly through the system on overhead or power & free conveyors without having to be transferred to lifting and lowering stations.

This saves on transfer equipment and related control costs.



Continuous dip painting is the most frequently used painting process for radiators.



Even very large or heavy workpieces, such as this machine assembly, are no problem for a continuous dip painting system.

Cleaner Processing Technology:
Cleaning and Pretreatment

Pretreatment systems operate solvent-free with wet chemicals and integrate advanced environmental technology.

Bath maintenance and increased bath life for rinse and process baths are not only economical, but are also required by current government regulations. Rinse water is cascaded repeatedly or recirculated through a filtration system.

The life of cleaner baths can be increased relatively easily by a multi-stage approach or through the use of continuous separation of oil and sludge. Still more effective for high concentration is the use of "Carbosep Ultrafiltration" in the cleaner bath recirculation.

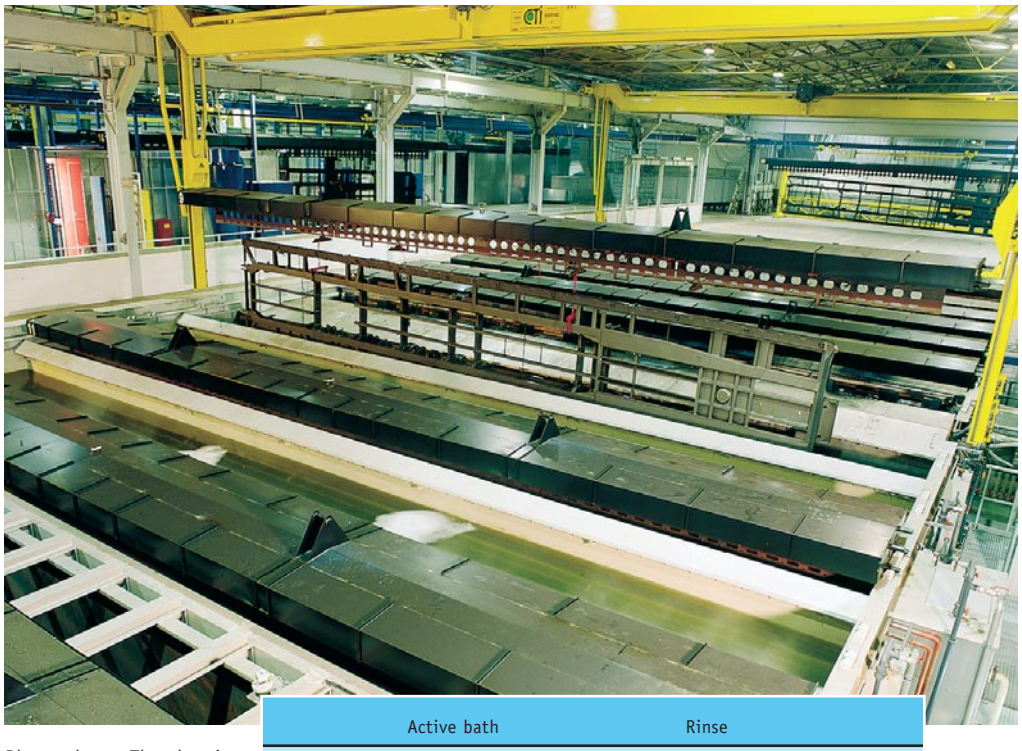
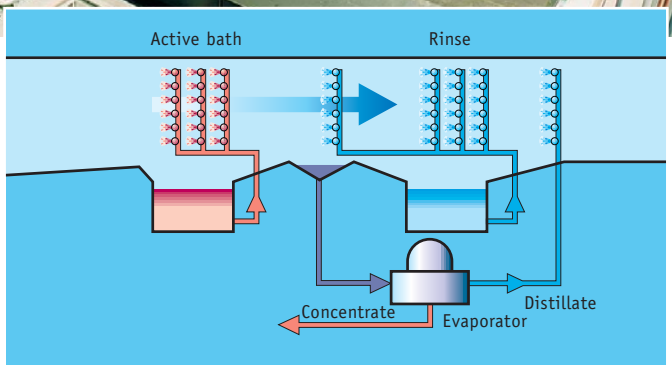
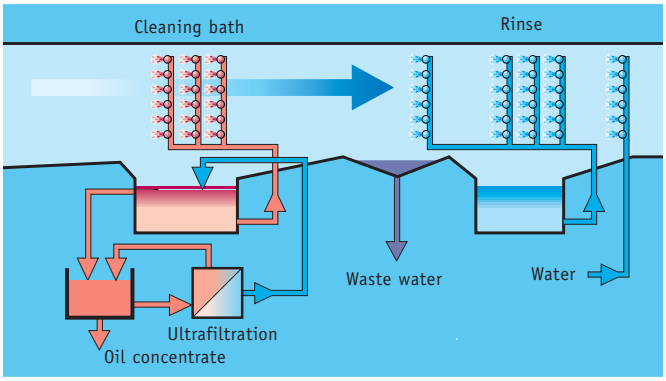


Photo above: The cleaning and pretreatment baths are completely integrated into the painting process with a programmable hoist system.



Wastewater-free evaporation for the recycling of rinse water.

Highly effective cleaner bath recycling through ultrafiltration.



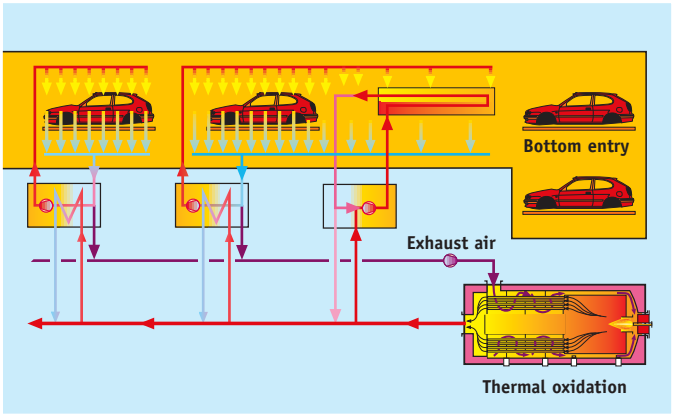
Energy-Efficient and Clean:
Paint Curing Ovens and Exhaust Air Purification

Picture left: Cathodic top coat curing oven with bottom entry/exit for heat loss prevention.

EISENMANN builds custom paint curing ovens adapted to technical specifications and economical feasibility with direct and indirect heating using oil, gas, electric or recovered energy in the form of thermal oil, hot water or steam.

Designs range from simple straight-through ovens to elevated multiple pass ovens with energy saving bottom entry and exit and optimized heat energy concept. Indexing systems with programmable hoist utilize a top-loading or continuous oven.

Picture above: Thermal oxidizer with heat recovery for purifying exhaust air from the E-coat curing oven.

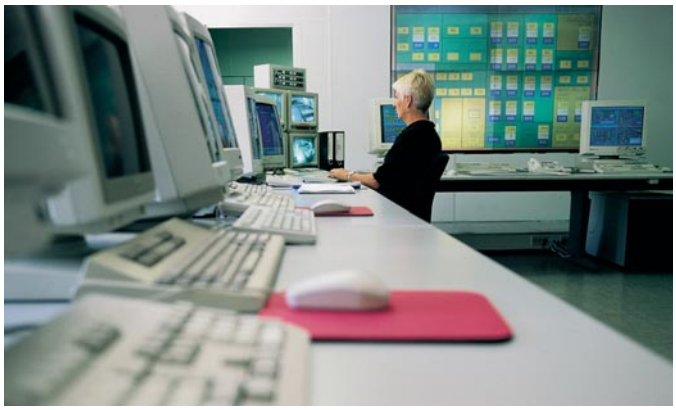


Heat recovery concept when curing paint: Thermal oxidation as exhaust purification and energy supply.

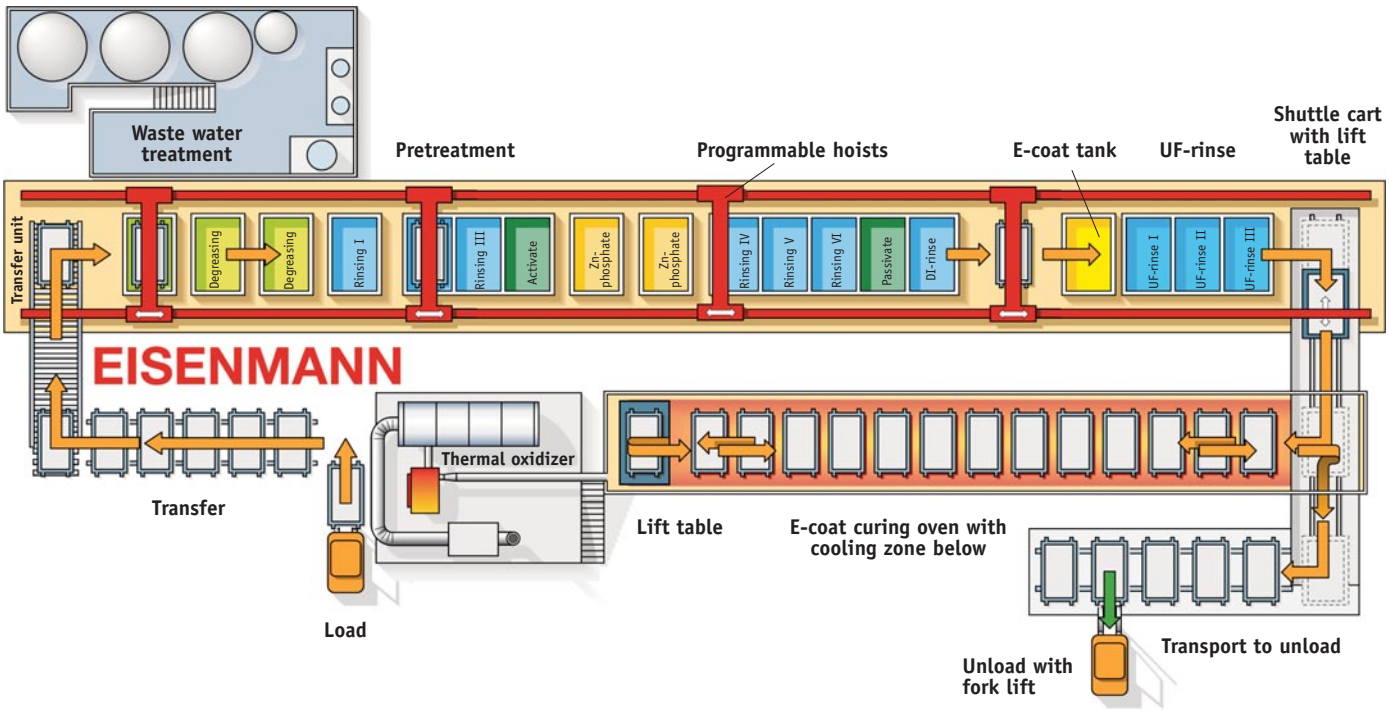
Intelligent Controls:
Handling and Controls

EISENMANN designs and builds customer-specific material-flow systems such as chain conveyors, power & free, skid conveyors, hoist systems, lifting and lowering stations as well as tailor-made special conveyors. Combined with intelligent computer systems and software developed solely for this purpose, they form the basis for fully automated production in your company.

Microprocessor-based controls are also being used more frequently for smaller systems. They profit from powerful, yet economic hardware and our software experience gained with large and complex paint lines. We have been able to achieve a technological edge through constant updating of the synergy potential of our conveyor and handling technologies.



Control center for an automotive paint line.



Above: Indexing system with programmable hoist and roller conveyors connecting load and unload stations.

Within a manufacturing area various conveying methods are available, such as electric monorail systems (EMS), roller or skid conveyors.

Remote service is possible with the transfer of digital images and data over telephone lines or the Internet. With this option, service specialists can immediately help maintenance personnel by sending them instructions.

Service and Maintenance

Preventive maintenance and continuous system improvements are the basis for lasting operational readiness and trouble-free operation of your facility.

EISENMANN offers an extensive package of service programs:

1. **Periodic service**
2. **Full-time service**
3. **Complete service**

Facility telemaintenance per PC and modem is the latest trend. Our service technicians remotely monitor your facility per PC from their workstation and, in many cases, re-establish system operations after a malfunction without making an on-site service call.

Long term monitoring with alarm data analysis support preventive maintenance.

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