

## **Session III**

**5<sup>th</sup> February 2016**

## The title for this Session was “Sustainability and Regulatory Trends impacting on Factories”

This Session was chaired by Mr Leandro de Melo from Centro Tecnológico Do Calçado De Portugal and Mr Sergio Dulio from ATOMLab, Italy

- The **Introductory Presentation** in this Session was by **Ms Dorothy Adolf from Deichmann, Germany** who spoke on “**Transparency in the Supply Chain- the expectations of the Consumers and NGO's**”
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Ms Dorothy Adolf from Deichmann underlined that they don't just offer their customers fashion at a great price, but also quality and safety when buying shoes and added that at Deichmann they guarantee the quality that they promise their customers because they work closely with their suppliers on manufacturing processes. She said their mantra was **'We're not satisfied until our customers are.'**

She reiterated that they believed in the transparency of their supply chain and adhered to three principles which they believed should be every customer's reality namely **Prices, Quality and Advice.**

She added that the company's motto was, “The company must serve the person” and they make it their concern and personal duty to make sure that this mission was carried out in day-to-day decisions.

She opined that business was there for the people, and not vice versa and added that Profits and growth aren't just ends in themselves, but help to keep the company healthy and to keep jobs secure, which according to her was only possible with qualified, motivated employees and absolute customer orientation. Touching on the aspect of the Supply Chain, she said that when dealing with their suppliers, they stress on fairness and partnership, but where necessary they also pressed for improved working conditions much in the same way they approached business, they approached social responsibility also.

She stressed that while it may sound obvious, but it must be repeated all the time: The goal of all their activities must be to satisfy their customers and this was the foundation of their business success..

Ms Adolf emphasized that they believed that mutually pulling together between the manufacturers, Consumers and NGOs, brought pride in their achievements, strengthened camaraderie and increased

work satisfaction. At the same time, this collegial interaction has positive effects on the company and its success. This, in turn, made it possible to bring meaning to their mission.

She said that they supported work safety, environmental protection and worker health, a ban on discriminatory practices, as well as on child and forced labour, regulated working hours, and clearly regulated compensation. In addition, they also set obligatory social and environmental standards that supplier companies must abide by, she added.



- The **First Speaker** in this Session was **Mr Sergio Alonso from CIATEC AC, Mexico** and he spoke on **"Tannery Blue Waste as raw material for Plastic Composites fabrication"**

Mr Sergio Alonso stated that Tanneries were commonly considered as contaminants and added that in this regard, CIATEC had developed a unique solution to valorize blue leather scrap as reinforcing filler in plastic formulations. He informed that several contents of the scrap had been incorporated into ABS creating a unique formula of plastic composite potentially usable in shoe heels and platforms and added that the mechanical properties of the material had also been quantified in polyolefins composites envisaging a wide panorama of applications. Mr Alonso underlined that the results showed the technical feasibility of the composite, either in polyolefins or ABS, in order to take the development further into a spin-off from CIATEC and stresses that one further advantage of the technology was that it could consume all the leather scrap generated locally to fabricate commercial plastic composites. He opined that as a result, the fabrication and commercialization of the plastic composite may contribute to the environment by valorizing a residue that is now difficult and costly to dispose.

Elaborating, Mr Alonso said that the **manufacture** of leather involved **wastes** and **added that after the tanning** step, the leather **thickness** should be **adjusted**, generating **blue leather** waste. He listed out the benefits as classified it as a **NEW VALUE-ADDED RAW MATERIAL** defining it as **PLASTIC + LEATHER WASTE = NEW COMPOSITE**. He informed that the **Leather** blue waste was **treated and combined** with **plastic** by means of a **proprietary** process and formula and a **variety** of **articles** could be **manufactured from it**. He stated that the **composite material** could be transformed into **valuable industrial products** either by **extrusion, injection, and compression molding** processes.



To **investigate** the **mechanical properties** of the leather blue waste – plastic **composite** to better **understand** the material behavior, Mr Alonso outlined that one had to **characterize** the material under different **waste concentrations** and under different **processing** technologies to envisage the possible applications of the composite.



Listing out the Advantages, Mr Alonso stated that the **inclusion** of **chrome leather waste** residue to the virgin **plastic** generated a **composite material** whose **cost is reduced** compared to that of the virgin plastic being used and that it also **maintained** most of the **mechanical properties**. In conclusion, he said that **the technology valorizes** a leather residue, provides **alternatives** of use and contributes to **reduce** the use of non-renewable resources such as **plastics as well as avoids** the **confinement** of a **contaminant**

- The **Second Speaker** in this Session was **Mr Jean Claude Cannot from CTC, France** and he spoke on **"Study of the variation in Chromium VI content inside the Leather used in Footwear"**

Mr Jean Claude Cannot informed at the beginning of his presentation that Leathers were mainly tanned with chromium and were widely used in the footwear industry and added that Trivalent chromium (CrIII) was employed for the tanning. He cautioned that, however, if the process was not perfectly mastered, some free CrIII radicals could be transformed into hexavalent chromium (CrVI), which was harmful. He stated that Several hypotheses had been advanced to explain the CrVI appearance and added that a few studies assessed the evolution within time of the CrVI content.

Mr Cannot stated that CTC had launched a research program where Four different bovine leathers had been defined: - Leather 1: tanned and finished with all the best practices known nowadays to avoid CrVI generation. - Leather 2: treated with the same recipe, except the fat liquors used, which are unsaturated. - Leather 3: tanned without applying the best practices. - Leather 4: treated the same way than the third, but with a vegetal retanning and for several months, they had been following their variation of the CrVI content, by studying particularly the influence of: - The homogeneity of the CrVI content on the hide (mapping) - The recipe applied to identify the best practices that are inescapable

- The storage, of the light effect - The means to detect the CrVI (ionic chromatography) The aim of these works was to suggest a new ageing methodology, which was really representative of what was happening to the leather, during the footwear manufacturing and use, he informed. Mr Cannot stated that the efficiency of reducing agents, used for prevention of CrVI generation, applied on bath or on the back side of finished leathers was also assessed and stated that these research works had already shown the impact of the application of best practices.



Mr Cannot emphasized that the goal of their Research was to secure the supply chain In the world as more than 80% of the leather was tanned with Chromium and the first use of leather was for footwear manufacture. He informed that only trivalent chromium (CrIII) was employed for tanning but added that if the process was not perfectly mastered, some hexavalent chromium (CrVI) would appear in leather. He also informed that the European legislation specified CrVI's content in leather as not exceeding 3 ppm and added that to guarantee the absence of Cr VI in leather was the major concern for the footwear industry now.

Mr Cannot concluded by spelling out 3 major options to avoid Cr VI in leather footwear, which he listed as:

1. The tanning process should follow the good practices
2. We must fully understand the chemical reaction and avoid it
3. We must work with anti-oxidant chemicals that would stop the action of oxygen

➤ The **Third Speaker** in this Session was **Mr John Hubbard from SATRA, UK** and he spoke on **"Sustainability benefits for Shoemakers using SATRA Production Efficiency tools"**

Mr John Hubbard prefaced his presentation by stating that a modern footwear factory should have access to a range of efficiency tools and systems in order to ensure that material and production costs were kept under strict control and added that these tools would also result in sustainability benefits. He added that as more investors and customers were requiring statements and evidence to demonstrate a positive approach to environmental and sustainability reporting, he underlined that by using these types of systems footwear manufacturers could be part of a strong sustainability narrative for their products.

He informed that there were three main systems that could be utilized and each one would provide different cost and sustainability benefits. He highlighted that that "SATRASumm" was a pattern cutting



programme that maximized the utilization of the primary raw material, leather. It took account of the flaws associated with this natural material and the complex shapes and size ranges of footwear uppers, he informed and added that this material saving reduced waste to landfill, and over time would lead to fewer transport deliveries and faulty products.



Mr Hubbard also informed that 'VisionStitch' was a sewing system that trained the stitching operatives and correctly optimized sewing machines and further stated that it had been shown that trained operatives using correctly adjusted machines would use less energy whilst improving the quality and accuracy of the stitching operation. He added that 'Timeline' was a system that balanced resources and skills and could be used to reduce work in progress in the factory. He elaborated that the systems were modular but compatible and could be a key to the real possibility of reduced costs, improved quality and increased sustainability.

Systems were selected primarily to achieve cost saving and increase production efficiency both of which impact positively on the long term sustainability of the products, Mr Hubbard continued and listed the major benefit as being a significant reduction of the materials and resources used. Outlining the additional benefits, he added that they included:

- Increased productivity
- Improved product quality
- Expanded knowledge

Mr Hubbard drew the attention of the audience to the benefits of the Leather Cutting Systems as being:

- Increased material utilisation
- Less scrap to landfill
- Reduced storage
- Less transportation
- Improved product quality

**Highlighting the Benefits of a leather cutting system, Mr Hubbard stated that for a footwear manufacturer producing 3,500 pairs/day of men's shoes, they would use 2,275,000 square feet each year and by working with a best practice leather cutting system they could reduce this figure by at least 8%**

He also underlined the Benefits of Stitching productivity, Benefits of Line Balancing and the Benefits of Lean Manufacturing. In conclusion, Mr Hubbard enumerated the Sustainability Benefits as being:

- Materials savings (Transport and waste)
- Energy use
- Right first time (Reducing waste)
- Fit for purpose (Durability)

and emphasized that Sustainability was now a key part of the global supply chain.

- The **Fourth Speaker** in this Session was **Mr Pasca Matteo from ARS Sutoria, Italy** and he spoke on **“Step 2 Sustainability”**



Mr Pasca Matteo informed the gathering that the project “Step to Sustainability”, co-financed by the European Commission, aimed at creating, designing, developing and piloting a new occupation and qualification profile with a corresponding training course. He stated that the overall objective was that businesses maximized energy efficiency and the use of their resources, while at the same time they increased the added value of their footwear in order to better satisfy consumers’ demands, as well as our planet’s needs, he added.

Mr Pasca said that based on the European Qualification Framework, two levels of occupational profiles had been developed, Level 4 – “Technician on Sustainable Manufacturing”- and Level 5 “Specialist Technician on Sustainability for Footwear Industry”, and a variety of modules of both training programmes would soon be finalized. He continued and stated that in brief, footwear companies would have an expert on sustainable manufacturing among their staff, who could advise on multiple topics such as the optimization of materials and processes with regards the product and packaging, the restricted chemicals to use, the legislation and standards to respect. He also informed that the consortium had now opened a Call for Expression of Interest at the project website [www.step2sustainability.eu](http://www.step2sustainability.eu), in which companies could apply to be part of the pilot exercise and follow training modules free of charge.

Mr Matteo queried as to ‘How to Implement Sustainable Manufacturing in Footwear’ and answered by stating that Sustainability applied to the industry affects the entire company at all working levels and was not restricted to only design and production departments, but also was applicable to the managerial level. He stressed that a multidisciplinary knowledge was needed in the company to develop a sustainable strategy and added that this knowledge did not currently exist, particularly at



technical level and stated that the footwear sector in Europe was constituted mainly by SMEs, which generally lacked qualified resources in this field, and did not have the necessary resources for investing in training.

Mr Pasca then listed out the PROJECT STEPS:

- Step 1: Research On Training Needs
- Step 2: Development Of A New Qualification Profile
- Step 3: Design Of Training Program – Training Units
- Step4: Piloting E-Learning

In conclusion, he said that this would lead to a finalization of the e-learning platform through video lectures and assessments and the pilot would be run with selected European companies. He added that a case history of a sustainable footwear collection would be created and a Final Conference would be held to launch the online training courses. He emphasized that the Project would be followed and the contents would be updated and the culture of sustainability would be disseminated.

- The **Fifth Speaker** in this Session was **Ms Patricia Pineiro from Spanish Federation of Footwear Industry, Spain** and she spoke on **“Footwear Carbon Footprint Calculation”**



Ms Patricia Pineiro defined the calculation of the Carbon footprint which consisted in quantifying the greenhouse gas emissions (GHG) of a product throughout its life cycle and added that it was an indicator of a product's environmental quality and allowed the implementation of GHG emission abatement measures, sustainability improvement and compliance with regulations that fight against climate change. She stated that there were numerous generic tools available for carbon footprint calculation, but none was specific for footwear. Furthermore, the selection of one methodology or another could noticeably affect the results so it was therefore necessary to find a harmonized methodology for the footwear sector, she opined.

Ms Pineiro informed that the “LIFE CO2Shoe Footwear Carbon Footprint project” was launched to address this issue and it was mainly aimed to develop a carbon footprint calculation tool specific for footwear. She stated that the project was supported by the European Union under the LIFE



programme and was coordinated by the Spanish Footwear Technology Institute (INESCOP), with the collaboration of the European Confederation of the Footwear Industry (CEC), and the Federation of Spanish Footwear Industries (FICE), among other partners. She elaborated that the calculation tool had been developed and successfully tested on different commercial footwear styles and added that for its operation, the international standards relative to Life Cycle Analysis (ISO 14040/14044), Carbon Footprint (ISO 14067) and the Product Category Rule “Leather Footwear” had been taken into consideration.

Ms Pineiro gave a background of **Global warming & climate change and also spelt out the Life Cycle Assessment of a Shoe. She then detailed the ‘Footwear carbon footprint calculation’ by stating that** there were a wide range of methodologies for calculating the carbon footprint (over 40) and that there was not a specific methodology for footwear and added that there were difficulties in the application of the existing methodologies in specific sectors as it was difficult to compare results across different methodologies, scopes, materials which led to consumer confusion.

She stated that the **Main objective was to** develop a carbon footprint calculation tool specific for footwear to quantify the greenhouse gas emissions of a pair of shoes to improve the environmental situation of the footwear companies. She said that the scope of the work was the Quantification of the GHG emissions produced by each pair of shoes inside its box defined within the system boundaries of Cradle to grave. She also briefly outlined the **Footwear carbon footprint methodology and the Footwear carbon footprint stages including the Verification.**

**In Summary, she concluded that the Carbon footprint was an** indicator used to assess the environmental behaviour of products or organisations (continuous improvement) and that **today, there was a calculation tool available** that allowed the specific calculation of the carbon footprint of footwear. **She underlined that this** tool had been **verified and it allowed the reduction of the carbon footprint, thus Reinforcing** the product, trademark as well as the company image.

- The **Sixth Speaker** in this Session was **Mr William Wong from GODDESS, Hong Kong** and he spoke on **“Green Factories for the future”**



Mr William Wong sought to focus on production energy and green energy, social compliance and safe working condition, wastage control, recycle and reuse and shared his views on products and sustainable products especially vis-à-vis the Green Consumer and the Green Supply Chain.



Elaborating, Mr Wong stated that during Production, the factors that needed focus were 1. Green Energy which could be either Solar, Hydro, any Green Process which would Minimize Impact to Environment and Workers with Social Compliance; 2. Wastage Control which he advocated through the policy of Recycle and Reuse.

As far as the Products were concerned he emphasized that they should be Natural and Bio-degradable. He strongly reinforced the concept of Recycling and pointed out the Factory Owners needed to have a Heart and Mind to absorb these Green Concepts, make suitable Investments in ensuring these and also inculcate the idea of "Green Factories" in the Hearts and Minds of their workers.

He also urged the Consumers to be 'Green Consumers' and advocated that the Supply Chain should have a large component of Localization with would minimize migrant work and also benefit the local market.

At the end of the Session, **Mementos** and Certificates were presented to the Chairpersons and Mementos to the Speakers by **Shri PR Aqeel Ahmed, Convenor of the 19<sup>th</sup> UITIC International Technical Footwear Congress and the Regional Chairman (South), Council for Leather Exports, India and Certificates to the Speakers** were presented by the **Chairman of the Session Mr Sergio Dulio from ATOMLab, Italy.**





