

RECP Best Practices Catalogue

*Replacing Phosphatation pretreatment
with Nano Ceramic conversion*

Developed within the framework of MED TEST II



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



switchmed



The SwitchMed Programme is
funded by the European Union

Best Practice - Replacing Phosphatation pretreatment with Nano Ceramic conversion

SECTOR:	Metal, electrical and motor vehicle parts
Branch:	Manufacture of parts and accessories for motor vehicles
CATEGORY	Process control or modification
APPLICABILITY	Process

COMPANY SIZE	255
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Description of the Problem (Base Scenario):

Before the painting layer, a phosphating layer is applied to increase paint adhesion. This pretreatment process is considered traditional and is the root cause of a number of inefficiencies:

- Generation of sludge containing heavy metals
- High energy consumption
- High water consumption

Description of the Solution

Nano ceramic layers have many advantages over phosphate, namely, reduced product consumption, reduced processing time and longer life. In addition, there is no need for changes in the facility.



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Economic Gains

€ 19,000

- Energy cost is € 0.034/m² for phosphatation and € 0.021/m² for nano ceramics,
- Water cost is € 0.0025/m² for phosphatation and 0.0012/m² for nano ceramics,
- Sludge management costs are € 0.022/m² for phosphatation and € 0.001/m² for nano ceramics,
- Reduction in raw material cost is about € 0.0015/m²,
- Overall saving is € 0.037/m².
- Productivity enhancement

Environmental Gains

- 82.5 m³ of water, which is 1.4% of overall consumption
- 6 kg/year of BOD, or 0.84%
- 74 kg/year of COD, or 0.88%
- 110 MWh or 4.1% of overall consumption
- 69.5 tons CO₂ which is 3.7%

Health and Safety Impact

Improvement of work conditions



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Capital Investments & Financial Indicators

Negligible
Time for Return on Investment: Immediate

Suppliers Information

Imported

Other Aspects

No impact on production or quality

Implementation

Under implementation



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