MAFO THE CONFERENCE

Timetable

February 28, 2020 (the day before Mido)

Location: Fiera Milano Rho in Milano/ Italy

08.30 a.m	Registering, badging, welcome coffee
09.00 a.m.	Welcome by Jörg Spangemacher, Peter Baumbach & Rebekka Nurkanovic
09.30 a.m.	**Axel Hoeschen**, Schneider Sustainable and efficient – innovative technologies reduce waste, save resources and energy
10.00 a.m.	**Xavier Pérez**, Bühler Meeting market requirements from fast coating solutions to premium processes
10.30 a.m.	**Jamal El-Hindi**, Filtertech Going green while saving green: environmental solutions that save your lab money
11.00 a.m.	Coffee break
11.30	**Norman Kester**, Quantum Innovation Technology and sustainability? A manufacturer's journey
Noon	**Ulrich Schiefer & Judith Ungewiß**, Aalen University A driving simulator as a tool for benchmarking optical lenses
12.30 p.m.	**Till Herzog**, GfK The European optics market 2019 – what is the impact of high end products on market size and development?
01.00 p.m.	Lunch
02.00 p.m.	**Michael Kreis**, Satisloh Sustainability 4.0: eco-efficient with alloy free blocking and MES
02.30 p.m.	**Orwell Wan**, BD8 Ecoplastics Revolutionary sustainable eyewear solution
03.00 p.m.	**Andreas Kelch**, Vivior Personalization of PALs based on objective customer data
03.30 p.m.	Coffee break
04.00 p.m.	**Eva Chamorro**, IOT How do lens manufacturing errors matter in wearer satisfaction?
04.30 p.m.	**Fritz Paßmann**, HWK Dortmund Achieving a prismatic effect on eyeglass lenses: optometrists vs. industry – the optician between industry and end user. How good is his advice on prismatic lenses?
05.00 p.m.	**Mo Jalie**, University Ulster Advanced single vision lenses – best form for distance and near
05.30 p.m.	Cocktail reception

Speakers

Special topic: Smart & Sustainable

Chairman: Peter Baumbach

Axel Hoeschen, Schneider

Sustainable and efficient – innovative technologies reduce waste, save resources and energy

No mass manufacturing consumer good industry today can afford to disregard its impact on our biosphere. Consumers today are much more sensitive, they attach value to the conditions under which a product is produced, shipped and serviced, both in terms of social and environmental impact.

We as one of the industry's leading technology providers have an important responsibility to supply solutions to our customers that reduce the amount of plastic waste, of energy consumption, and of other hazardous materials that come along with manufacturing ophthalmic lenses.

I will present five key innovations out of different steps of lens manufacturing and how they will contribute to a more sustainable and more effective lens manufacturing. I will show:

- how plastic waste can be drastically reduced with a new, highly productive and cost-effective spin protecting solution, replacing the need for tape and the associated waste,
- how highly reusable metal shell block pieces reduce plastic waste and cost around our EFT blocking solution,
- how new polishing technologies and materials increase the life time of polishing pads, reducing cost and waste,
- how technology advances in the coating process drastically reduce energy consumption and -cost, and
- how inline quality measurement reduces breakage, energy consumption and waste altogether.

The quest towards sustainability will be a holistic, multi-level journey. Rather than one big solution, becoming sustainable will take many small steps that contribute. These steps can be taken independently and over time. Each new investment decision gives the chance to take a step into the right direction.

Xavier Pérez, Bühler

Meeting market requirements from fast coating solutions to premium processes

The current ophthalmic market demands specific coating solutions to meet sustainability requirements. In this lecture, several solutions will be presented in order to tackle that demand in different ways: process, energy management and IoT.

Newly launched processes address sustainability through two different approaches. On the one hand, a very fast process allows for an unmatched batch time of less than 23 minutes in order to minimize the carbon footprint of each lens.

On the other hand, a new benchmark for highly scratch resistant and durable coating solutions allows for a longer lifetime of the eyeglasses. The end user can therefore keep his/her glasses for a longer period of time, hence saving energy by not having a new pair produced and avoiding unnecessary waste.

Eco-mode functions on machines allow for potential energy savings of up to 40%. Some machines can even benefit from an extra 25% energy saving using an intelligent control of the heater power, more energy efficient parts and effective insulations.

Finally, IoT tools support sustainability. Using such services, customers can increase dynamically and instantly their yield, therefore minimizing wastes and energy consumption. A yield increase of 1% can help save several hundreds of kilos of plastic each year.

Jamal El-Hindi, Filtertech

Going green while saving green: environmental solutions that save your lab money

How we manufacture can literally change the world. As we learn more about how these changes affect our environment, not only in our day to day lives, but on a global scale, we are faced with some harsh realities. Manufacturers today are faced with tough decisions about their manufacturing process and the waste they create. Sustainable manufacturing is how we can manage these harsh realities and build safer and better processes to minimize our negative environmental impacts.

Optical labs across the industry are currently looking for efficient ways to streamline production while reducing waste. Ideally, every lab could do more to help reduce their environmental impact, but at what cost?

Who takes on the responsibility to make better changes for our world? How do we compete on the global scale when regulations differ across the globe? How do we decrease our ecological footprint while remaining competitive with those who don't? We can't expect major changes to happen at no cost, but sustainable manufacturing is about increasing efficiency and developing smarter manufacturing practices that both save you money and the environment.

This talk will review several technologies that provide smarter, more efficient, and cost-effective ways your lab can practice sustainability - technologies from hazardous waste treatment to reducing plastic "swarf." There are options for your lab.

Norman Kester, Quantum Innovation

Technology and sustainability? A manufacturer's journey

Doing the right thing, because it's the right thing to do – virtuous cycles – was part of our corporate beliefs, but we were challenged when we looked at our impact on our community, our state, our country and the world. This sent us on a path of discovery as to what sustainability means and how to impact our local community and business community in a positive way.

On this path of discovery, we had to uncover why we in the manufacturing community struggle with sustainability. One question we had to consider was what does it mean to focus on sustainability? Another was how can a focus on sustainability affect our bottom lines, and what is the link between sustainability and purpose?

Ulrich Schiefer & Judith Ungewiß,
Aalen University

A driving simulator as a tool for benchmarking optical lenses

Ulrich Schiefer[a,b] Judith Ungewiß[a], Michael Wörner[a,c] and the ContrastVal Study Group

a Competence Center „Vision Research", Study Course Ophthalmic Optics, University of Applied Sciences Aalen, FRG
b Department of Ophthalmology, University of Tübingen/FR
c BlickShift Inc., Stuttgart/FRG

Optical lenses are usually evaluated by ray tracing methods or questionnaires: Ray tracing is well suited to characterize the image quality at the retina level whereby the image processing in the downstream visual pathway is not taken into account. Questionnaires are subjective tools with an inherent lack of standardization.

The aim of this approach is to develop a psychophysical test set-up that records the individual's visual performance or impairment in a location-specific manner within the highly standardized environment of a driving simulator. LED arrays moved via cable robots serve as moving or static glare sources.[1]

Individual local visual acuity and/or contrast sensitivity thresholds are assessed by eight-position LANDOLT C's. The stimuli can be presented at various locations within the set-up (e.g. projection screen, dashboard, navigation monitor, rear mirrors etc.), utilizing static and moving optotypes, respectively[2]. The vector origins of the moving stimuli can be placed within the center of a glare source in order to assess the individual, location-related extent of the visual impairment due to halo or starburst. Local threshold variability and individual response time are assessed by repeated presentations and vector placements within unaffected visual field areas.

The set-up is being used for characterizing the visual effects of media opacities (cataract) in motorists (ContrastVal study)[3] for benchmarking the impact of any kind of optical corrections, such as spectacle lenses, contact lenses, intraocular lenses (JJ-EYHANCE study)[4] or other (surgical) refractive procedures.

1 German Patent and Trademark Office: Deutsches Patent Nr. 10 2017 126 741.7
2 German Patent and Trademark Office: Deutsches Patent Nr. 10 2019 121 602.8
3 ClinicalTrials.gov Identifier: NCT03169855
4 ClinicalTrials.gov Identifier: NCT04059289

Acknowledgement: These studies are supported by the German Social Accident Insurance, Berlin/FRG and by a JOHNSON & JOHNSON/AMO, Dublin/Ireland, IIT grant.

Till Herzog, GfK

The European optics market 2019 – what is the impact of high end products on market size and development?

The European Optic market in 2019 (Nov 18 to Oct 19) has developed positive with a growth of 2% in value.

The development has been driven by spectacle lenses and spectacle frames, both product groups account for 83% of the market.

The positive trend comes from Germany and the UK with a 5% value increase; France, Spain and Italy are weaker in their development.

While spectacle lenses grow in all markets, spectacle frames face a value drop in Spain and Italy. At the same time Germany and UK show a strong positive trend in frames.

In all markets where the trends for spectacle lenses and frames are positive, a huge impact comes from a positive price development.

The question is now, what are the drivers of these price increases – simply rising prices or development of the assortment towards more valuable products?

For spectacle frames the countries with growing markets show at the same time an increase of the higher price segments, going along with a drop of private label shares.

For spectacle lenses all markets show a positive trend in price, which is driven by a good development of progressive lenses in all markets and a positive impact of proximity lenses,- still on a low share level though.

The highest increase rate is audited for progressive 1.6 lenses and proximity 1.6 lenses.

Also, contact lenses show a positive trend due to an average price increase.

Reason for this development is the increase of the toric and multifocal products within daily and monthly lenses.

The optic market gets its positive impacts out of an ongoing improvement of the quality in all products segments.

Michael Kreis, Satisloh

Sustainability 4.0: eco-efficient with alloy free blocking and MES

Besides the well-known KPI´s like throughput, lead-time or yield it becomes more and more important to operate production facilities in a sustainable and eco-efficient way. Are these contradictory requirements or maybe even complementary tasks? In general, waste genera-

tion, as well as water and energy consumption, are the biggest hurdles in achieving a green lab operation.

This talk outlines the most promising levers to make an ophthalmic lab more eco-efficient by avoiding waste as well as reusing energy and water. The biggest opportunity to run a production in a sustainable way lies in the optimization of throughput and yield. Keeping machines running and producing quality lenses in the first pass will reduce waste generation and consumption of energy and water per good lens dramatically.

Key to leveraging these potentials is the use of green technologies like next generation ART blocking as well as smart routing and scheduling with MES. To get the right job at the right moment to the right machine is crucial to maintain high productivity and therefore high efficiency. Even in smaller labs it is almost impossible to do this manually and optimize the usage of the equipment at the same time. Every waste – no matter if unused machine time, scrapped lenses or excessive use of materials – will also create an economical loss. Automation with MES based software routing and the use of green technologies are therefore not only eco-efficient but also help a lab's profitability.

Orwell Wan, BD8 Ecoplastics

Revolutionary sustainable eyewear solution

Every country strives to reduce her carbon emission and promotes to use less plastic. Every year, 400 million ophthalmic frames are produced in the industry and 4000 tones of demo lens are wasted. The land required to cover the lens is equivalent to 1/3 of the area of Central Park, New York. The level of plastic contamination, particularly from the eyewear industry is certainly alarming. Nowadays, 60% of plastic wastes will go to landfills, 25% to incineration, 13% to recycling and 2% to litter.

However, in the eyewear industry, there is no well-established recycling or waste management system at the moment. Demo lenses, eyeglasses, and polybags are disposed into garbage bins and eventually to landfills. Some might be recycled, but not significantly. Biodegradable materials are capable of being decomposed by bacteria or other living organisms and thereby pollution is avoided.

Currently, there are 2 types of biodegradation: compost (aerobic) and landfill (anaerobic). Compost biodegradation happens only in designated industrial composting facilities. The anaerobic biodegradation process consists of microorganisms using chemicals other than oxygen as an electron acceptor during the chemical breakdown process. ISO14855 describes a test method for industrial compost, but without clear pass and fail criteria that could serve as the basis for proper biodegradability claims and labelling. Landfill biodegradable polybags and demo lenses are proven to be biodegradable according to ISO 15985 and the said biodegradation is relatively linear. Eventually, these products would be estimated fully biodegraded after approx. 5 years.

During the landfill degradation, there is a landfill green energy program taking place. Landfill gas contains approximately 60% methane which can be used in the same way as energy from fossil fuels to generate energy to heat and even produce electricity. The landfill green energy in the UK could produce 3.4 TWh of green electricity yearly across the UK. Landfill biodegradable products are not only environmental friendly but also benefit our daily life with green electricity and are therefore revolutionary sustainable eyewear solutions to the industry.




Andreas Kelch, Vivior

Personalization of PALs based on objective customer data

As visual behavior becomes more complex due to changes in our lifestyle and the increased use of digital media, the demand for personalized vision solutions in ophthalmology and optometry is growing.

To date, the methods used to analyze presbyopia solutions have shown numerous shortcomings. A new technology helps eye care professionals to provide customers with an objective description of their individual visual behavior. A monitor in conjunction with algorithms is used to create a comprehensive and objective evaluation of the customer's visual behavior that complements the anamnesis. The software creates an intuitive visualization of the visual behavior of the customer by analyzing the data that was gathered over the measurement time period. This is shown in the form of a vision profile. The vision profile is divided into three visual distances: near, intermediate, and far, with each range being assigned a percentage proportion. Based on the percentages of the visual profile and potential additional information on viewing angle, head position etc., the software calculates the personalized design of the PAL. In the lecture I will show how this approach is used to produce high quality progressive lenses that meet the demands of the digital working world.

Eva Chamorro, IOT

How do lens manufacturing errors matter in wearer satisfaction?

Freeform technology made it possible to have any lens design using just spherical lens blanks; it has increased the possibilities in terms of what can be designed and produced. But freeform, by itself, is not equivalent to better quality or performance. In fact, the result is going to depend not only on the calculation technology used for the design in the first place, but also the production quality of the lab that is used to make the lens.

The standard ISO 8980-2 specifies requirements for optical and geometrical properties that power variations lenses should meet. These criteria are based in the verification of lens power in the reference points of lenses without considering other points of the lens surface. However, the quality of the lens in other points of the lens can affect visual quality and visual performance of the user.

Along this presentation, the results of a double-blind wearer trial in which a group of users compared the visual performance of a lens with an excellent production and a lens with induced errors during the generating process will be presented. The results show the importance of the quality and reliability of the surfacing process of freeform lenses in the user satisfaction.

Fritz Paßmann, HWK Dortmund

Achieving a prismatic effect on eyeglass lenses: optometrists vs. industry – the optician between industry and end user. How good is his advice on prismatic lenses?

Prismatic prescriptions are the supreme discipline in the triad between the optical industry, the opticians and the end user. The transformation of a prescription determined in the refraction room into glasses that are comfortable for the wearer requires precise cooperation between all those involved. The optician is the vital link between the customer to the industry and handing over the glasses in the optician's shop. The lecture aims to raise awareness of the approach and way of thinking of the optician, so that together this leads to optimal care of the end user and thereby increases customer satisfaction.

Mo Jalie, University Ulster

Advanced single vision lenses – best form for distance and near

With the advent of aspherical surfaces there is no longer a restriction to the lens forms proposed by Tscherning's Ellipse. It is possible to make any power of lens in any form and to use a suitable aspherical surface to neutralize the astigmatism of oblique incidence or to eliminate the power error at the lens periphery. The forms of lenses required for any given power are different for distance vision use and for near vision use and in the past, lens forms were chosen, in the main, to minimize off-axis aberrations for distance vision since it is for this range of vision that maximum visual acuity is required. When restricted to spherical surfaces, the best form for near vision is about two diopters flatter than the best form for distance vision over the common range of prescriptions but when aspherical surfaces are employed, the asphericity can be varied to provide the different off-axis performances for distance and near vision. The variation in asphericity is subtle enough to blend the two eccentricities together without causing a noticeable disturbance in the visual field. This talk describes the rationale of this new family of lenses and shows the improved off-axis performance over the different ranges of vision. ◆