Zippers and so much more...

ADAPTING THROUGH INNOVATION

ALEX GREGORY
YKK CORPORATION OF AMERICA
Spring 2003

From an anonymous Georgia Tech student’s blog; today’s “take away”:

“If that guy can do it, anybody can!”
Two Great Brands

YKK®

FASTENERS FOR SEWN PRODUCTS INDUSTRIES

ARCHITECTURAL PRODUCTS FOR COMMERCIAL AND RESIDENTIAL BUILDINGS
Three Business Groups

YKK CORPORATION

YKK AP Inc.

Fastening Products
Machinery & Engineering
Architectural Products

Research & Development

Other Group Companies
Six-Region Global Structure
Global YKK
108 companies; 570 locations; 71 countries

- Founded in Japan in 1934 by Tadao Yoshida; still privately owned
- 40,708 employees (Japan: 17,229; Overseas: 23,479)
- Annual global sales approx. $6 billion (60% architectural products)
YKK North and Central America Group
12 companies; 8 countries
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>Yoshida International Inc. established in Long Island City, NY</td>
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<tr>
<td>1970</td>
<td>YKK sales office in Atlanta opened</td>
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<tr>
<td>1974</td>
<td>Fastening manufacturing center opened (Macon) (54 acres)</td>
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<tr>
<td>1979</td>
<td>Additional 250 acres purchased in Macon</td>
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<tr>
<td>1987</td>
<td>YKK Corporation of America established</td>
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<tr>
<td>1991</td>
<td>YKK AP America Inc. established</td>
</tr>
<tr>
<td>1992</td>
<td>Architectural Products manufacturing center opened (Dublin)</td>
</tr>
</tbody>
</table>
YKK in Georgia

3 companies headquartered in Cobb County:

• YKK Corporation of America
• YKK (U.S.A.) Inc.
• YKK AP America Inc.

- Macon:
  - 2.5 million ft²
  - 1,200 employees (and growing)

- Dublin:
  - 1 million ft²
  - $65 million in wages paid in 2013
YKK (U.S.A.) Inc. Snap and Button Products
Lawrenceburg, Kentucky
YKK El Salvador S.A. de C.V.
San Juan Opico, La Libertad
YKK (U.S.A.) Inc.
Anaheim, California
YKK Canada Inc.
Montreal, Quebec
Jen Colombia
Medellin, Antioquia
Tape Craft Corporation
Oxford, Alabama
Continuous improvement and pride in our work... It’s the YKK way!
CYCLE OF GOODNESS™
“No one prospers without rendering benefit to others.”

YKK Philosophy

Management Principle

Seeking corporate value of higher significance, YKK will pursue innovative quality in the seven key areas shown above.

Core Values

Do not fear failure; experience builds success. Create opportunities for employees.

YKK GROUP

Insist on quality in everything.

YKK GROUP

Build trust, transparency and respect.

YKK GROUP

customers

society

employees

customers

society

employees

customers

society

employees
Commitment to the Environment
YKK Group
Environmental Pledge

It is recognized today as being a most important duty for all humankind that we preserve the abundantly endowed global environment and that we transfer it to the next generation in a sound condition. The YKK Group proclaims that it will address and promote “harmony with the environment” as the highest priority of its business activities.

September 20, 1994
Fastening

- NATULON® Chemically Recycled fastener
- NATULON® Material Recycled fastener
- Organic cotton fasteners
- VOC (Volatile Organic Compounds) treatment machinery to help reduce VOC emission levels
- Conformity to wastewater treatment standards
- Industrial wastewater recycling
- Quick Dyeing – to reduce the amount of steam used for dyeing by 25% and wastewater by 50%
YKK Fastening Macon

YKK Fastening’s U.S. manufacturing plant in Macon, Georgia, is ISO 14001 certified and has a 73% recycling rate.

The plant

• recycles 90% of brass waste on-site, in addition special recycling programs with key customers.

• through recycling programs 2.8MM lbs. of waste diverted from landfill in 2013.

• innovative solutions have led to a 25% (40M lbs.) reduction in hazardous waste generation.

• uses state-of-the art techniques for waste water treatment
YKK Macon Environmental Objectives (2014)

- Reduce **Electricity** Usage by 2%
- Reduce **t-CO2 Emissions** by 2%
- Reduce **Water** Usage by 3%
- Reduce **Gas** Usage by 3%
YKK AP’s U.S. manufacturing plant in Dublin, Georgia, is ISO 14001 certified and has a 73% recycling rate.

The plant

• recycles 100% of aluminum waste on-site
• has reduced the amount of other waste materials sent to the landfill by 40%
• uses regenerative burners to save 50% on the melting/casting operation’s fuel consumption
• captures and burns 93% of all solvent emissions from the paint line
• uses state-of-the-art techniques for waste water treatment
Giving Back to Our Community
YKK El Salvador Supports School Music Program
YKK USA Macon Gives to the United Way
YKK USA Snap & Button Products Donates Benches to Turner Trail
YKK donates Japanese garden to The Carter Center
YKK donates Macon Cherry Blossom Festival Headquarters Building (1990)
YKK supports Macon-Kurobe Sister City Relationship
YKK supports Dublin-Osaki Sister City Relationship
YKK Tree Planting Day

JUNE 5
Alabama
Canada
YKK (U.S.A.) Inc. Named 2013 Macon "Industry of the Year"

October 29, 2013
FASTENING PRODUCTS
Fastening Manufacturing Center
Macon, GA

OCMULGEE PARK
54 ACRES

CHESTNEY PARK
A “FACTORY IN A FOREST”
250 ACRES
YKK Canada Inc.
Montreal, Quebec
Tape Craft Corporation
Oxford, Alabama
YKK Mexicana S.A. de C.V.
Irapuato, Guanajuato
Challenges
Total U.S. Zipper Consumption Market

- YKK
- Zippers sold by competitors
- Imported products with zippers

Billions pcs

'70 '72 '74 '76 '78 '80 '82 '84 '86 '88 '90 '92 '94 '96 '98 '00 '01 '02 '04 '05 '06 '08 '10
Apparel Price Deflation

Source: Department of Labor
Wage Comparison in Apparel Industry

Source: The Woolmark Company
Late 1990s
Brand Name Jeans Factory Locations

59 Factories
Growth through Diversification & Innovation
Value-added products with industry specific applications

- Jeans/Pants
- Outdoor
- Government
- Safety
- Automotive
- Medical
Product Types: **YKK ZIPPERS**

**VISLON® Zipper**
- **DS**
  - Semi-Automatic lock
  - Unlocks when the zipper pull is raised 90°

**Coil Zipper**
- **GS6**
  - Semi-Automatic lock
  - Semi-auto for Jeans
  - Made of brass
- **DA8**
  - Automatic lock
  - Won’t open unless you pull the zipper pull

**Metal Zipper**
- **DFW**
  - Non-lock
  - No locking mechanism
  - For pockets, bags, etc
- **DU**
  - Reversible Automatic
  - Auto lock
- **CA8**
  - Automatic lock
  - Auto-lock. You can clip on your own puller
- **CF**
  - Non-lock
  - You can clip on your own puller
- **ZA**
  - Automatic lock
  - Auto-lock. You can clip on your own puller
- **ZF**
  - Non-lock
  - You can clip on your own puller
- **DFNT**
  - Non-lock
  - Non-lock. You can attach your own puller by closing the crown
Product Types
HOOK & LOOP

Hook
Loop
Woven
Knit
POWERHOOK®
Injection
Product Types
WEBBING
Product Types
PLASTIC HARDWARE

- Buckle
- Strap Adjuster
- Cord stopper & Cord end
- D-ring/Tri-ring
- Loop
- Others
- Snap Hook
Product Types

SNAP & BUTTON

Jeans Button
Rivet & Burr
Snap
Snapet®
Hook and Eye
SNAD®
Attaching Machine
US Total Jeans Market by Segment

- **Premium**
  - 35MM pairs
  - Retail Price: $120-$350

- **Moderate**
  - 30MM pairs
  - Retail Price: $59-$99

- **Lower Level Moderate**
  - 143MM pairs
  - Retail Price: $39-$59

- **Main Stream**
  - 279MM pairs
  - Retail Price: $20-$49

- **Budget**
  - 136MM pairs
  - Retail Price: $19-$30

Retail Price
Jeans

Textured Finish
To Mass Brands with
Higher Price

Big Size Button & Burr

Deformed Button & Burr

Real Patina Finish
YKK’s Exports from the United States

YKK in the U.S. exports products to 57 companies in 40 countries.
Vertically Integrated Production

1. Select the purest raw materials
2. Melt pure copper and zinc in a huge furnace and cast. Out comes a narrow ribbon of molten 99.98% pure brass
3. Cool the brass
4. Stamp into element, slider, and stops
5. Join to the tape

To get as close to PERFECTION as possible
Brass Wire Exports

YKK Macon exports to 12 countries (14 factories)

North America (NCA): Canada, YSU, Mexico, El Salvador, Argentina

EMEA: Spain, Italy, Turkey, Egypt, South Africa

Asia (ASIA): Bangladesh, Indonesia

South America: Brazil, South America

Macon
Innovation
YKK Worldwide R&D Network

- EMEA
- America
- ASAO

- Japan
  - Mother Factory R&D HQ
  - Core Technology
  - Core Machines
  - Core Products

- East Asia

- ASAO
- EMEA
- America
Rockets

This rocket's thermal curtain is connected using a YKK zipper. The thermal curtain protects the rocket from the high heat generated upon launch. At first, the thermal curtain was connected by a cord, but it has been replaced by a zipper because a zipper makes it more convenient to open and close the thermal curtain when checking and repairing the rocket. And thus, YKK's special flameproof zipper heads to space.
Fishnet

Zipper used for fishnet
Firefighting suits

Since firefighters must work very close to fire, YKK's flame resistant zippers are used in firefighting suits. The tape on these zippers are on the outer side of the element, and engage with each other in such a way as to prevent burning and melting. Easy to zip and unzip and resistant to heat, YKK's flame resistant zipper works well for firefighters.
Fireproof zipper test – standard zipper

Test #09-2161
8kA, 26 cycles
YKK
Level 2B2
FR Coil DA front
FR Coil DA pocket
Fireproof zipper test – Nomex zipper

Test #09-2156
8kA, 26 cycles
YKK
Level 1A
Front & Pocket zipper
snap hook

Kinectrics
Diving Suits

Since you can't always scuba dive in a warm ocean, dry suits allow you to scuba dive during the winter and when the water is cold. When you wear a dry suit, you can dive in cold water, and it will not penetrate the suit. A zipper will make the suit easier to put on and take off. YKK's waterproof zipper is used in dry suits.
QUICKBURST® Inflatable Collar for Pilot Suits
Chemical and Biological Resistant Zipper Development

TAPE: Proprietary Thermoplastic Coating

TEETH: Polymeric Material

Technical Specifications

✓ Air tight
✓ Chemical resistant
✓ Easily opened
✓ High crosswise strength
✓ Lightweight and highly flexible
Automotive

QUICKFIT® and QUICKFIT® Flex

3CF Zipper

Webbing and Straps

Visor Tether Cord

Hook and Loop

5CI Zipper

ISOFIX Button

Tie Down Cord

45ECH CONCEAL®
Auto Seating Applications for QUICKFIT® Extruded Hook
CONCEAL® 5CH Fasteners for Auto Interiors

Current Back Panel Designs

New Back Panel with 5CH Zipper

Estimated Seat Cost Savings = 50%
Estimated Seat Weight Savings = 2.5 lbs
Some brands that use CONCEAL® 5CH Fasteners

Ford Fusion
Ford F-250
Chrysler Dodge Dart
Chevrolet Cruze
Foam Retention Cords

Technical info:
- Cords hold foam tight against seat frame
- FMVSS 302 flammability
- 500N pull force
- Fasteners for full spectrum of engagement possibilities
Safety Padding
Stage Padding
Custom Padding
Wall Mounting
Line of Sight Hose Cover

Joint Development Agreement between Gates & Tape Craft

Provide burst protection from hoses in operator’s line-of-sight

Contain bursts and pin hole leaks in hydraulic hoses rated up to 5000 psi

Protect hose from abrasion in normal use
3D Printer: Slider Tab Sample

YKK’s original size 5 metal pull has a rectangular shape. (Far Right)

A customer requested YKK to develop a bell shape, with and without the YKK logo. The 3D printer was used to verify shape before we produced the production dies (2 left samples).
YKK Japan originally designed the Cord Holder pull.

Our customer requested the same shape in a smaller version. We were able to use the 3D printer to verify fit and function before we actually produced an expensive mold.
Brand Protection
Architectural Products Manufacturing Centers

COMMERCIAL PRODUCTS PLANT
DUBLIN, GA

RESIDENTIAL PRODUCTS PLANT
MACON, GA
Vertically Integrated Production

1. Smelt the T-ingots
2. Make our own aluminum extrusions
3. Produce the logs
4. Test
5. Produce the dies
6. Extrude the sash
7. Anodize with our Anodized Plus® process for the most consistent finish available
YKK AP Project Photos
Commercial Products

- Entrances
- Storefront
- Window Wall
- Curtain Wall
- Windows
- Balcony Doors
- Sloped Glazing
- Sun Control

1010 Midtown & 1075 Peachtree
Atlanta, GA

Cornell University - Bill Gates Hall
Ithaca, NY
The VUE
Charlotte, NC
RBC PLAZA CONDOMINIUMS
Raleigh, NC
1775 Eye Street
Washington, DC
ALLENTOWN ARENA
Allentown, PA
Residential Products

• **StyleView®** windows and doors for new construction

• **StyleGuard®** impact-resistant windows and doors for coastal new construction

• **Precedence®** vinyl replacement window and doors
Our first customer was Atlanta’s John Wieland Homes

John Wieland was named “2005 Homebuilder of the Year” by the National Association of Home Builders
Innovation: One Creative Step at a Time
Hurricane and Blast Solutions
Breaching a building’s envelope can cause catastrophic damage to a building.
YKK AP pioneered hurricane impact-resistant glazing systems and is the leading industry brand.

Performance is validated using an air cannon propelling a 9 lb., 2”x4” lumber at 80 feet/second (55mph).
YKK AP pioneered hurricane impact-resistant glazing systems and is the leading industry brand.
Government facilities implement new requirements due to threat of terrorist attacks

Arena Blast Test – Lubbock, TX
Government facilities implement new requirements due to threat of terrorist attacks
Studies show that up to 80% of injuries in a blast are the direct result of flying glass debris.

Products absorb force from explosion & minimize flying glass to the building’s interior.
Products absorb force from explosion & minimize flying glass to the building’s interior.

Studies show that up to 80% of injuries in a blast are the direct result of flying glass debris.
Products absorb force from explosion & minimize flying glass to the building’s interior
Products absorb force from explosion & minimize flying glass to the building’s interior
The leading brand in protective fenestration products

A complete family for the entire building envelope
Energy Saving Solutions
Buildings consume more energy than the transportation industry.

**USA Total Energy Consumption**
- **Manufacturing**: 9%
- **Commercial and Residential Buildings**: 34%
- **Transportation**: 26%
- **Other**: 31%

**USA Total Electrical Consumption**
- **Commercial and Residential Buildings**: 32%
- **Manufacturing**: 65%
- **Other**: 3%
Innovative designs that significantly reduce energy loss/gain.
The evolution continues with YKK AP products

A suite of advanced fenestration systems that meet and exceed USA’s green construction codes, ASHRAE 189.1, and the next generation of standard energy codes, IECC 2012

Curtain Wall
YCW 750 XT

Storefront
YES 45 XT

Unit Wall
YUW 750 XT

Entrances
Model 35XT, 50XT
(fixed / operable)

Windows
YOW 350 XT
(Nov 2012)
Green Building Design

**THERMASHADE®**

Developed 2007; Patent pending

**LUMINANCE® LIGHT SHELF**

2009
New Unit Wall System (YUW 750 XT)

YUW 750 XT Project – Building Renovation
7550 Wisconsin Avenue
Bethesda, MD

Industry Recognition / Awards

Environmental Design + Construction Magazine
Reader’s Choice Award (Nov ’12)

Architectural Products Magazine
Product Innovation Award (Nov ’12)

Polyamide Stem is the key to product’s versatility

Greater Energy Efficiency
Rapid On-site Installation
The “Cycle of Goodness”

Tadao Yoshida
Founder of YKK
(1908-1993)
The “Cycle of Goodness” in Georgia

Jimmy Carter and Tadao Yoshida
First meeting with Tadao Yoshida
“YKK seeks corporate value of higher significance”

Seeking *corporate value* of higher significance, YKK will pursue innovative *quality* in the seven key areas shown above.

Tadahiro Yoshida
Chairman and CEO
YKK Corporation
YKK Core Values

Do not fear failure; experience builds success. Create opportunities for employees.

Insist on quality in everything.

Build trust, transparency and respect.
Core Values Initiative Objectives

UNDERSTAND

• Core Values are recognized by every department of the organization
• Every employee within the organization can state the Core Values from memory

IMPLEMENT

• Specific behaviors have been assigned to the Core Values
• Core Values drive decisions made by the organization at all levels

REINFORCE

• Behavior-based Values are integrated into the hiring process
• Behavior-based Values are integrated into the performance planning and appraisal process
• Behavior-based Values are integrated into the promotion process
• The organization provides recognition and rewards based on the Core Values
"CORE" Values Implementation Framework

The following to be completed with input from Core Values committee team members (revisit Committee list):

- Create Core Values Blueprint tying Core Values with behaviors together with Committee – finalize with senior leaders
- Distribute Values Blueprint, Philosophy Book, Philosophy Workbook, new DVD and wall decals to each site via Core Values Committee (translate all materials into Spanish and French)
- Create new core values intro Power Point with video clips to be used for longer orientations – conduct orientation (including workbook usage) for Committee via teleconference
- Create daily reminders (screensaver?)

Leaders

- YKK University - In depth (2 hr?) Core Values workshop using Core Values Blueprint, Philosophy Book, Philosophy Workbook, new DVD
- Training on recognizing shining stars
- Attendees must then present at least once at their workplace

New Hire

- Show “This is YKK” and 4-minute Core Values video
- Distribute Core Values Blueprint, Philosophy Book and Philosophy Workbook, new DVD
- Have employees fill out Core Values commitment card and bring to 6-month workshop

6-month employees

- 90 minute (?) in-depth “Living our Values” workshop held twice per year – company overview, history, Core Values workshop using materials distributed at new hire orientation
- Senior leadership tells personal stories

All Employees

- Each Core Values Committee member conducts at least one Core Values workshop at own workplace for managers/supervisors
- Leaders must distribute and complete workbook with employees – can be over 2 month timeframe – 10 min per week?

• Create Hire “A” players – Using the values blueprint as a basis, create an Interview Guide for values hiring by identifying the key attributes for every job and tying them with one of the values
- Include Core Values in evaluations – one way is to create a simple rating tool for peers to rate the values and behaviors they have on a scale of 1 to 3 – Evaluations is done by three peer raters, manager and themselves. 50% of weight is given to living the values and meeting goals; the rest is for specific job performance that constitutes a mirror image of the hiring process. Before promoting, put the candidate through the behavior interview process to see if that person’s values align with the values of the company.
- Make an annual review of the Values Blueprint and its components part of year-end planning
## YKK Values Blueprint

### Core Values

<table>
<thead>
<tr>
<th>Do not fear failure; experience builds success. Create opportunities for employees.</th>
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</thead>
<tbody>
<tr>
<td><strong>Challenge yourself. Keep trying.</strong></td>
</tr>
<tr>
<td>Raise the bar higher and persevere.</td>
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<tr>
<td>Don’t be stopped by precedent or custom. Don’t just talk about it, do it.</td>
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<tr>
<td><strong>Support others.</strong></td>
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<tr>
<td>For managers, once you assign a job, don’t over-manage. Survey the situation and provide follow-up support as needed.</td>
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<tr>
<td>When someone fails, do not reprimand. Take responsibility for what you have delegated.</td>
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<tr>
<td>Analyze and clarify causes of the failure, then collaborate on how to recover.</td>
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<tr>
<td>Celebrate when there is success gained through perseverance. Recognize the process, not just the results.</td>
</tr>
<tr>
<td><strong>Insist on quality in everything.</strong></td>
</tr>
<tr>
<td>Make the effort to really know our customers, our products, and the total production process. Insist on value for the customer. Be very receptive to the customer’s sense of value to see if anything is lacking in our products or services. Analyze and improve.</td>
</tr>
<tr>
<td>Even if your function is indirectly connected to the customer, think about how you can provide value.</td>
</tr>
<tr>
<td><strong>Realize value for others.</strong></td>
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<tr>
<td>Don’t give up or avoid barriers; instead, think of a way through them. Don’t have a narrow point of view; think from a broad perspective and collaborate cross-functionally.</td>
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<tr>
<td>When you think you have reached your limit, go one step beyond.</td>
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<tr>
<td><strong>Make fair judgments.</strong></td>
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<tr>
<td>Improve your knowledge and awareness of compliance, and openly share with others.</td>
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<tr>
<td>Don’t prejudge; listen to others and consider many points of view.</td>
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<tr>
<td><strong>Maintain a long-term, broad perspective.</strong></td>
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<tr>
<td>Think like a manager, and encourage others to do so (for example, delegate planning and leadership of meetings).</td>
</tr>
<tr>
<td>Base judgments and behaviors on knowledge and information about social trends, the natural environment, etc.</td>
</tr>
<tr>
<td><strong>Be trustworthy.</strong></td>
</tr>
<tr>
<td>Consider the trustworthiness of all your actions so you can be proud of all you do. Don’t do what does not benefit the customer, even if YKK profits.</td>
</tr>
<tr>
<td>When you can’t find the answer to a problem, don’t agonize about it on your own; talk to others. Create an atmosphere for open discussion. Do what you are asked, then think of what else should be or can be done from the other’s point of view.</td>
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