



# Eco-Phos

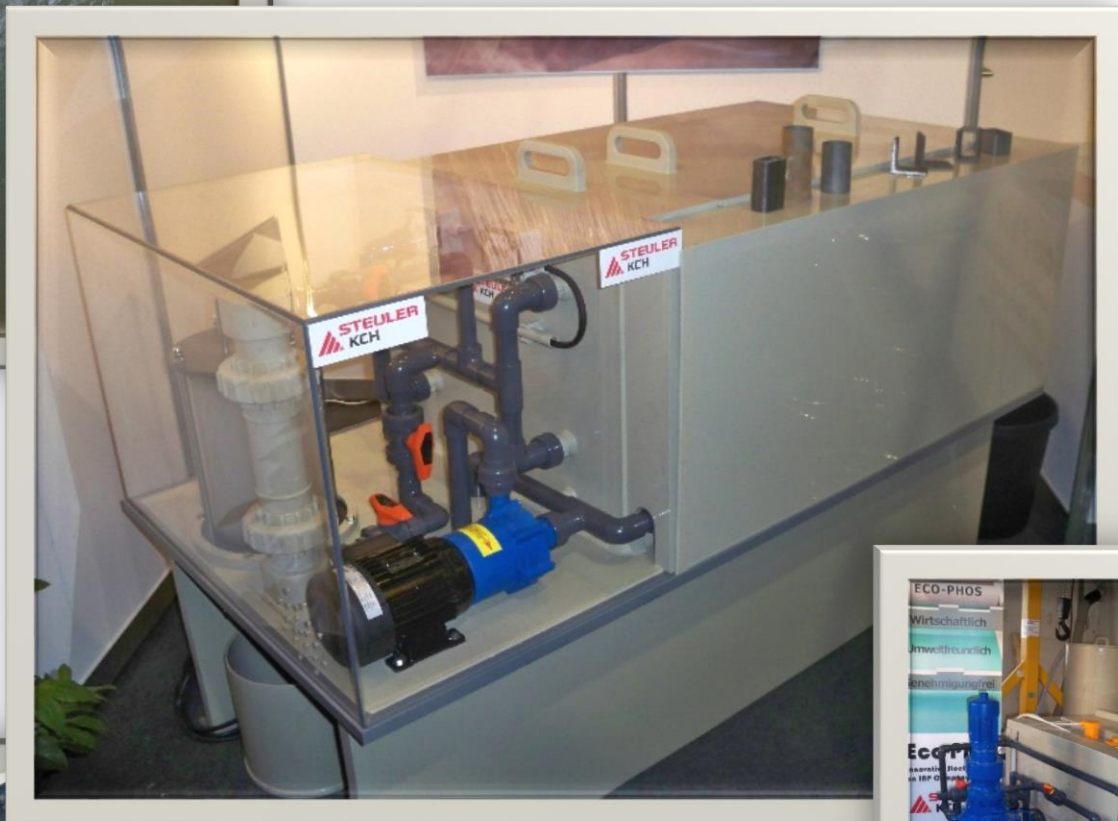
Innovative Steel Pickling

## Environmentally friendly Pickling and Phosphating Process



Environmentally friendly

Shorter handling process



Non corrosive gases



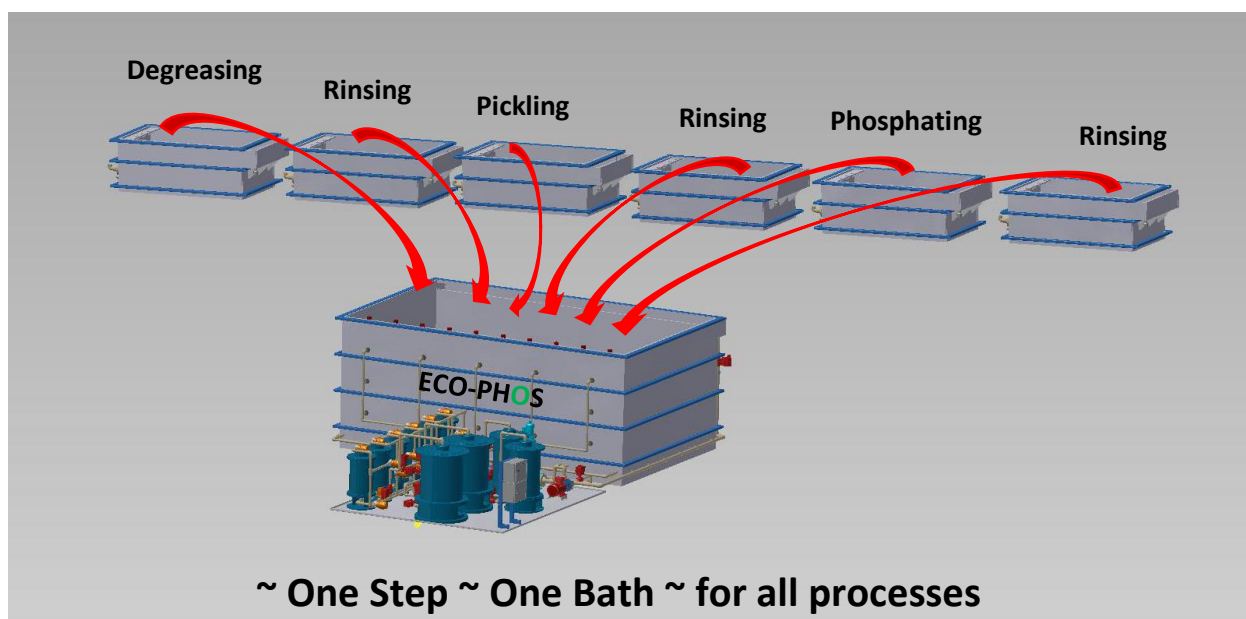
ECO-PHOS – Economical and environmentally friendly



## ~ One Step ~ One Bath System ~

**Degreasing > Rinsing > Pickling > Rinsing > Phosphating = ECO-PHOS.**

- ECO-PHOS requires one bath and one process.
- The newly developed system of pumps, filters, jets and rinsing elements ensures a high quality finish to components.
- The system cleans the scale and rust from the surface of the components effectively.
- An Ion-Exchanger can be installed for maximum usage of ECO-PHOS.
- Specially designed circulatory jets move the removed particles into a filter system, ensuring that the ECO-PHOS always remains clean.



**~ One Step ~ One Bath ~ for all processes**

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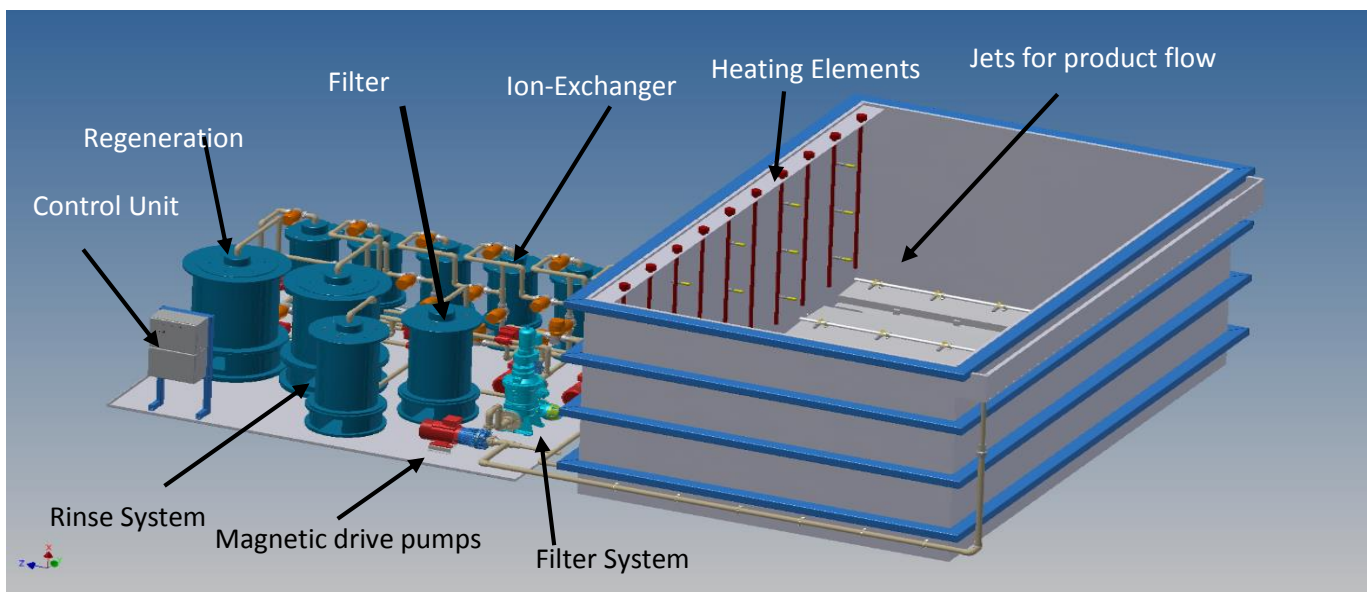
# Technology Process of ECO-PHOS

**An ECO-PHOS plant consists of the following components :**

- Custom designed tanks
- Self cleaning filters
- Ion-Exchanger
- Magnetic drive pumps
- Jets
- Heating elements
- Automated control panels

The Plant design of the Eco-Phos system enables an intensive cleaning mechanism and further regenerates the ECO-PHOS concentration in the tank.

With the ECO-PHOS Ion-Exchanger, the ECO-PHOS can be regenerated up to approximately 1500 times, thereby ensuring a highly, cost effective method of cleaning. The continuous circulation in the tank ensures an intensive cleaning process, thereby aiding to a constant, high quality surface finish of each component.



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## Advantages of ECO-PHOS

### Advantages :

- An ECO-PHOS plant consists of one bath, saving space – no longer 5 or more baths required.
- The ECO-PHOS technology becomes more economically viable and extends the lifespan of the chemical, with the installation of the ECO-PHOS Ion-Exchanger. ECO-PHOS can be regenerated up to approximately 1500 times, substantially reducing running costs.
- The suspended, waste particles in the tank are intensively filtered and removed from the circuit, allowing for continuous and high quality results. The shut-down cleaning process is therefore minimised.
- The strategically positioned jets remove the waste particles from the pickling tank into the intensive filter system, where the particles are thereafter discharged. ECO-PHOS therefore remains concentrated and clean.
- No corrosive gases, therefore can be utilised in closed environments.
- Non – Poisonous.
- Environmentally friendly – no legislative approvals required.
- Lower waste disposal costs.
- Non flammable.
- No MAC Values (Maximum Allowable Concentrations).

**Many advantages and opportunities result from the smaller amount of space required, environmentally friendly system and economic viability.**

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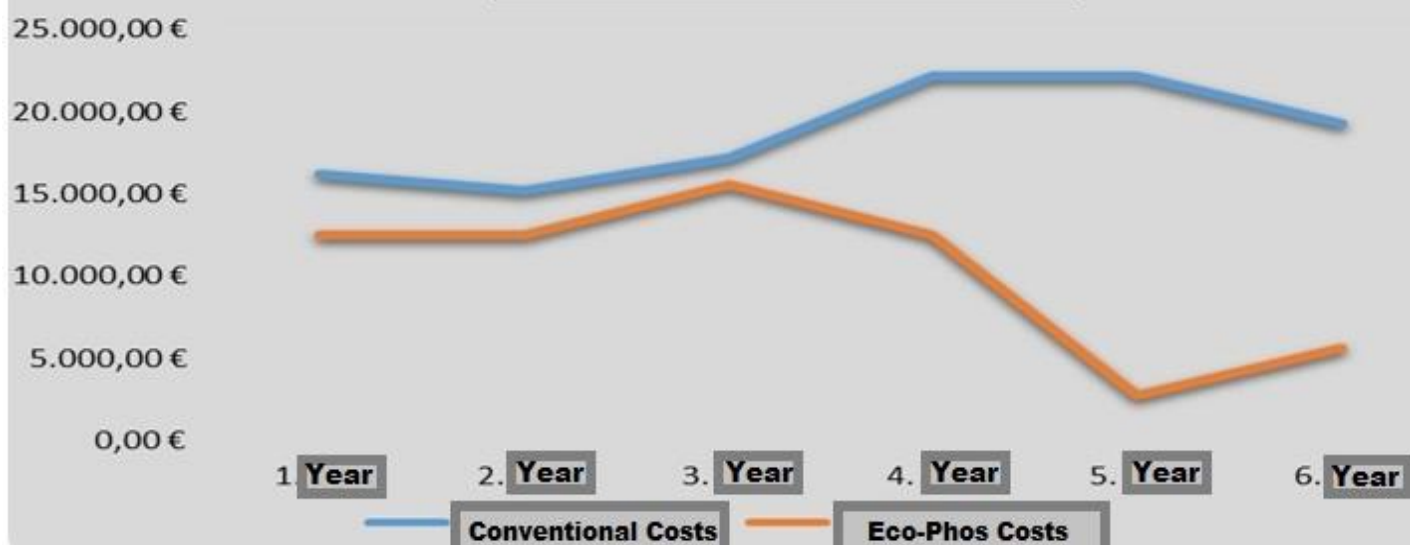


## ECO-PHOS v/s Conventional System

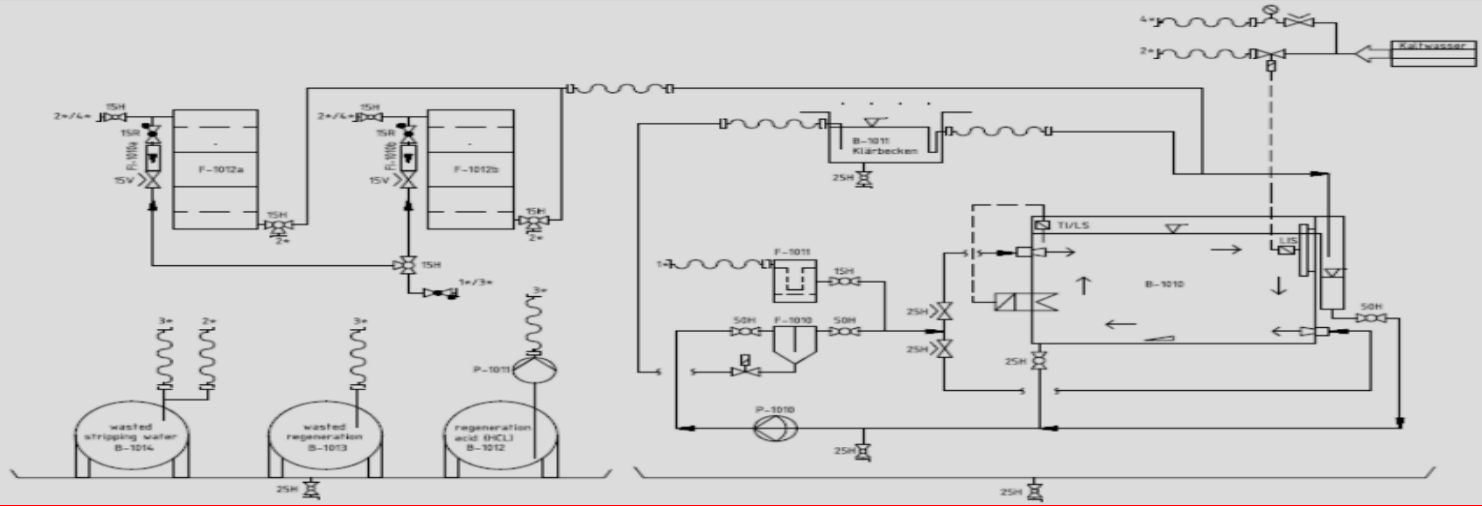
### Comparison

Description	ECO-PHOS Plant	Conventional Plant
Process and/or Cycle times	± 20 - 40 min	30 - 55 min
Capital Investment (eg 30 m <sup>3</sup> Tank)	400 -500 T€	650 - 850 T€
Size of Plant	40 m <sup>2</sup> (for 30 m <sup>3</sup> Tank)	110 - 120 m <sup>2</sup>
Time usage	24 -30 Months, dependant on bath usage	12 Months
Pickling and Phosphating costs :		
- Pipes and Steel Construction	± 0,8 - 1,6 €/m <sup>2</sup>	1,8 - 2,50 €/m <sup>2</sup>
- Tin Sheets	0,6 -0,9 €/m	1,0 - 1,30 €/m <sup>2</sup>
Waste removal costs	± 0,1 - 0,2 €/m <sup>2</sup> (Region dependent)	0,3 - 0,5 €/m <sup>2</sup>

### Cost Advantages



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## ECO-PHOS Technology

**ECO-PHOS can be utilised in various Industries :**

- Steel Industry and Fabricators
- Pipe Assembly
- Automobile Industry
- Transmission manufacturers
- Wharfs
- Machinery and Plant erection



A unique feature of ECO-PHOS is the integration of pickling and phosphating in ONE TANK – ONE STEP.

In the production facility, the temporary corrosion protection of ECO-PHOS is a major advantage.

The subsequent surface coating required on the component does not necessarily require immediate treatment.



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**Before**



**After**



## Temporary corrosion resistant & strength adhesion

ECO-PHOS offers a temporary corrosion protection surface. A 400hr salt spray test shows no side penetration under the ECO-PHOS layer.

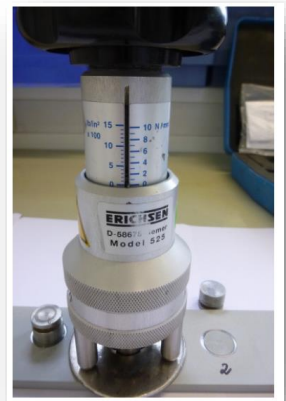
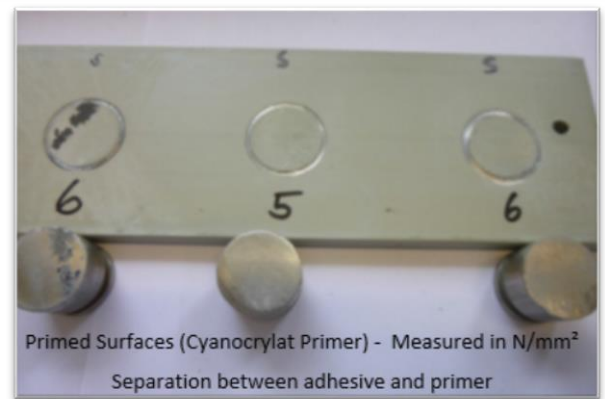
Components may be stored in dry conditions for lengthy periods after ECO-PHOS usage.

Even heavily and severely rusted components can be treated and protected with ECO-PHOS.

The build-up after ECO-PHOS usage, provides an ideal base for subsequent coating processes.

The pull-off tests, after ECO-PHOS usage have shown average readings of between 6 and 9 MPa.

The Phosphate layer is measured between 4 – 6  $\mu\text{m}$ .



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I.A.P. International and Steuler KCH are Worldwide entities



**ECO-PHOS** is a Worldwide entity

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