Table S1. Owens Corning patents on NCCS glass fibre production.

Year	Patent Number	Title
1961	US-3231459-A	Attenuated mineral filaments
1964	US-3310455-A	Mat of ribbon shaped mineral fibers having a reflective coating
1985	US-4666485-A	Method and apparatus for making tapered mineral and organic fibers
1986	US-4620859-A	Method for making coalesced mineral fibers
1986	US-4636234-A	Method and apparatus for making non-circular mineral fibers
1996	US-5776223-A	Method of making shaped fibers

Table S2. Nittobo patents on NCCS glass fibre production.

Year	Patent Number	Title
1985	JP-S61219731-A	Production of glass fiber
1985	JP-S61219734-A	Glass fiber
1986	EP-0190011-B1	Glass fiber strand and method of manufacture thereof
1986	EP-0196194-B1	Glass fiber strand and method of producing the same
1986	US-4698083-A	Method for producing glass fibers having non-circular cross sections
1986	JP-S62226836-A	Production of glass fiber of irregular section
1993	JP-3482656-B2	Glass fiber powder having flat cross-sectional shape and method for producing the same
1993	JP-H06234540-A	Orifice plate and noncircular-sectioned glass fiber
1993	JP-3369674-B2	Nozzle tip for spinning glass fiber with irregular cross section and method for producing glass fiber with irregular cross section
1993	US-5462571-A	Nozzle tip for spinning glass fiber having deformed cross-section and a plurality of projections
1994	JP-H07291649-A	Nozzle tip for spinning glass fiber, modified cross-section glass fiber and its production
1994	JP-H07300335-A	Bushing for glass fiber, glass fiber bundle and its production
1994	JP-H07126033-A	Orifice plate and glass fiber of noncircular cross section
1994	JP-H07133132-A	Glass fiber having noncircular section and its production
1997	JP-H1143343-A	Nozzle tip for spinning highly flat glass fiber and glass fiber
1998	JP-4240605-B2	Nozzle tip for producing flat glass fiber and method for producing glass fiber using the same
1998	DE-69837558-T2	Nozzle tip for spinning glass fibers with large flat cross section and device having this nozzle tip
1999	JP-4370633-B2	Nozzle tip for flat glass fiber spinning and manufacturing apparatus
1999	JP-2000344541-A	Nozzle tip for spinning deformed cross-section glass fiber
2001	EP-1281683-A4	Bushing and glass fiber producing method FF
2001	JP-2003048740-A	Method of manufacturing nozzle tip and method of manufacturing bushing
2001	JP-2003048742-A	Nozzle and pushing
2001	JP-4370742-B2	Bushing plate manufacturing method
2002	JP-4096634-B2	Non-circular cross-section glass filament spinning bushing nozzle and bushing nozzle
2004	JP-4876377-B2	Method for producing flat glass fiber-containing pellets
2008	JP-2009007252-A	Nozzle chip for producing flat glass fiber, and method for producing glass fiber

Table S3. Nittobo patents on products containing NCCS glass fibres.

Year	Patent Number	Title
1993	JP-3564710-B2	Thermoplastic resin composition using glass fiber powder having a flat cross section as a reinforcing material
1994	JP-3674960-B2	Glass woven fabric for printed wiring board and printed wiring board
1997	JP-H10273838-A	Production of resin-covered flat yarn
1998	EP-1039004-A4	Nonwoven fabric made of glass fiber and printed wiring boards
1999	JP-4314660-B2	Glass fiber fabric using non-circular cross-section glass fiber
2003	JP-4062140-B2	Flat glass fiber bundle, thermoplastic composition and thermoplastic molding
2006	EP-1982814-B1	Process for producing pellets containing flat glass fibers
2010	EP-2570454-B1	Method of foam molding of resin reinforced with flat glass fibers
2012	EP-2789591-B1	Glass fibers having non-circular cross sections, and fiber-reinforced resin compact using same
2023	JP-7393714-B1	Flat cross-section glass fibers, glass fiber reinforced resin compositions and glass fiber reinforced resin molded products
2023	JP-7356074-B1	Flat cross-section glass fibers, glass fiber reinforced resin compositions and glass fiber reinforced resin molded products

Table S4. NEG patents on NCCS glass fibre production.

Year	**Patent Number**	**Title**
2010	JP-2010184858-A	Glass fiber manufacturing apparatus and method of manufacturing glass fiber
2016	JP-2018016506-A	Manufacturing apparatus for glass fibers of irregular shape cross section, and production of the glass fibers
2017	TW-I719165-B	Special-shaped cross-section glass fiber manufacturing device and manufacturing method thereof
2017	JP-7075059-B2	Nozzle for manufacturing irregular cross-section glass fiber, irregular cross-section glass fiber manufacturing equipment, its manufacturing method, irregular cross-section glass fiber
2020	JP-7522387-B2	Nozzle for irregular cross-section glass fiber and manufacturing method for irregular cross-section glass fiber
2021	WO-2021256143-A1	Nozzle for modified cross-section glass fibers and manufacturing method for modified cross-section glass fibers
2022	WO-2022264607-A1	Bushing, glass fiber production device, and glass fiber production method
2022	WO-2022264606-A1	Bushing, glass fiber manufacturing device, and glass fiber manufacturing method

Table S5. CPIC patents on NCCS glass fibre production.

Year	**Patent Number**	**Title**
2011	CN-102506756-A	Method for representing cross section appearance and dimensions of glass fibre or basalt fibre
2011	CN-102515505-A	Flat fiber wire drawing equipment and wire drawing technology
2011	CN-202482224-U	Flat fiber bushing plate
2013	CN-103193384-A	Leak plate for drawing flat glass fibers and discharge spout thereof as well as flat glass fiber tow
2015	CN-104591541-A	Special-shaped glass fiber and preparation method thereof
2015	CN-104556711-A	Special-shaped glass fiber and preparation method thereof
2020	CN-112174514-A	Platinum bushing for flat glass fiber forming