

**NSG**

**GROUP**

# BPIP Conference 2020

## Introduction to your (virtual) host - NSG Group

# While we wait for attendees to join...



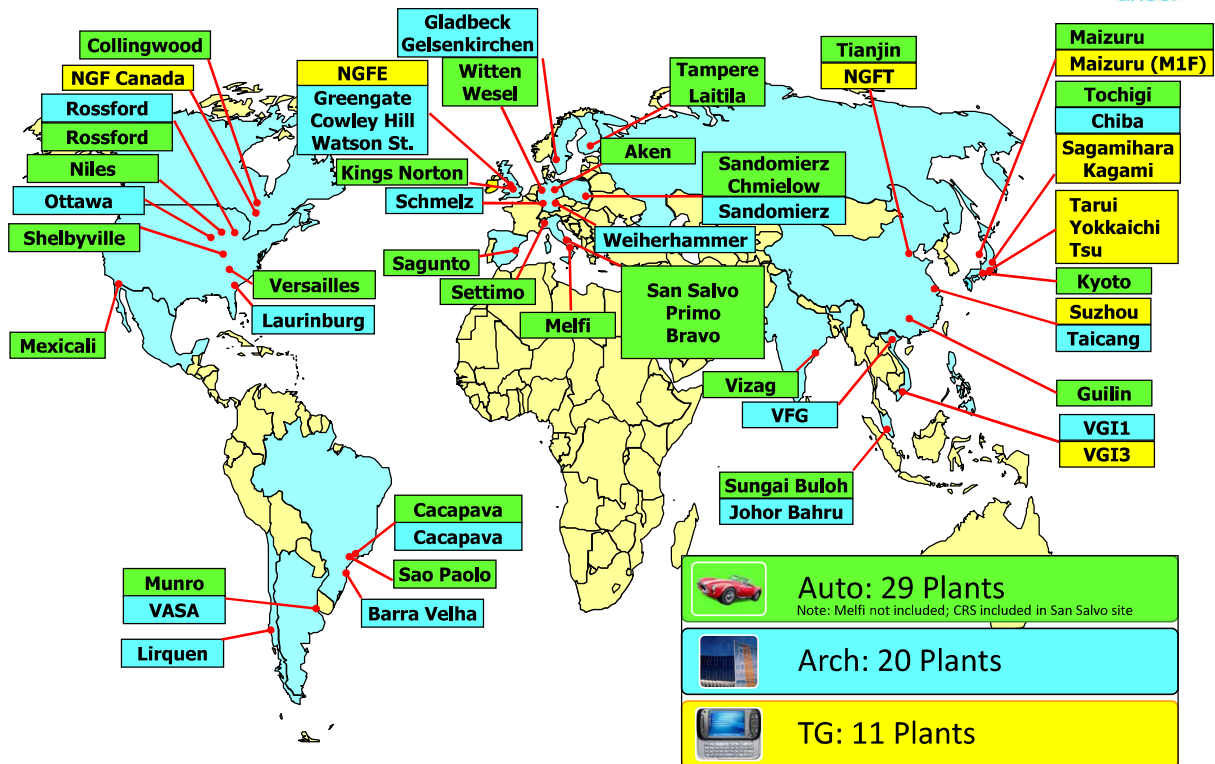
- Why not look at some of the videos on the PilkingtonTV youtube channel?
- Or feel free to introduce yourself and chat to fellow early birds!
  
- <https://www.youtube.com/user/PilkingtonTV/>
- Videos you might enjoy:
- General Videos: NSG Group (overview video), The History of Pilkington Glass, NSG European Technical Centre
- Product Videos: Pilkington Spacia, Testing Pilkington Optilam, Pilkington Activ, Pilkington Mirroview, Pilkington Kappafloat, Pilkington Planar Mini Drop and more!

# NSG Group Background



- Nippon Sheet Glass Co. Ltd – established 1918
  - Pilkington – established 1826
  - Current NSG group formed from NSG and Pilkington – 2006
- 
- 47 Float plants in 14 countries
  - 23 Automotive plants in 14 countries
  - 10 Technical Glass plants in 5 countries

# NSG Manufacturing Base



# World Leader in Architectural Glass



Both BIG: Beijing Global Trade Centre



And SMALL: Glass radiators and Heated Mirrors

As well as:  
Residential glass  
Patterned Glass  
Toughened Glass  
Bulletproof glass  
Soundproof glass  
Display Glass



BPIP 2020 at NSG Group

# A few NSG Architectural Milestones

- 1959 Float Process – ground-breaking improvement in flat glass manufacture, now used by all quality flat glass producers – one of the most influential inventions of the modern age and an early example of excellent patent protection and licensing
- 1990 Low-E Coatings – World’s first on-line CVD coatings which reduce energy usage in buildings (K-glass)
- 1995 NSG **Spacia**<sup>™</sup> – World’s first vacuum glazing
- 2001 Pilkington **Activ**<sup>™</sup> – World’s first self-cleaning glass
- 2005 NSG **TEC**<sup>™</sup> – World’s leading range of conductive coating substrates for thin film Solar cells

# Pilkington MirroView

- Pilkington **MirroView™** is highly durable and easily transported, handled and processed
  - 3mm and 6mm substrates



Pilkington MirroView™	3mm	6mm
Visible transmittance	20%	20%
Visible reflectance (coated)	76%	74%
Visible reflectance (glass)	70%	66%

- Pilkington **MirroView™ 50/50** now launched
  - ~50%  $R_{vis}$  / 50%  $T_{vis}$
  - Used for higher ambient light applications





# Pilkington SaniTise (2020)

- Pilkington **SaniTise™** shows 80-90% viral reduction versus control within 1 hour (tested against 2 non-pathogenic coronaviruses)
  - Daylight conditions: ~90% viral reduction in 15 minutes, versus uncoated glass
  - Non-daylight conditions: > 80% viral reduction in 1 hour, versus uncoated glass,
    - This performance also demonstrated in dark following activation.
- Pilkington **SaniTise™** demonstrates strong antimicrobial performance against various bacterial strains
  - Different bacteria have different levels of resistance, but Pilkington **SaniTise™** was effective in all cases

# Automotive Glass

- Glass solutions used by the leading OEMs
- Globally around 1 in 5 Vehicles contain our glass
- Focus on high technology items including HUD, Antenna, Variable Transmission
- And enabling electrification through energy conservation, weight reduction and complex shaping



# Sundym Select™ – World's first switchable car sunroof (2010)



Mercedes Magic Sky Control™

# Automotive Glazing Replacement

- As glazings become damaged through the vehicle lifecycle, they must be replaced
- The windshield is a critical piece of safety equipment
- As well as human vision, defects in the windshield will compromise computer vision, making self driving vehicles unsafe without replacement and recalibration



# Automotive Glazing Replacement

- In some cases the OEM no longer supplies replacement glazings
- In other cases the OEM parts are unsuitable for installation in the vehicle at the roadside
- Or sometimes, the OEM parts are cost prohibitive

 PILKINGTON

*Classics*

- Pilkington Automotive is the global number one in AGR distribution & wholesale
- Must provide parts that are suitable replacement for OEM parts
- In some cases we are the provider to the OEM for the part
- In many other cases we are not!
- So must not infringe patents of 3<sup>rd</sup> parties (OEMs or glass competitors)
- A large amount of FTO work is required

# Technical Glass Functional Products

Glass cord



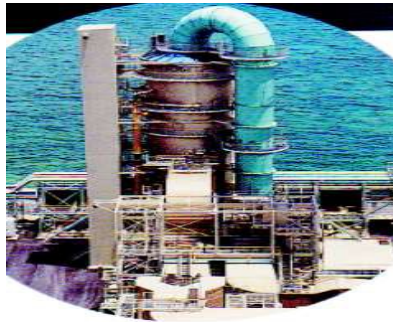
Timing Belts



Glass Flakes



Anti-Corrosion Lining



Metashine



Cosmetics



- NSG Group central R&D function serves the Business Units (Architectural including Solar, Automotive, Technical Glass)
- R&D function around 500 people worldwide in UK, Japan, USA, Germany, Italy, Poland, Brazil
- Embedded IP Function communicates directly with inventors, commercial functions and strategic functions



# NSG Group IP in Europe



- European IP Group Manager
  - 6 European Patent Attorneys
  - 2 Patent Searchers
  - Patent Portfolio Manager
  - Trademark Attorney
  - 2 Certified Patent Paralegals
  - 2 Patent Administrators
- 
- Additional Teams in Japan and US Associates

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