Advancements in Manufacturing Technologies

Advancing Automation

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Brother International Corp.
Brother Sewing Solutions for the better
Business Segments

- Printing & Solutions: 63.9%
- Machinery: 13.4%
- Personal & Home: 7.1%
- Network & Contents: 7.2%
- Domino: 6.5%
- Others: 2.0%

Net Sales (consolidated): 7.5B US$ (FY 03/2016)
Challenges in Sewing Automation

• “The ability to replicate those tasks which are performed by a skilled sewing operator when using a conventional sewing machine.”

• The control and manipulation of one or more pieces of fabric when joining the fabric pieces together using a conventional sewing machine.

• The ability to consistently pick up or grip a “single” piece of fabric from a stack of multiple layers or plies of fabric to be presented to the sewing machine for sewing.
Operator Elements

• The coordination and articulated movement of the fingers, hands, arms and feet based upon the operators visual input and sense of touch/feel.

INPUT

Visual: Visually observing the fabric workpieces so to coordinate the movement of the hands / fingers and machine sewing speed (as regulated by the foot) as needed during the sewing process

Sense/Touch: Sensing fabric presence in order to regulate the degree of pressure and or gripping force by the fingers as needed during the sewing process
Operator Elements

PROCESSING

Brain: The Brain simply put is the central processor that provides the logic in controlling the outputs based upon the inputs

OUTPUT

Fingers: Necessary for the articulated gripping and or applying a degree of pressure, force, creating resistance to control the fabric workpieces during the sewing process

Hands/Wrist: Necessary to facilitate the position and orientation of the fingers during the sewing process as needed

Arms: Necessary to facilitate the position and orientation of the hands/fingers during the sewing process as needed

Feet/legs: Necessary to facilitate the control of the sewing machine speeds and the rate in which the workpiece(s) move through the sewing machine during the sewing process as needed
Advancing Sewing Automation

Technology Challenges?

- Vision Technology
- Sensor Technology
- Articulated motion Technology
- Processor Technology