Wide Format Thermoforming and “The Imaging of Things”

A STRETCH BEYOND THE IMAGINATION

EFI Innovation

- 2015 – H1625 is SGIA product of the year
- EFI introduces 1.6, 2 m and 3m digital printer for SuperDraw inks
- 2013 Digital Ink Product of the Year, SGIA

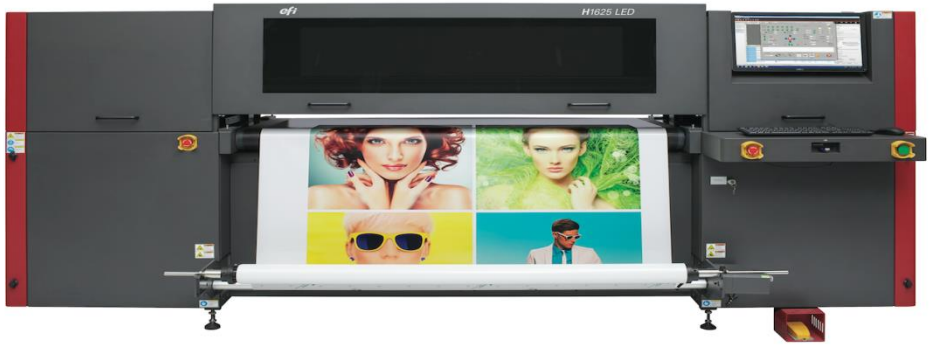
The Imaging of Things


PLANTS VS ZOMBIES
PLANTS VS ZOMBIES
BACKYARD SHOWDOWN
RANDOM WINS!
$$$ $$$ $$$
$$$
$$$ $$$ $$$
WATCH FOR DIAMONDS ON ANY SPIN!


MILLER BREWING CO.
Miller Lite
Miller
Good
MILLER BREWING CO.


Coca-Cola

Introducing the EFI H162-SD



EFI H1625-SD Overview

- 65” (1.6m) wide UV Hybrid (64” full bleed print)
- 8-Level variable drop grayscale printheads up to 1200 dpi
- Arc Lamps & CMYK + WW
- Speeds:
  - HQ CWC– 26 ft²/hr (2.3 m²/hr)
  - HQ color/color or CW – 39 ft²/hr (3.7m²/hr)
  - HQ Color - 78 ft²/hr (7.2 m²/hr)
  - Quality – 247 sqft/hr

H1625-SD Ink

- Extreme Color (Near Gracol Gamut)
- Deep-draw Thermoformable (Vacuum, Drape, Blow, Press)
- Specialty ink primarily for formable materials and secondarily for corrugated plastics

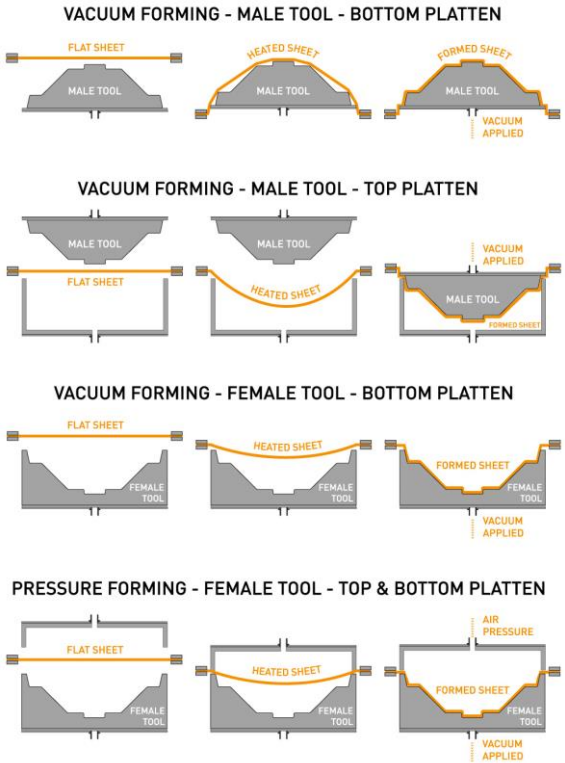
H1625-SD key attributes

- Formed parts/signage decoration with fewer steps
- Elimination of set up costs
- Superior elongation characteristics support
- Inks withstand heat forming and cutting without cracking, chipping or loss of adhesion.
- Water and moisture resistance enable durable, lasting images.

Thermoforming: The Digital Advantage

DISTRUPTIVE TECHNOLGY/The UNFAIR Advantage !

Forming processes



- Thermoforming is a type of vacuum forming process requiring heat and pressure
- Standard heat is in 280-425 degree Fahrenheit range
- Mold/Tool configuration depends on specific product or signage needs or application.

Forming processes

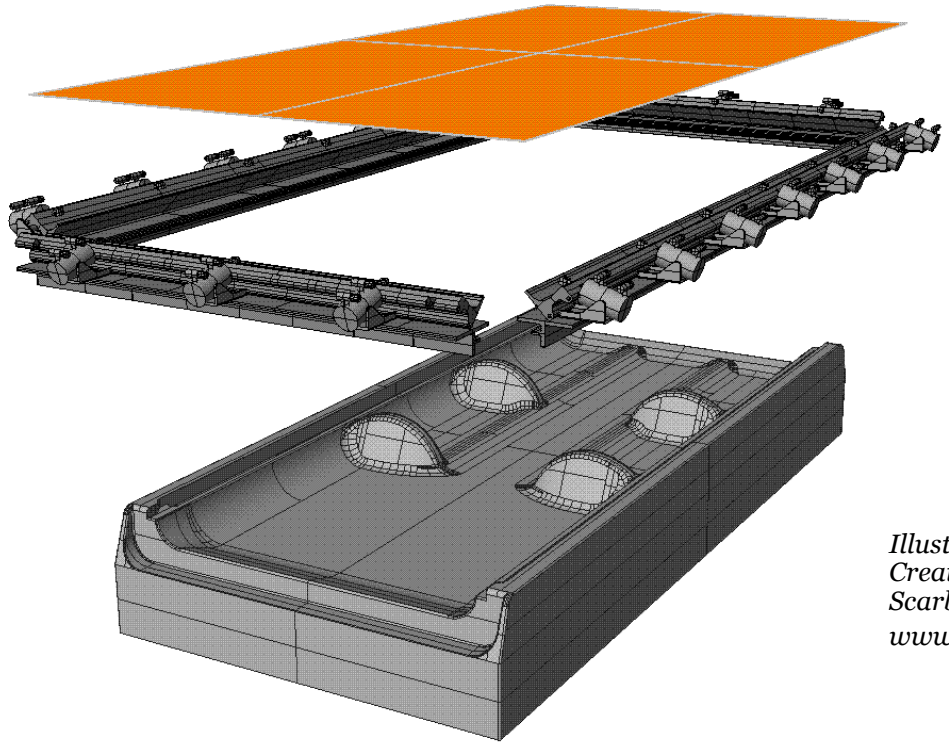
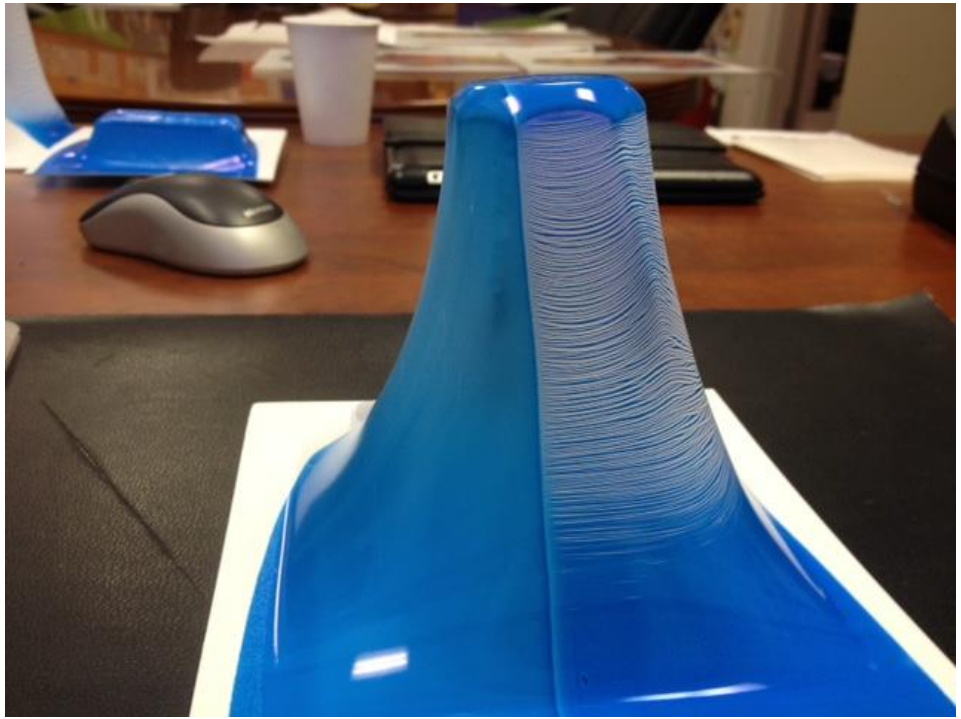


Illustration from
Creative Form Plastics Inc.,
Scarborough, Ontario
www.creativeformplastics.com

THE UNFAIR ADVANTAGE

- A customer who produces two halves of a sign/display totaling 100 ft² (9.3 m²) would take ~7.5-8 hours with the manual process
- Same output on the H1625-SD
  - CWC HQ – 4 hours
  - CW HQ – 2.6 hours

Seeing is believing! Who is Who?



What happens during forming?

- Thermoforming starts here!
  - During the heating cycle both the inks and the plastics become malleable. (Buzz words.. Thermoplastic or glass transition phase)
  - The pigments or dispersions are not thermo-chromatic. They do not shift in color or hue during the heating or forming process!
  - Unlimited elongation! These systems have the ability to meet or exceed the elongation characteristics of the plastic it is printed on.
  - Extremely broad adhesion ranges with a vast application range that goes beyond vacuum forming.

Softer cure and high-heat tolerances
signage applications

Vending

Gaming

POS Display

Softer cure, and high-heat tolerances
functional/industrial applications

Digitally printed hunting blind

Custom automotive bumper

Camo-body Polaris Utility Task Vehicle

Color Management? The Key is Profiling!

- Distortion software if often needed for proper alignment of graphic image to mold.
- In most cases with proper color profiling color hue adjustments are not needed!
  - Draw depth of 4 inches or less.
  - Print images in higher density, but at the same hue/chromatic value

Taking thermoforming to its limits

- Successful applications with all thermoplastic medias
- Exceptional adhesion range and elongation properties.

Know your plastics

*Some plastics have Hydro-chromatic properties (Ability to absorb moisture) causing pinholes of star-lighting.

*Forming temperatures vary from plastic to plastic.

*Select the appropriate plastic for it intended end use!

*The right plastic for the job… Impact resistance? Weathering? Dimensional stability after forming? Resistance to solvents, chemicals or abrasion.

Coating/protection

- Some applications require enhancement coatings or laminates.
  - Important factor in outdoor equipment, automotive, marine, and ATV applications that may require high levels of abrasion, chemical, solvent and protection from UV exposure!
  - These enhancements can be applied both pre-formed and post formed
  - Methods application includes screen printing, roll-coating, spray coating and lamination.

Process simplification/cost reduction

- Working with printable styrene, converters can eliminate labels for a cleaner look.
- Potential to eliminate cardboard inserts on packages, reducing cost and time in packaging assembly process.