

Product Adaptation in Exporting

How Kestrel adapted the Kestrel HST
to appeal to the Singapore Military

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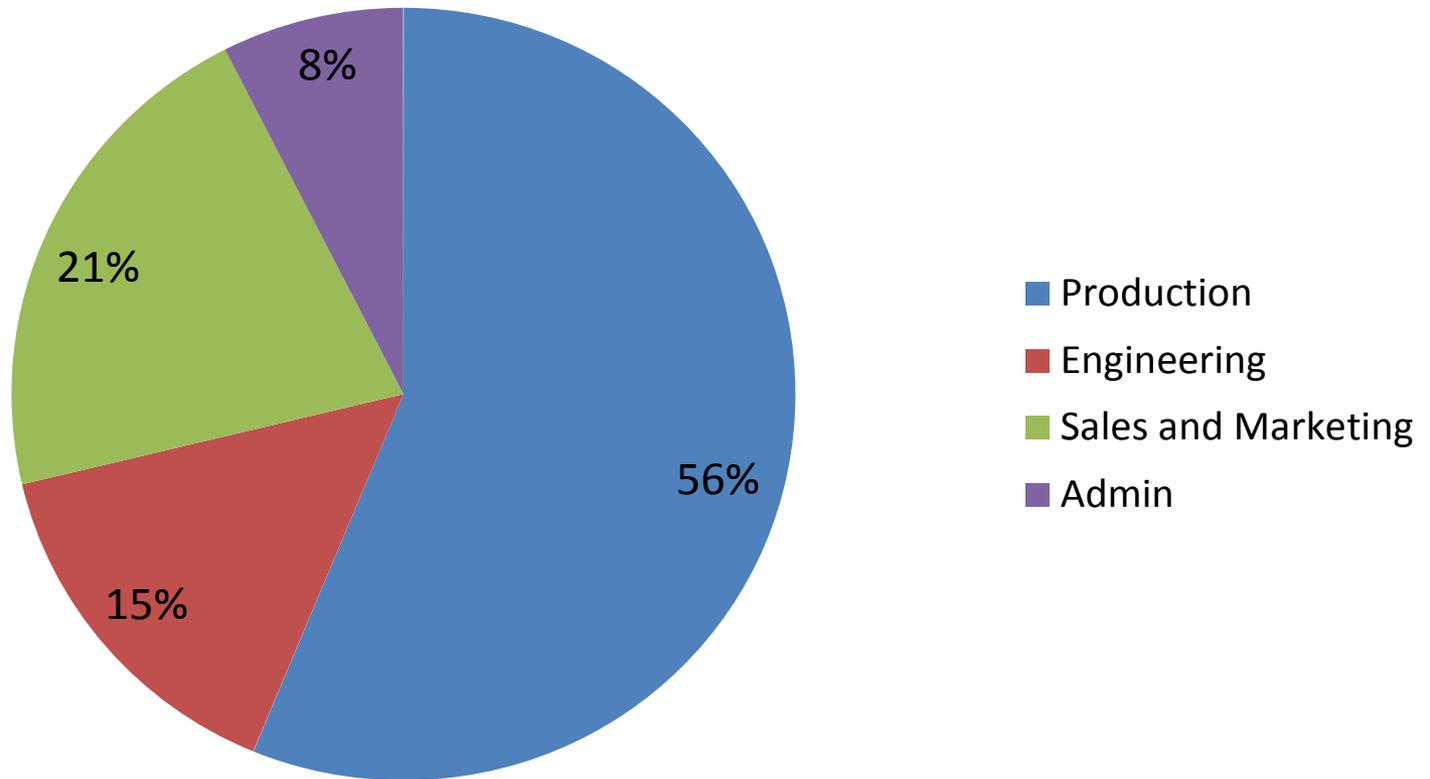
- 1978 NK was founded in a basement in Syracuse, NY with the Cox Box
- 1984 NK expanded to include a second product and moved to Marcus Hook, PA
- 1996 NK introduced the first Kestrel Wind Meter
- 2009 NK built their own manufacturing plant in Boothwyn, PA
- 2013 NK released the Kestrel 4400 HST
- 2015 –NK released a redesign of the Kestrel 4000 line, bringing apps and connectivity to the product line

Who is NK?

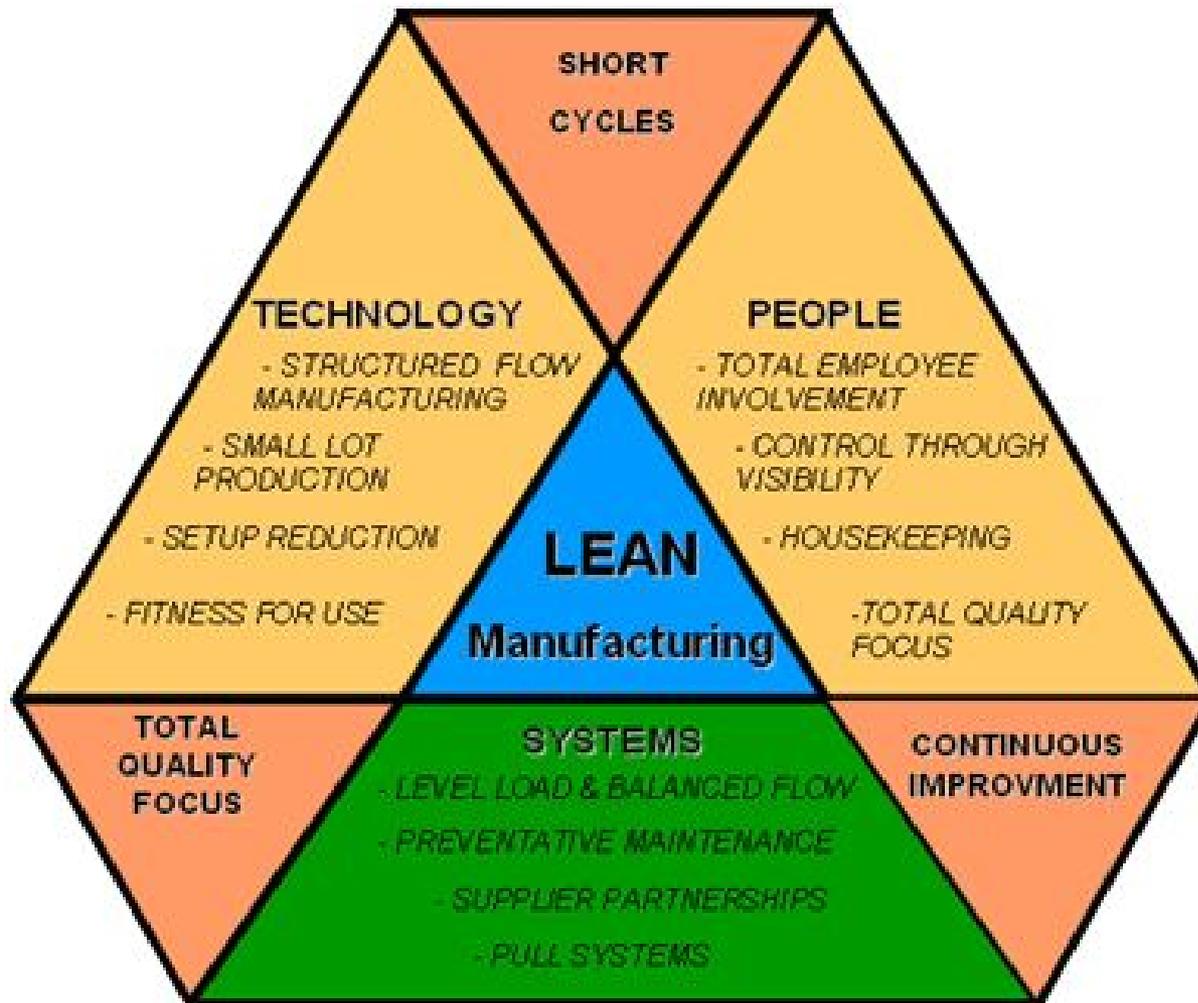
- Mission – To Provide Demanding Customers With Rugged, Accurate, Waterproof Measurement Devices
- US Designer & Manufacturer Of 11 Product Lines With Global Distribution
 - Kestrel Weather and Environmental Meters
 - NK Sports Performance
 - Blue Ocean Rugged Megaphone
- Recognized Market Leader In Rugged Environmental Research, Long Range Shooting, Rowing Sport Performance
- Lean Manufacturing Plant
- Today – 90 employees

Employee Breakdown

NK Employee Breakdown



Manufacturing



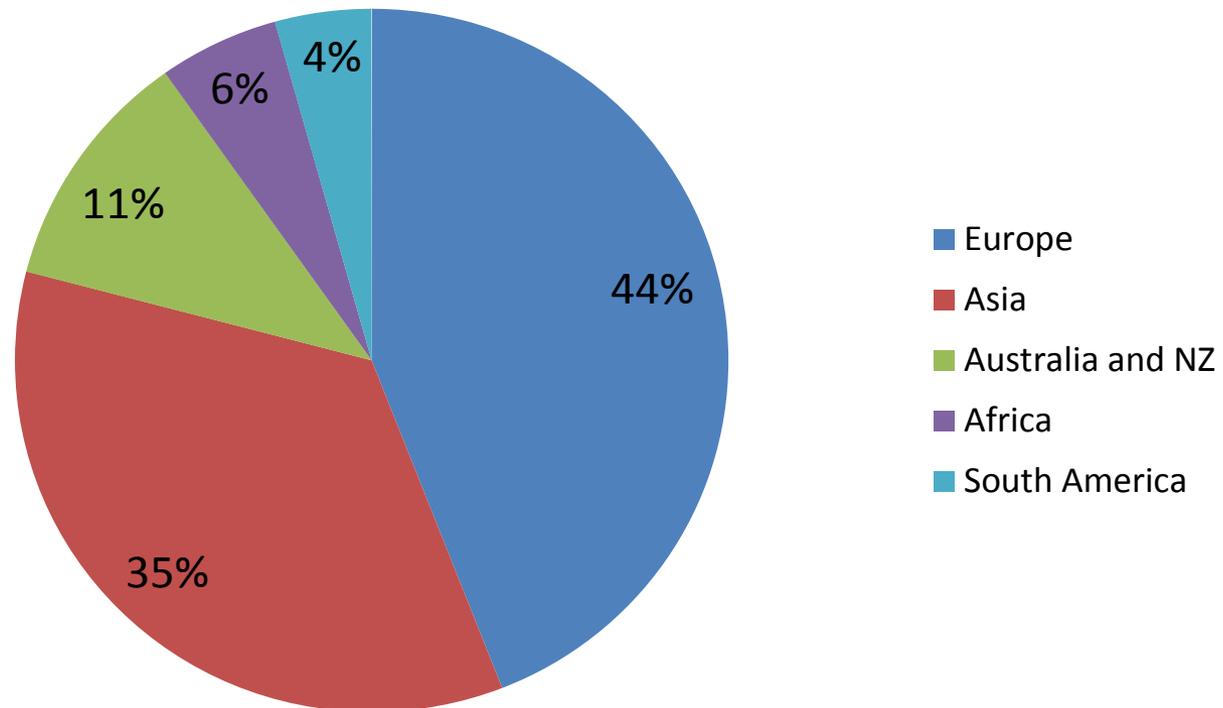
Lean Manufacturing

- Lean shows value by eliminating what does not have value.
- Basically, Lean eliminates waste.
 - Transport
 - Inventory
 - Motion
 - Waiting
 - Overproduction
 - Over Processing
 - Defects

Export Sales

- 5 year average of 48% of all sales

Export Sales Breakdown



Export Sales Structure

- No Exclusivities
- Sales Channels
 - Direct to End User Worldwide
 - Direct to Dealer Worldwide
 - Very Small Use of Distributor

Market Strategies

- Niche Markets are the most valuable
- We learn all that we can in a particular market
– become the SME through action
- Provides internal knowledge that does not have to be outsourced
- Our interest and ability to learn markets ties us closer to leaders in the markets

The Market

- Singapore Military
 - 18 – 21 years of age males 2 year compulsory military service
- Climate
 - Average temperatures between 79° and 89°
 - Extreme high RH levels
 - Little variance in day to night temperatures
 - 2 monsoon seasons

The Need of the Market

- A device to measure and monitor heat stress conditions for soldier safety in training and operations
 - Must measure WBGT (Wet Bulb Globe Temperature)
 - Must be customizable based on environments

The Product

Exertional Heat Stress
Injuries are 100%
Preventable with
the Right Tools!



DROP D2
Heat Stress Monitor
(iOS app-enabled Bluetooth®
data logger) (Heat Index)



3000
Heat Stress Meter
(Heat Index)



4400
Heat Stress Tracker
(Heat Index & WBGT)



4600
Heat Stress Tracker
with Bluetooth®
Wireless Data Transfer
(Heat Index & WBGT)

Recommended by



Kestrel 4400 WBGT Heat Stress Meter

- Wet Bulb Globe Temperature ("WBGT")
- Thermal Work Limit ("TWL")
- Globe Temperature
- Naturally Aspirated Wet Bulb Temperature
- Wind Speed (Current, Average, & Maximum)
- Altitude
- Pressure trend
- Barometric pressure
- Relative humidity in %
- [Heat stress index](#)
- Dewpoint
- Wet bulb temperature
- Density altitude
- Wind chill
- Air, water, and snow temperature °F or °C
- Waterproof and floats
- Time and date
- Easy- to-read backlit display
- Data Logger (automatic and manual)
- Customizable data storage - 2900 data points
- Humidity sensor can be calibrated in the field with our Relative Humidity Calibration Kit.
- Customize screens to display user-selected measurements
- Graph and recall trends
- User-replaceable impeller
- Data charting
- Upload to a computer (with optional interface)
- Meets MIL-STD-810F 516.5 Procedure IV Transit Shock test - 20 drops from 5 ft. IP-67 sealed to exclude dust and water at 3 ft. submersion
- Five languages (English, French, Spanish, German, and Italian)
- US Patent Nos. 5,783,753 and 5,939,645 and 6,257,074
- Made in the USA

Market Demand

- Created based on demand from both the military and sports market
- Partnered with KSI (Korey Stringer Institute) and USARIEM (US Army Research Institute of Environmental Medicine)

The miss



- Color
 - The Singapore military works in rainforest type environment, they desired an Olive Drab
- Unnecessary measurements
 - Wind Chill will never be a factor
- Settings
 - Flag settings could be difficult to set
- Education
 - Military is required of all males, education may not be

The fix



- Procured Olive Drab plastic parts
- Removed undesired measurements
 - Reduced number of screens
- Established desired flag settings and preset prior to shipment
- No fix for lack of education

The barriers

Barriers

- Communication
- Establishing the correct screens to remove
- Establishing the desired flag settings
- Plastic parts lead time
- Coding – engineering time away from other projects

Solutions

- Scheduled conference calls at night
 - Allowed direct confirmation of needs and wants
- Worked with local vendor for shorter lead times
- Hand programmed units to hit initial date

The outcome

- 5 year contract
- Initial purchase exceeded \$500,000



Summary

- Market knowledge and research revealed a large potential.
- Flexibility in manufacturing and product development allowed the customer to have their desired product with very little cost to NK.