

# A14 DENIM

**ROAD MAP TO ACHIEVABLE SUSTAINABILITY  
IN FASHIONABLE DENIM MANUFACTURING**

‘The future is exciting’

# WATER CONSUMPTION IN DENIM MANUFACTURING

AVERAGE WATER CONSUMPTION PER JEANS PRODUCED

70 L

ESTIMATED ANNUAL PRODUCTION OF JEANS

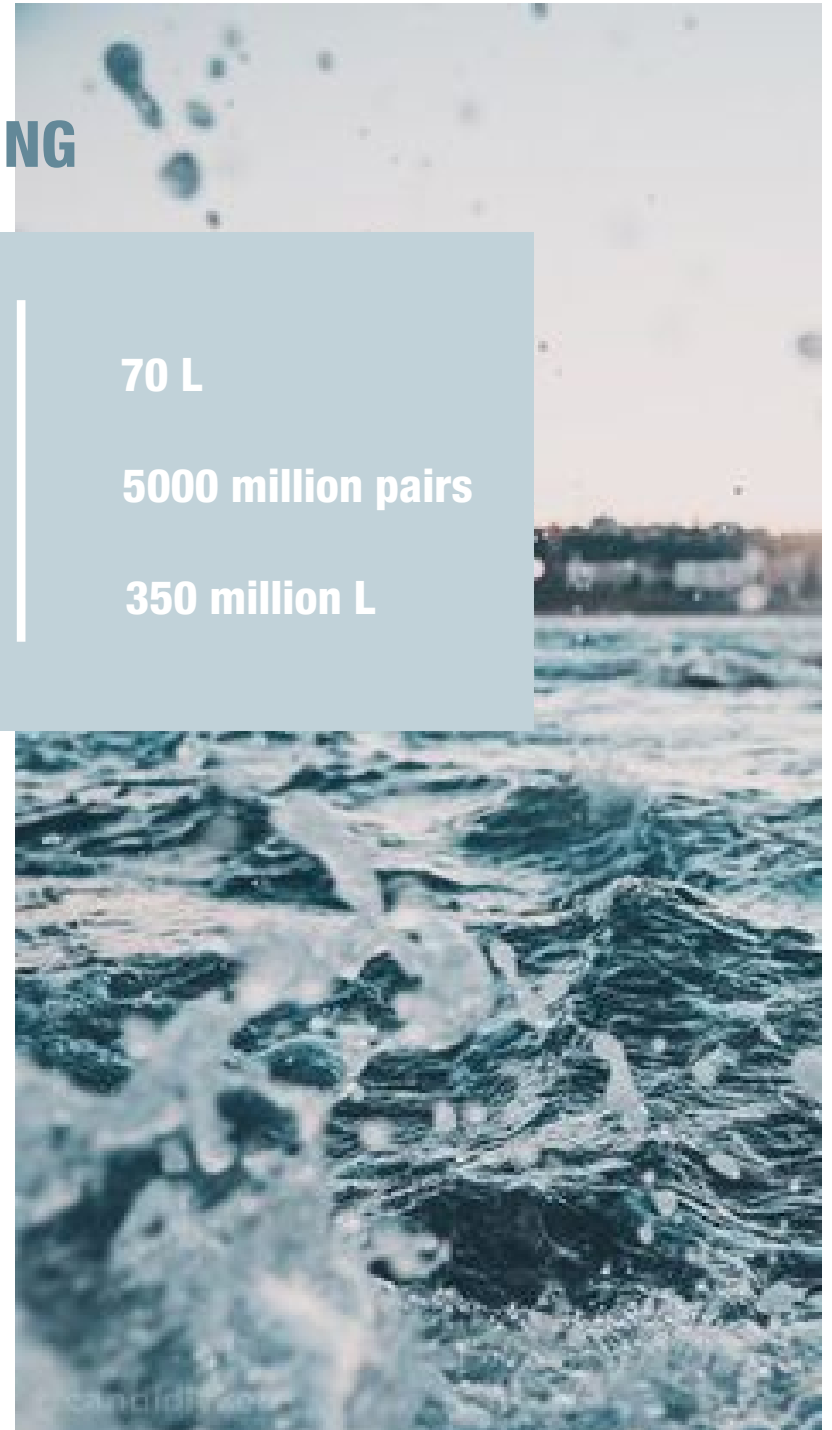
5000 million pairs

TOTAL WATER CONSUMPTION IN JEANS PRODUCTION

350 million L

A Recent Denim Life Cycle Assessment (LCA) analysis (Levi Strauss Co., 2009; Ademe, 2011) reveals that **more than 3000 Lt of water is used** during the full product life cycle of a single pair of jeans.

This is twice the water supply need of all inhabitants of one of the most populated cities of Europe, Madrid ( Spain) (Instituto Nacional de Estadística, 2013; Europa Press, 2009)



# SECOND DIRTIEST INDUSTRY

Fashion Industry is the second largest polluter in the world.

**Chemicals** are used during fiber production, dyeing, bleaching, and wet processing of each of our garments.

The heavy use of chemicals in cotton farming is **causing diseases and premature death** among cotton farmers, along with massive freshwater and ocean **water pollution and soil degradation**.

Some of these substances are also harmful to the consumer.



## TOXIC THREADS

Untreated toxic wastewaters from textiles factories are dumped directly into the rivers.

**Wastewater contains toxic substances** such as lead, mercury and arsenic, among others. These are extremely **harmful for the aquatic life and the health of the millions people** living by those rivers banks. The contamination also reaches the sea and eventually spreads around the globe.



**Huge quantity of fresh water are used for the dyeing and finishing process for all of our clothes.**

**1.5 TRILLION**

LITERS OF WATER  
are used by the fashion  
industry each year



**5,2%**

OF THE WASTE  
in our landfills are  
textiles



**20% OF INDUSTRIAL**

WATER POLLUTION  
comes from textiles  
treatment and dying



**90%**

OF WASTEWATERS  
in developing countries is  
discharged into rivers  
without treatment



**200,000 TONS**

OF DYES  
are lost to effluents  
every year



**10 %**  
GLOBAL  
CARBON  
EMISSION



**200 TONS**

OF FRESH WATER  
are needed to dye  
one ton of fabric



**750 MILLION**

PEOPLE IN THE WORLD  
DO NOT have access to  
drinking water



# **SUSTAINABLE FASHION IS THE FUTURE AND WE NEED TO BE PART OF IT**

ETHICS+  
AESTHETICS=  
SUSTAINABLE  
FASHION

**AS A14 DENIM WE ARE TAKING IMPORTANT  
STEPS TOWARDS SUSTAINABILITY.**

**SUSTAINABLE PRODUCTION SHOULD  
START FROM THE VERY BEGINING OF THE  
DEVELOPMENT STAGE.**

**OUR DESIGN TEAM HAS BEEN WORKING  
AND FOCUSING ON SUSTAINABILITY FOR  
MANY YEARS.**



A photograph of a whale's tail breaching the ocean surface, creating a large splash. The sky is overcast and grey. The image is part of a background collage that also includes a light blue sky and a sandy beach at the bottom.

# WHAT WE DO

**A14 DESIGN TEAM IS ALREADY USING JEANOLOGIA E-FLOW AND OZONE G2 MACHINES FOR THE DEVELOPMENTS. THESE MACHINERY MADE FOR THE HIGHEST SUSTAINABILITY GOALS.**

**IN PRODUCTION WE USE LASER AND LOW LIQUOR RATIO LAUNDRY-DYEING MACHINERY.**

**WE USE AN ENVIRONMENTAL SCORING PLATFORM FROM JEANOLOGIA CALLED EIM SCORE.**

# SUSTAINABLE DENIM MANUFACTURING

Use **LESS WATER** and **LESS ENERGY**.  
Keeping your waste water clean is a goal.

## HOW CAN WE DO THIS?

To make sustainable jeans and production you can follow below tools and machinery.

**LASER**

**LOW LIQUOR RATIO LAUNDRY  
MACHINERY**

**NANO BUBBLE TECHNOLOGY**

**OZONE**

**BAN HAZARDOUS CHEMICALS**  
such as **potassium permanganate**  
and **Sodium- Hypochlorite**.

**USE SYNTHETIC STONE** to get  
faded effects on your jeans but  
still **reduce dirty waste water**.



# LASER TECHNOLOGY

Laser has been a replacement for the traditional methods of denim - finishing like sandblasting, stone washing etc. It is the fastest growing and accepted technique in the denim market, as this technology has made denims GO GREEN.



## WHY CHOOSE LASER TECHNOLOGY

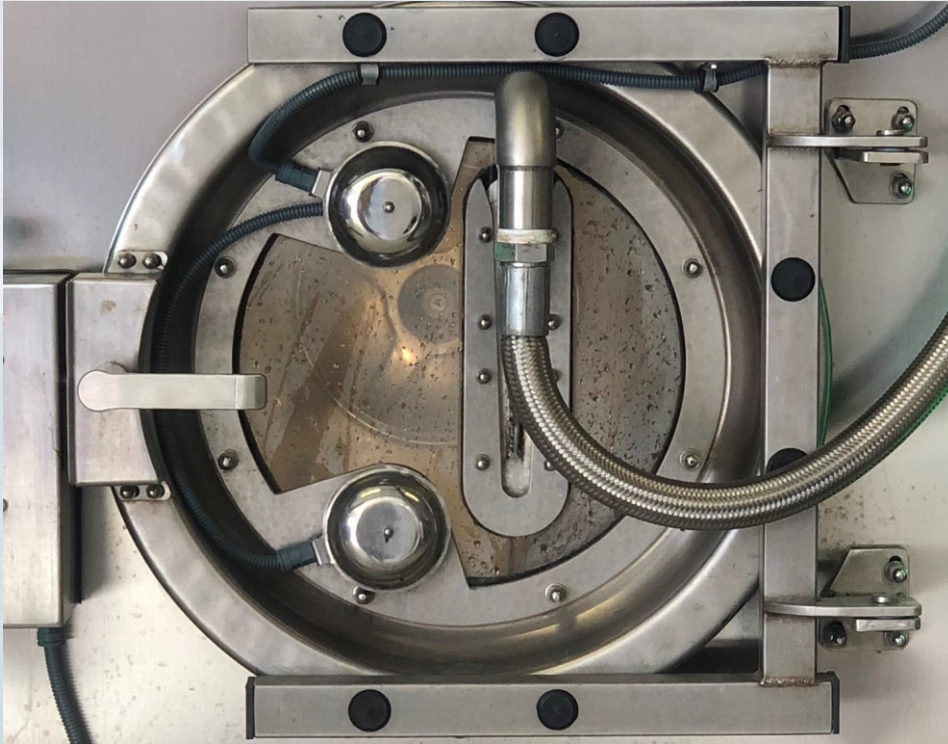
**The designs** can be placed anywhere on the garment depending on the requirement.

Much **faster** process as compared to the conventional finishing process.

Suitable for a **wide range of materials**.

**ECO friendly** with comparatively negligible use of water with no use of chemicals.

**Saves denim fabric from damages** caused by traditional tools, chemicals, stones and bleaches etc.



# LOW LIQUOR RATIO LAUNDRY MACHINERIES

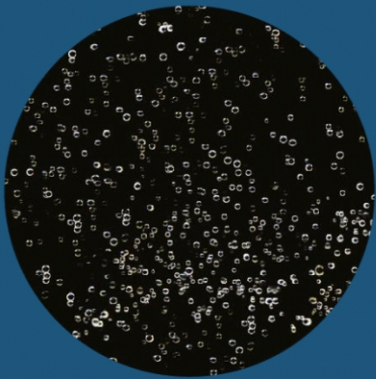
Design & Technology of machinery's drum is ideal for sustainable production. These types of machineries are decreasing your water, energy and chemical consumption dramatically.

Please see comparison table to understand the differences.

	CONVENTIONAL	LOW LIQUOR
Desizing (L/KG)	8-10	2-3
Enzyme Wash (L/KG)	6-8	2-3
Stone wash (L/KG)	6-8	2-3
Rinse (L/KG)	8-10	2-3
Bleach (L/KG)	8-10	3-4
Neutralization (L/KG)	6-8	2-3
Detergent (L/KG)	6-8	2-3
Tint (L/KG)	6-8	2-3
Softener (L/KG)	6-8	2-3

# NANO-BUBBLE TECHNOLOGY

## How ultra low liquor ratio technology works



Air, water and chemicals are introduced into the ultra low liquor ratio machine, creating a mixture of nano-bubbles and moist air.



The mixture is injected into a rotating tumbler containing the denim garments.



The nano-bubbles layer transports the chemicals to the garment, creating effects in a closed system.



SAVINGS  
UP TO:

💧 65%

⚡ 20%

🧪 80%

## OZONE WASHING

**WASHED BY THE ATMOSPHERE** – Ozone naturally has strong oxidizing capabilities, which can **destroy indigo dyes** on the fabric's surface, **creating a bleached appearance**.

**ENVIRONMENTALLY FRIENDLY** since ozonized water can easily be deoxygenated by UV radiation. **Ozone works quickly**, ozone requires fewer rinses, while chemical bleaching or stone washing uses six to seven washes and rinses.

Ozone Finishing for Denim **Reduces Environmental Impact, Processing Costs and Processing Time.**

## ORGANIC BLEACHING AGENTS & ENZYMES



Use **ORGANIC BLEACHING AGENT** and **ENZYMES** as an ecological alternative to **fade your denim**. You will still get high and low effects on your jeans.

The advantages of these treatment ;

**NO DAMAGE**  
**NON HAZARDOUS**  
**ECOLOGICAL**

We should **Ban hazardous chemicals** as much as possible to make sustainable jeans; such as **Potassium Permanganate** and **Sodium- Hypochlorite**.

# BANNING POTASSIUM PERMANGANATE

**Spray treatment** with potassium permanganate ( $\text{KMnO}_4$ ) has been **traditionally used** in the garment industry as a very effective way to create the popular **used look on denim**.

90% of bleaching processes use **potassium permanganate** which is sprayed on the jeans by workers, which constituting a **risk for humans and the environment**. In addition, manganese is a heavy metal with no biodegradability.

**It would be ideal to ban potassium permanganate because of the risk on both workers and environment.**



## MORE SYNTHETIC STONE



Synthetic Stones have been introduced in order to find alternative to pumice stone. These synthetic stones are produced from abrasive materials such as **silicate, plastic, rubber or portland cement.**

Synthetic stones are;  
**More durable** than pumice stone.  
Can be repeatedly used more than **5000 cyle.**  
They cause **less damage to machines and garments.**  
Gives better **hand feel** and **rich look.**

## LESS PUMICE STONE



Pumice is a **natural volcanic stone**, which is used in the **traditional stone washing** of denim garments.

This treatment **causes a large amount of sludge which will end up as waste in the environment.** Also, residues need to be removed from the pockets and folds of the garment, consuming even more water.

# ENVIRONMENTAL EFFECT OF DIFFERENT PROCESSES

SUSTAINABLE  
TREATMENT

TRADITIONAL  
TREATMENT



LASER  
PRETREATMENT

LASER

ENZYME WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

BLEACHING  
ENZYME (spray)

WHISKERS

HAND SAND  
SCRAPING

ENZYME WASH  
WITH PUMICE  
STONE

HYPOCHLORITE  
BLEACHING

PERMANGANATE  
SPRAY

SUSTAINABLE

TRADITIONAL

6,2



Water Impact  
(L/Garment)

46,4

0,79



Energy Impact  
(KWH/Garment)

2,27

18



Chemical Impact  
(Garment)

72,5

26,5



Worker Impact  
(Garment)

90

22

EIM  
SCORE

67

# WHAT WE OFFER



**Short  
lead time**



**Trust**



**Quality**



**Innovation**



**Fashion  
Trends**



**Transparency**



**Certification**

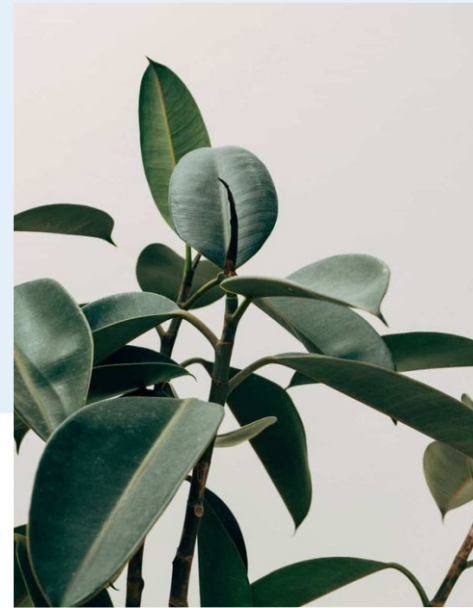


**Sustainable  
Measuring**



**Partnership**

# GLOBAL CERTIFICATIONS



**WE BELIEVE IN  
SUSTAINABLE  
DEVELOPMENT  
AND PRODUCTION.**

**IT IS NOT MAGIC  
OR A WAY TO SHOW  
OFF, IT IS A SIMPLE  
FACT WHICH IS  
ABSOLUTELY  
UNAVOIDABLE**





# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

BLEACHING  
ENZYME (spray)

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

BLEACHING  
ENZYME

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

STONE WASH  
WITH LOW  
FLOTTE

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

ENZYME WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

BLEACHING  
ENZYME (spray)

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

ENZYME WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

LOW FLOTTE  
stone wash

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

LOW FLOTTE  
stone wash

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

BLEACHING  
ENZYME SPRAY

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT

ECO-FRIENDLY.  
A14 DENIM  
CONCIOUS  
All you need  
is LESS!



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LASER  
PRETREATMENT

LASER

E-FLOW WASH  
WITH SYNTHETIC  
STONE

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT

ECO-FRIENDLY.  
A14 DENIM  
CONCIOUS  
All you need  
is LESS!



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LASER  
PRETREATMENT

LASER

SYNTHETIC  
STONE WASH

ORGANIC  
BLEACHING  
AGENT

# A14 DENIM / SUSTAINABLE DENIM DEVELOPMENT



LASER  
PRETREATMENT

LASER

ENZYME WASH  
WITH SYNTHETIC  
STONE

BLEACHING  
ENZYME SPRAY