1 Glass production/Production Technology

1.1 Raw material for glass production

1.2.1 Auxiliary and operating materials
1.2.2 Refractories
1.2.3 Industrial gases
1.2.4 Lubricants and coolants
1.2.5 Laboratory equipment

1.3 Preparation of raw materials and batches
1.3.1 Crushing and grading
1.3.2 Drying technology
1.3.3 Metering and weighing technology
1.3.4 Miling technology
1.3.5 Pelletising technology
1.3.6 Cullet preparation
1.3.7 Refuse collection and glass recycling
1.3.8 Raw material technology and prewarming cullet technology
1.3.9 Colour sorting (cullet)
1.3.10 Ventilation systems
1.3.11 Batch calculation and assessment of glass properties

1.4 Glass melting technology
1.4.1 Batch charging technology
1.4.2 Forehearth technology
1.4.3 Melting technology for tank furnaces
1.4.4 Melting technology for pot furnaces
1.4.5 Gas equipment and supply systems
1.4.6 Regenerative systems
1.4.7 Recuperative systems
1.4.8 Electrically heated systems
1.4.9 Combustion technology
1.4.9.1 Combustion technology for oil and gas fired melting furnaces
1.4.9.2 Combustion technology for oxy-fired systems
1.4.10 Feeders/Feeder colouring

1.5 Forming for flat glass
1.5.1 Float glass technique
1.5.2 Glass drawing technique
1.5.3 Casting and rolling technology

1.6 Forming for hollow glass
1.6.1 Gob feeder
1.6.2 Ball gatherer
1.6.3 Suction feeder
1.6.4 Platinum feeder
1.6.5 Shear blades
1.6.6 Blowing machines
1.6.7 Press machines
1.6.8 Press-blow-machines
1.6.9 Spinning machines
1.6.10 Injection machines
1.6.11 Ampoule and laboratory glass machines
1.6.12 Bottle and glass container machines
1.6.13 Molds for glass production
1.6.14 Flash welding and fire polishing machines
1.6.15 Dying systems
1.6.16 Glass mould spray systems
1.6.17 Aids for the forming of hollow glass

1.7 Equipment for glass tube production

1.8 Equipment for glass fibre production
1.8.1 Glass wool technology
1.8.2 Rock wool technology
1.8.3 Textile glass fibre technology

1.9 Kiln technology
1.9.1 Transport systems
1.9.2 Stacker systems
1.9.3 Annealing lehrs, continuous/intermittent operation
1.9.4 Decorating lehrs
1.9.5 Pre-heating furnaces
1.9.6 Fusing Kilns

1.10 Cold and technology for float glass, laminated glass, wired glass and other types of flat glass
1.10.1 Cullet transportation
1.10.2 Inspection systems
1.10.3 Paper applying machines
1.10.4 Separator applying machines
1.10.5 Stacking machines

1.11 Suppliers for the glass machinery industry

1.12 Coating technology for hollow glass
1.12.1 Hot end coating
1.12.2 Cold end coating
1.12.3 Strengthening coating

1.13 Conveying, transport, packing and warehouse technology
1.13.1 Feeding and stacking systems
1.13.2 Transport and handling systems
1.13.3 Conveying, sorting and storage facilities
1.13.4 Packing lines - boxes, shrinking, hoop-casing machinery
1.13.5 Warehouse technology
1.13.6 Glass racks for transport and warehouse
1.13.7 Vehicles for glass transport
1.13.8 Construction and glazing equipment
1.13.9 Parts for conveying, transport, packing and warehouse technology

1.14 Photovoltaic production/Production Technologies
1.14.1 Wafer production
1.14.1.1 Etching (wet/dry)
1.14.1.2 Edge isolation (wet/laser)
1.14.1.3 Coating systems
1.14.1.4 Metallisation
1.14.1.5 Printing machines
1.14.1.6 Other technologies for cell production
1.14.2 Panel production
1.14.2.1 Laminators
1.14.2.2 Coating/spattering systems
1.14.2.3Structuring
1.14.2.4 Tempering furnaces
1.14.2.5 Edge deletion
1.14.2.6 Contacting
1.14.2.7 Foil handling
1.14.2.8 Laminating
1.14.2.9 Butyl edge application and other encapsulation methods
1.14.2.10 Panel sorting and packaging
1.14.2.11 Other technologies for panel production (thin-film)
Product categories

glasstec 2018

2 Glass processing and finishing

2.1 Cutting, breaking and snapping technology
2.1.1 Cutting technology
2.1.1.1 Cutting technology for flat glass
2.1.1.2 Cutting technology for laminated safety glass (LSG)
2.1.1.3 Cutting technology for technical glass
2.1.2 Glass saws
2.1.3 Devices for coating removal
2.1.4 Snapping technology flat glass
2.1.4.1 Mechanical snapping devices
2.1.4.2 Thermal snapping devices
2.1.5 Crack-off technology hollow glass
2.1.5.1 Mechanical crack-off devices
2.1.5.2 Thermal crack-off devices
2.1.6 Rim polishing machines

2.2 Drilling technology

2.3.1 Grinding techniques for flat glass
2.3.1.1 Grinding techniques for straight edges
2.3.1.2 Grinding techniques for shaped glass
2.3.2 Grinding techniques for hollow glass/moulded glass
2.3.2.1 Decorative grinding technology
2.3.2.2 Surface grinding technology
2.3.3 Matt/Supercalendering/etching/sand blasting technologies
2.3.4 Glass frosting
2.3.5 Polishing technology
2.3.6 UV edge tapering technology
2.3.7 Printing technology
2.3.7.1 Screen printing techniques
2.3.7.2 Digital printing technology
2.3.7.3 Pad printing technology
2.3.7.4 Spraying technology
2.3.7.5 Inkjet, 3D printing technology
2.3.7.6 Other printing / coating technology

2.4 Forming and bending technology

2.5 Laser technology
2.5.1 Laser cutting technology
2.5.2 Laser marking technology
2.5.3 Laser drilling technology
2.5.4 Laser removing technology
2.5.5 Laser fusing technology
2.5.6 Components and accessories (Laser technology)

2.6 Coating technology
2.6.1 Vacuum coating equipment
2.6.2 Enameling machines, thermal printing equipment
2.6.3 Mirror coating equipment
2.6.4 Metallicizing machines
2.6.5 Dryers and enameling furnaces
2.6.6 UV-Absorption - Coating (pyrolytic)
2.6.7 IR-Reflective Coating (pyrolytic)
2.12.2.2 NOx reduction technology, emission reduction technology
2.12.3 Heat recovery installations
2.12.4 Waste water treatment
2.12.4.1 Processing of water cooling for cullet treatment
2.12.4.2 Wastewater treatment and cleaning lines
2.12.4.3 Water treatment for grinding technology
2.12.5 Treatment of auxiliary materials
2.12.6 Special glass recycling
2.12.6.1 Lamps/lights
2.12.6.2 Electrical and optical glass
2.12.6.3 Technical glass
2.12.6.4 Solar glass and modules
2.12.6.5 Window disposal

3.1 Flat glass
3.1.1 Float and mirror glass
3.1.2 Drawing glass
3.1.3 Mouth-blown glass
3.1.4 Cast glass, ornamental glass
3.1.5 Thin glass
3.1.6 Horticultural glass
3.1.7 Wired glass
3.1.8 Figurine glass/Profiled architectural glass
3.1.9 Antique and coloured glass
3.1.10 flashed glass
3.1.11 Tiffany glass
3.1.12 Decorative colored glass
3.1.13 Glass jewellery
3.1.14 Glass facets
3.1.15 Cross cut glass for melting/fusing glass
3.1.16 Glass for restoration work
3.1.17 X-ray protection glass
3.1.18 Window pictures

3.2 Processed glass
3.2.1 Tempered glass
3.2.2 Laminated glass
3.2.2.1 Laminated safety glass (LSG)
3.2.2.2 Laminated glass, synthetic-coated
3.2.2.3 Casting resin combinations
3.2.2.4 Laminated glass (other)
3.2.3 Insulating glass
3.2.4 Function glasses
3.2.4.1 Fireproof glass
3.2.4.2 Neige absorbing glass
3.2.4.3 Heat insulation glass
3.2.4.4 Sun protection glass
3.2.4.5 Switchable glass/electrochromic glass/smart glass
3.2.5 Alarm glass
3.2.6 Display glass
3.2.6.1 LED/OLED technology
3.2.6.2 LCD glass technology
3.2.6.3 Touch screen display glass
3.2.7 Other coated types of glass
3.2.8 Antireflective glass/frosted glass
3.2.9 Curved glass
3.2.10 Printed glass
3.2.11 Optical glass

3.12.12 Self-cleaning glass
3.12.13 Solar glass
3.12.13.1 Solar float glass
3.12.13.2 Solar rolled glass
3.12.14 Vacuum insulating glass
3.12.15 Aluminium silicate glass
3.12.16 Processed flat glass (general)

3.3 Automotive glass
3.3.1 Vehicle glass
3.3.1.1 Sealants and adhesives
3.3.1.2 Foils (PVB)
3.3.1.2.1 Polymer foils for smart glass
3.3.1.2.2 Other foils
3.3.1.3 Nano coating technology
3.3.2 Materials
3.3.3 Bonding technology
3.3.4 Tools
3.3.5 Trade

3.4 Solar technology
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3.4.1.1.2 Thin film PV panels
3.4.1.1.3 Organic Photovoltaics
3.4.1.1.4 Multi functional PV panels and elements
3.4.1.2 PV system components
3.4.2 Solar thermal energy
3.4.2.1 Solar mirrors / CSP
3.4.2.2 Solar thermal system components
3.4.3 Solar architecture and building integrated photovoltaics (BIPV)
3.4.4 Other accessories and services

3.5 Other glasses
3.5.1 Paving blocks, roof tiles
3.5.2 Glass spheres and stones
3.5.3 Quartz glass
3.5.4 Pellets
3.5.5 Foam glass
3.5.6 Laboratory glass
3.5.7 Glass bricks
3.5.8 Other types of special glass

3.6 Glass and mineral fibres
3.6.1 Glass and mineral fibres (general)
3.6.2 Glass fibres made of optical glass

3.7 Processed flat glass
3.7.1 Balustrade panels
3.7.1.1 Balcony glazing
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3.7.2.1.2 Mullion-transom constructions made of plastic
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3.7.2.2 Element facades made of glass
3.7.2.3 Structural-sealant-glazing facades
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# Measurement, testing, control technology and software

## 5.1 Measurement and control technology, sensoring

1. **Measurement and control**
   - **5.1.1.1** Measurement and control of glass level
   - **5.1.1.2** Measurement and control of viscosity
   - **5.1.1.3** Measurement and control of radiation in the melt
   - **5.1.1.4** Measurement and control of glass thickness
   - **5.1.1.5** Measurement and control of glass temperature
   - **5.1.1.6** Measurement and control of glass tension
   - **5.1.1.7** Measurement and control of glass colour

2. **Inspection technology**
   - **5.1.2.1** Inspection of surface, contour and imperfection
   - **5.1.2.2** Measurement, control and inspection of gas mixture
   - **5.1.2.3** Measurement, control and inspection of gas-filling levels
   - **5.1.2.4** Video inspection glass furnace
   - **5.1.3** Measuring devices to be used on site
   - **5.1.4** Detectors for laminated glass
   - **5.1.5** Control and automation technology

## 5.2 Regulation technology

1. **5.2.1** MRP machine and transport adjustment
2. **5.2.2** CNC control for handling machines
3. **5.2.3** Electronically controlled machine cooling
4. **5.2.4** Controls for glass inspection machines

## 5.3 Host computer systems, IT, Communication and Security Technology

1. **5.3.1** MRP/CAD/CIM systems
2. **5.3.2** Inspection, protocolling and diagnostic systems
3. **5.3.3** Process control systems
4. **5.3.4** Other control systems

## 5.4 Software

1. **5.4.1** Gob control software
2. **5.4.2** Optimization of glass cutting and glass production yield
3. **5.4.3** Machine control software
4. **5.4.4** Software and applications for architects and planners
5. **5.4.5** BIM - Building Integrated Modeling

## 5.5 Measuring and testing technology/Software

1. **5.5.1** Single cell and string testers, module testers, test chambers
2. **5.5.2** Visual inspection systems
3. **5.5.3** Process control
4. **5.5.4** Software

## 5.6 Motorized Technology

## 5.7 Hydraulics / Pneumatics

## 6 Contracting, consulting, engineering, services

## 7 Research and teaching, trade literature, trade associations and organisations

1. **7.1** Universities and colleges
2. **7.2** Specialised Publishers
3. **7.3** Trade associations/Organisations
4. **7.4** Test institutes
5. **7.5** Research institutes and projects