FDGA Research Report

Smart Manufacturing Processes in the Fashion Industry of China
Report Submitted by Vincent Quan: July 8, 2019

I am extremely grateful for the support provided by the FDGA to continue my research on smart manufacturing in the fashion industry of China. The information gleaned will be used to support a second case study on Smart Manufacturing. As part of this research trip, I visited three factories in China producing fashion apparel, conducted tours of each facility, and engaged in spirited discussions regarding the state of each factory's progress on the "Made in China 2025" (MIC2025) government mandate to modernize manufacturing throughout China.

Factories are required to modernize their facilities through a combination of digitization, automation, software upgrades, etc. In order to support the MIC2025 mandate, factories compete for various sources of government funding to modernize their factories. Each of the factories secured funding either from either their local city government (Hangzhou) or provincial government (Zhejiang). Progress is monitored by government auditors who conduct onsite visits and interviews with factory personnel to gauge progress.

The three factories manufactured assorted fashion apparel: men's tailored clothing, women's ready to wear, and the traditional Chinese dress known as the qipao or cheongsam. Each factory was progressing at a different pace on their modernization efforts. A common goal for each company was to digitize their work processes in order to increase productive capacity while reducing labor costs. Robotic sewing is still way in the future for all three companies as they are focusing on increasing efficiency and factory output. Big data collection and analysis is being conducted by each factory to streamline operations to maximize efficiency. The company with the most advanced smart manufacturing capability was Baoxiniao Holdings Ltd. based in Wenzhou, China.

Smart Manufacturing Dashboard at Baoxiniao Holdings Ltd.

Baoxiniao is one of the top manufacturers of custom men's suits. As such, the smart manufacturing initiatives undertaken by the company include the digitization of made-to-measure specifications for its clients into its MTM system. The information is then transferred to a cutting specialist who oversees the cutting of fabric performed by a laser cutting machine.
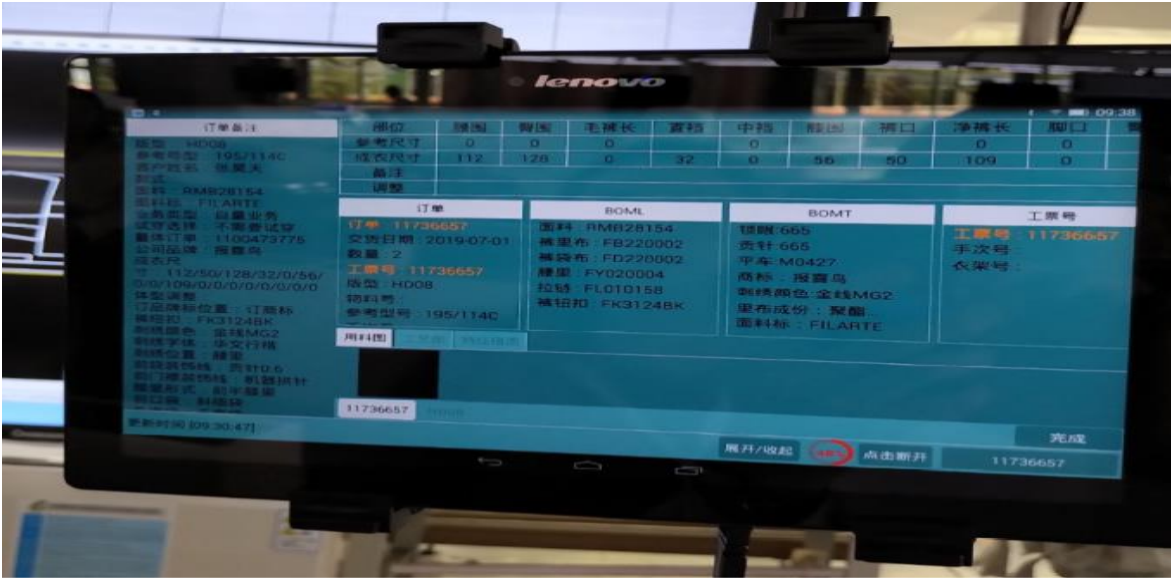
Individual Made-to-Measure Data at Baoxiniao Holdings Ltd.

Laser Cutting Machine at Baoxiniao Holdings Ltd.

The company's original productive output was fifty suits per day with a lead time of fifteen days before its digitization and automation efforts were undertaken. Today, the company has cut its lead time to seven days and produces four hundred suits per day with an eventual goal of five hundred suits per day by 2021.

Intelligent or smart manufacturing also requires the use of inter-linked software systems including the combination of Made-to-Measure (MTM) software with Computer-Aided Design (CAD). The company utilizes SAP as its Enterprise Resource Planning (ERP) backbone to harness its numerous systems including Computer-Aided Process Planning (CAPP), Manufacturing Execution System (MES), Supply Chain Management System (SCM), and Warehouse Management System (WMS).

Due to security concerns, the company does not engage in cloud-based computing except for "Ali-Cloud" which is required to support the company's main brand, Saint Angelo on the Alibaba "T-Mall" platform. The Saint Angelo brand has an online store through "T-Mall" which is hosted by Alibaba. Most major brands partner with Alibaba to operate their brands' e-commerce business via T-Mall.

In summary, the three factories exhibited different levels of progress for smart manufacturing. However, each company demonstrated measureable results since their smart manufacturing initiatives were undertaken. While MIC2025 was certainly one of the underlying reasons to undertake the digitization, software, and automation efforts, all companies expressed the need to be more efficient and competitive by increasing productive capacity to survive and prosper on both a local and global scale.