

# RECP Best Practice Catalogue

## *Laser bleaching*

*Developed within the framework  
of MED TEST II*



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



The SwitchMed Programme is  
funded by the European Union

# Best Practice - Laser bleaching

SECTOR:	Textile & Readymade Garments
SUBSECTOR:	Manufacture of wearing apparel, except fur apparel
PRODUCTS	Jeans products
CATEGORY	Technology upgrade/Eco-innovation
APPLICABILITY	Process
COMPANY NAME	--
COMPANY SIZE	Large

# Best Practice - Laser bleaching

## Description of the problem (Base scenario):

The company produces denim which are manually processed using sandpaper and grinder to get the required (degraded) look. Washing of the products is done outside the production facility through a subcontractor utilizing conventional permanganate process, however the company is planning to install a washing facility in-house, and to install a advanced bleaching machine to expand the design and level of degradation.

## Description of the solution

The eco-innovative technology of laser bleaching was introduced to the company during one B2B event organized within the SwitchMed project. The proposed machine can produce 75,000 trousers/month.

The major benefit in the laser bleaching is that it cuts the chemicals and water consumption as compared to the conventional mechanical bleaching process. Moreover, it provides higher flexibility to the level of degradation, leading to more designs.

The productivity for a line equipped with laser bleaching machines exceeds the conventional process in:

- Waste in the production can be reduced from approximately 5% to below 0.5 %
- Output that needs rework can be reduced from 20 % to 0 %

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<b>Economic Benefits</b>	<p>Savings in production of 75,000 trousers/month compared to conventional permanganate process include:</p> <ul style="list-style-type: none"><li>• Reduction in water consumption by 904 m<sup>3</sup>/month ~ 3,100 Euro/year</li><li>• Elimination of 60 kg of potassium permanganate/month ~ 14,760 Euro/year</li><li>• Elimination of 300 kg Sodium metabisulfite ~ 2,250 Euro/year</li></ul> <p>Increase of production designs, and addressing more markets which cannot be quantified.</p>
<b>Environmental Benefits</b>	<ul style="list-style-type: none"><li>• Reduction in water consumption by 904 m<sup>3</sup>/month ~ 10,848 m<sup>3</sup>/year.</li><li>• Elimination of 60 kg of potassium permanganate/month ~ 720 kg/year (100% of baseline).</li><li>• Elimination of 300 kg Sodium metabisulfite ~ 3,600 kg/year (100% of baseline).</li></ul>
<b>Health and safety impact</b>	<p>Permanganate is on the EU list of hazardous chemicals which will be prohibited in the near future, the substance is considered as extremely hazardous to the environment.</p>

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<b>Capital investments &amp; financial indicators</b>	Investment is around 300,000 Euro. Payback is estimated as 15 years without considering the additional profits for increase in productivity and reduction of rework. <b>The company is considering this measure mainly to expand its market coverage.</b>
<b>Suppliers</b>	Imported
<b>Other aspects</b>	Brands have been eliminating the usage of permanganate and currently there is no alternative to the laser bleaching technology in this respect. Of interest ... <a href="https://youtu.be/SMDIbNpE6dU">https://youtu.be/SMDIbNpE6dU</a>
<b>Implementation</b>	The company plan to implement this measure, aiming at expanding new market segments. The long payback is slowing down the process.

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**Replicability sectors**      Jeans production (ready made garments)

<b>Aspects to investigate for replicability</b>	Water, and chemicals consumed in the bleaching process Monthly/annual production levels
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**Useful resources**

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