



# A driving force for technological innovation within the automotive industry

## CASE STUDY



NGF EUROPE Limited (NGFE), situated in St Helens, Merseyside is a subsidiary company of the NSG Group of Japan, one of the World's leading manufacturers of glass products for building, automotive and information electronics applications.

### Driving innovation and growth

The drive for innovation is a key contributor to NGFE's success, particularly in the automotive sector. An award winning manufacturer, NGFE had previously been awarded with The Queen's accolade for Enterprise in Innovation in recognition of the design and manufacture of small filament diameter glass cords which are changing the way that automotive engineers design vehicles. The primary application for these specialised glass cords is the

reinforcement of synchronous drive belts, such as the timing belt used in a car's engine to operate the overhead camshaft system. This particular product is supplied by NGFE to timing belt manufacturers in all the major car-manufacturing countries across the world.

Coupled with its culture for innovation, NGFE is continually developing its operation to better serve its customers. Recent increases in market demand for glass filament, a key component in the manufacture of glass fibre, provided NGFE with the foundations for a business case to commission a £4million expansion of its existing manufacturing plant in St. Helens that would enable manufacturing of glass filament to take place in Europe.



### Data capture - supporting the drive for operational excellence

Data capture technology has played a fundamental role in driving NGFE towards its vision for safe and ethical production of innovative, high performance glass and

glazing solutions for a number of years. Working in partnership with leading mobile computing solution provider, TouchStar Technologies, RFID has become an integral part of the manufacturing process for NGFE's glass cord products, including production, general warehousing and packing.

NGFE's in house developed software maps across TouchStar's real-time scanning technology. The complete system provides NGFE with 100% confidence that every product is manufactured to the right specification, correctly labelled and ready for shipment. The system also ensures that no faulty product enters the supply chain and provides NGFE access to business critical data which is key to optimising its manufacturing process.

Alistair Poole, Managing Director, NGFE explains, "NGFE's main business driver is to ensure 100% accuracy in everything we ship to our customers. Data capture technology is key to ensuring this level of product quality and helps us to meet our customers' ever increasing demands to provide improved traceability and error proofing"

## Data capture - an integrated approach to operational growth

NGFE previously partnered with TouchStar to roll out RFID technology within its packing and rewind operation, which helped the organisation to achieve 100% visibility and accuracy of all its customer shipments. Following the completion of its £4million site expansion, NGFE partnered with TouchStar again to upgrade its RFID technology and roll out additional barcode technology to aid data capture, streamlining and fulfilment of its various manufacturing processes.

TouchStar worked closely with NGFE to integrate additional functionality from NGFE's in house developed software with TouchStar's latest data capture hardware handhelds, truck mounts and specialist ATEX devices.

The longstanding partnership with TouchStar has not only helped support operational growth and efficiencies, but also provides full support for seamless operation, reduced downtime and real business results. Peter Lai, Production Manager, NGFE comments, "TouchStar provides a complete solution on its own hardware and a comprehensive repair and maintenance contract to go with it. Not only does this give us peace of mind that any problems with our chosen solution will be resolved quickly, but we also only have one company to deal with."

## Goods in

The introduction of the additional barcode technology dovetails with the start of the manufacturing process for the glass filament. New scanning technology allows raw material stocks to be updated in real time providing complete visibility of stock levels and location. As the palletised raw material enters the manufacturing facility, each of the containers is tagged with a barcode, providing it with an identity. This identity is critical to providing traceability of the raw material throughout the manufacturing operation, meeting end user demands for improved traceability and mistake proofing. Utilising the forklift trucks, the truck operator logs in to a centralised IT system on their truck mounted terminal and scans the pallet using TouchStar's Power Scan barcode scanner. The truck mount screen displays a location for put-away and check digits entered by the operator manually at the required location confirm put-away.

## Picking for manufacture

The integration of barcode technology has also streamlined the existing 'pick for manufacture' operation significantly in comparison to NGFE's previous paper-based system. With stock levels and locations being updated in real time throughout the put-away process, operators log in to the internal IT system on their Truck Mount Terminal and are sent to a location to pick a required raw material. After retrieving the product from the location, they confirm the pick by manually entering the check digit from the racking into the Truck Mount before being directed to the next location.

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**Peter Lai,**  
**Production Manager, NGFE**

## The manufacturing process

Once the raw materials have been correctly picked, the manufacture of glass fibre cord can begin. The manufacturing process is highly complex and involves a number of intricate procedures to produce a high-performance glass cord that has the durability to last the lifetime of an engine.

To ensure the continuation of visibility during the manufacturing processes, a barcode identity is given to each newly formed glass cord. Using the TouchStar handheld devices, the cord is scanned, and the operator has the ability to record any faults with the cord. The introduction of this process eliminates the need for additional resource to manually record product faults, significantly speeding up the feedback loop on any performance issues. Any information captured about faults can be instantly fed into the continuous improvement process that NGF EUROPE practices.

The final stages of the manufacturing process require the glass cord to be dipped in a bonding agent that adds a black finish to the golden-brown cord. This stage of the process takes place in a potentially explosive environment, so to ensure the cord can still be tracked, TouchStar rolled out its ATEX approved handheld computer to collect data during this phase.

## Testing

Once the manufacturing process is complete, the cord undergoes rigorous testing procedures before it is released for packing. The test history for each cord is written to an RFID tag using the TouchStar handhelds.



## Warehouse/packing

After the glass cord has been tested the spools are sent directly to the warehouse for packing. The bobbins are weighed and individually packed, then passed through RFID readers that verify its identity and a label is produced and applied to the outside of the spool.

After packing, the operator will carry out a number of cross verification checks, firstly to check the product is ready to be shipped and secondly, that the correct pallet label has been printed. Through this process NGF can be 100% confident that every product has the correct labelling before it is shipped. Previously if an operator was to intervene and remove a spool then the process could go out of synchronisation and spools could easily be incorrectly labelled.



## Rewind area

Spools that have to be reworked due to damage or manufacturing error are sent to the rewind area. Previously, NGF manually controlled this process by reprinting labels. This created a significant amount of risk of label duplication and mis-labelling, it was the operator's responsibility to ensure that the correct label was on the correct spool and that all information was transferred accurately to the new spools.

A new process was developed using the handheld scanners which recorded any faults and would hold the bobbin in production. Faulty bobbins that reached the warehouse were rendered un-packable and not released until an operator had given authorisation. This system provides NGF with better control of any internal problems. All bobbins now have to go to the rework area. Bobbins are scanned onto the machines and new labels produced, thereby eliminating duplications and mis-labelling. Essentially they are transferring data from one label in the database into another, the old bobbin that has been rewound will be rendered useless and the new bobbin can be packed and shipped to the customer.

## Data capture – driving, safety, quality and environmental responsibility

TouchStar’s data capture solution is also being used to manage processes off the production line, one such process is the management of health and safety.

For NGFE, safety, quality, environmental responsibility and sustainability are fundamental elements of its mission statement and company values. NGFE is committed to the safe use of its products, ensuring they can be effectively handled, fitted and used by customers. It is critical that NGF EUROPE is able to clearly demonstrate its health and safety practices align with the corporate sustainability policies and auditing procedures that are in place within the automotive industry.

The drive to differentiate its organisation from a health and safety perspective led NGF EUROPE to develop a scanning system for its maintenance operation. Equipping each individual fitter with an additional handheld computer, the system dictates the health and safety actions to be executed, but also, via barcode, allows the fitter to capture data on equipment faults and provide confirmation of the type of maintenance carried out. The new process provides NGF EUROPE with real time access

to maintenance data allowing for the development of an internal preventative maintenance schedule, optimising productivity and reducing the costs associated with any downtime caused by faulty and unsafe equipment.

The mobile computing solution also ensures adherence to the group’s Safe Operating Practices. NGF EUROPE leads the industry with respect to its Safe Operating Practice (SOP) procedures and its end users have embraced this culture. With over 160 personnel on site and up to 800 SOPs in place, NGFE needed to gain strict control of any SOP updates to ensure adherence to these practices and minimise the potential impact on other departments. The handheld controls all SOPs within NGF EUROPE by requesting the operator to read, confirm and scan the SOP to verify receipt and understanding of any updates.

Looking ahead, NGFE plans to continue driving its high customer focus by providing even more detailed data. NGFE continues to be excited by the potential that data capture offers with regard to possible process improvements and look forward working with TouchStar to drive future technological innovations within its operations.

