

*CORE MACHINE
TECHNOLOGY
IMPACT*

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9/09

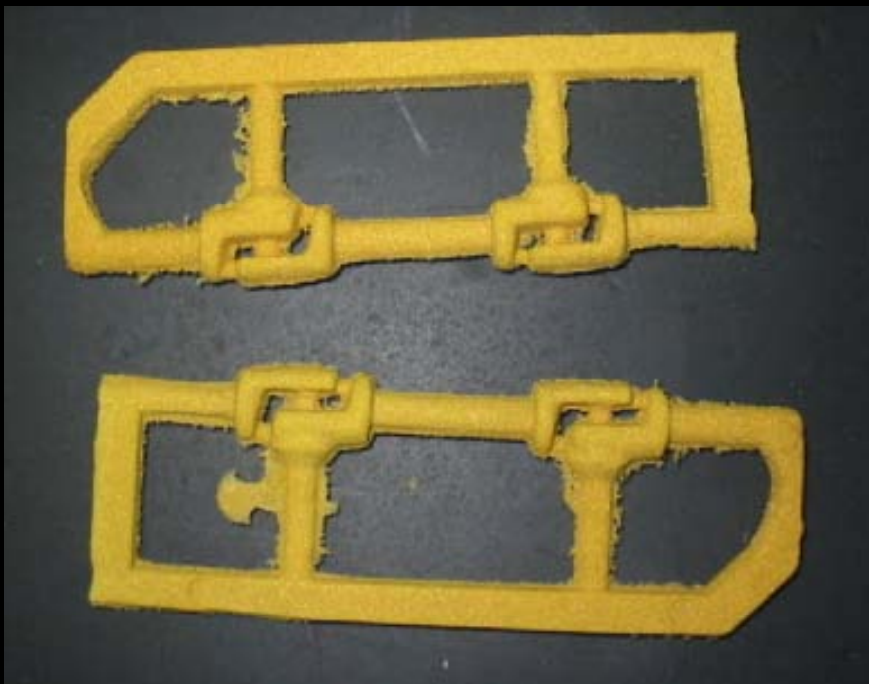
Early Design Costs

Adjustability = Costs from Warp



Early Design Costs

*Inadequate Clamping & Pressure =
Cost from Flashing*



Early Design Costs

Inadequate Blow =

Cost of Material Waste & Scrap



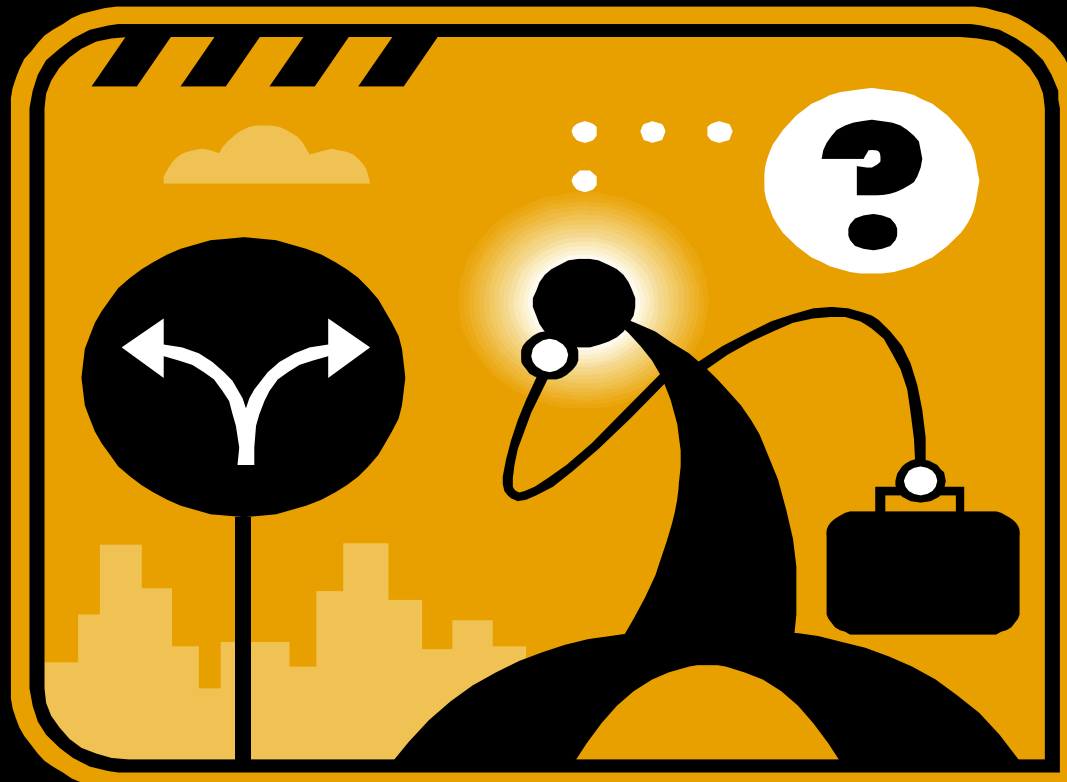
Early Design Costs

*Poor Heat Transfer & Control =
Cost of Low Productivity*



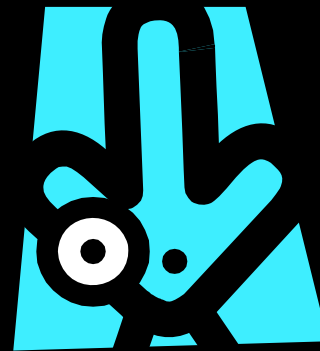
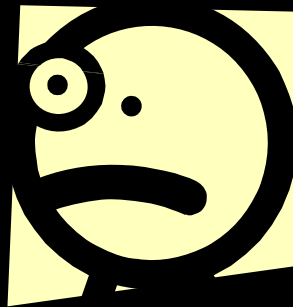
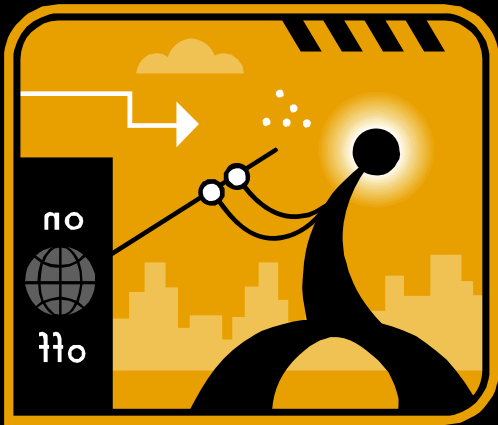
Early Design Costs

Computerized Controls = ? Gain



Early Design Costs

*Operator Dependant Process = Variable
Quality, Productivity, & Cost*



Quality

Profit

Boss

How Do We Get

PROCESS CONTROL

PRODUCTION CONTROL

COST CONTROL

QUALITY CONTROL

FLEXIBILITY

UTILIZATION

RELIABILITY

First Step Back, Look, & Ask

**DOES THE CORE MACHINE
TECHNOLOGY
CONTRIBUTE TO
THE PROBLEM
OR
THE SOLUTION?**

Solutions

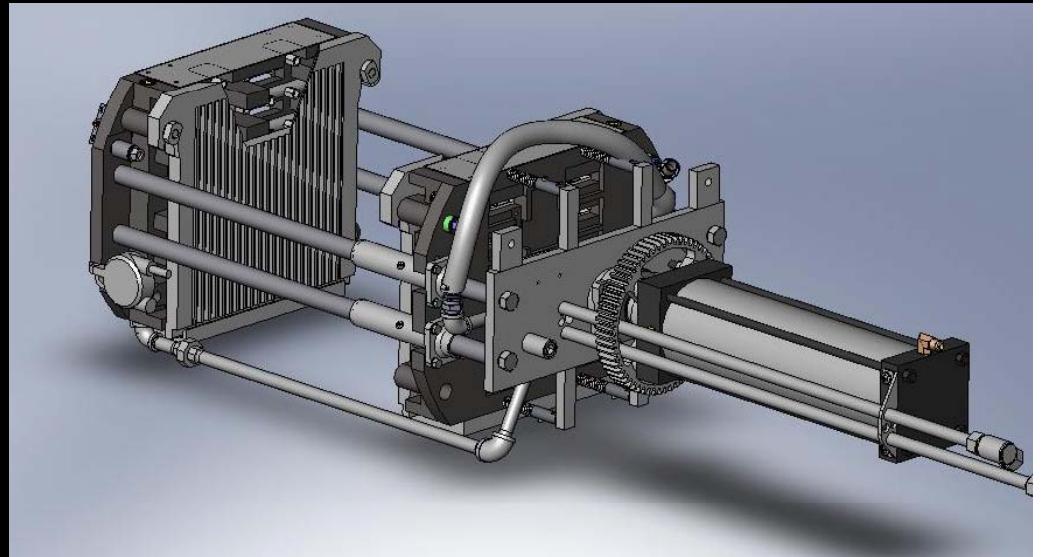
Parallel Clamp Vises & Increased Constant Clamp Pressure

Reduces or Eliminates:

Warping

Alignment Pin Wear

Flashing



Enhanced Blow Stream = Better Fill

Flexibility

Two Short Runs for jobbing work.

Two Long Runs for high volume production.

One Long Run & several short other station.

One Long Cycle & several short on the other.

Large & Small Cores at same.

Two Part Core both pieces at the same time.

Three Piece Boxes with available arbor system.

Ejection Systems available, multiple types.

Box Change (1) changing, other producing.

Universal Blow Plate change blow-holes not plate.

Utilization & Reliability

Machine Drives the Process minimal operator involvement resulting in higher yield.

Available Quick Change System minimal change times for increased production time.

Pneumatic Actuation System easier and quicker to maintain than hydraulics.

Easy Access & Diagnostics for Maintenance improves maintenance efficiency for increased up time.

Commercial Components used where possible for local parts availability increasing up time.

PRODUCTIVITY

Shell Machine Comparison

New Harrison 1818-GA
running 2 boxes
from an
older Harrison 1016-G

PROCESS CONTROL


Reduced Operator Involvement

Process Monitoring by Control

*Auto-Adjust Maintain Process, Smart
Blow, Smart Core Box, & Smart
Cure Technology*

*Alarm Alert System Describes the
Problem on Screen*

*Recorded Alarm History for Pattern
Recognition and Solution
Development*



Alarm time	Acknowledge time	Message
* 9/21/2009 9:17:58 AM	9/21/2009 9:17:58 AM	ABCDE FGHIJK LMNOPQ RSTUV WXYZ ABCDE*

Buttons: Acknowledge All F1, ↑ F2, ↓ F3, Clear Alarms F5, Harrison Machine, Logout K12, Login K11, Op Timers F6, Op Temps F7, Maint Screen F10

PRODUCTION CONTROL

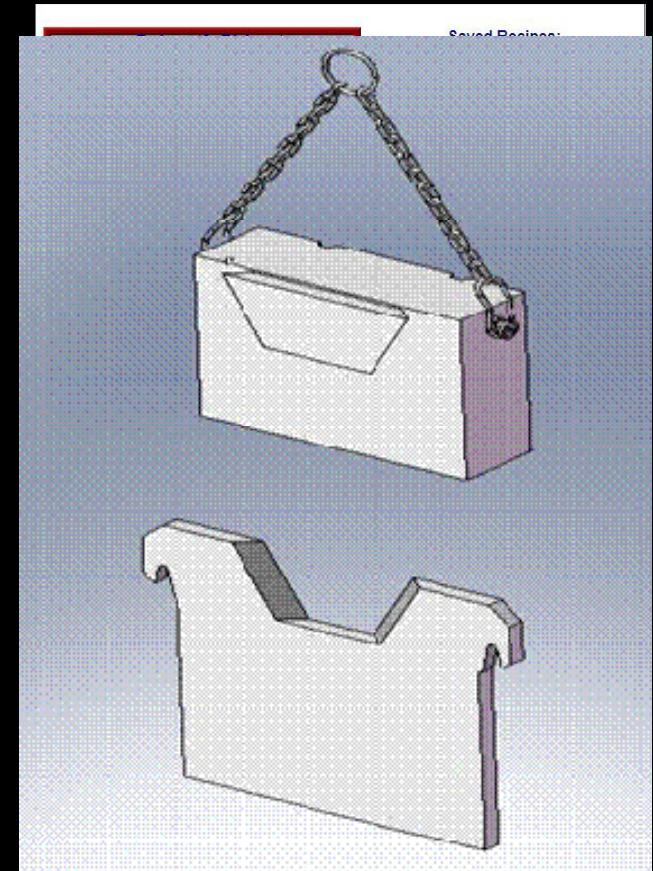
Recall Optimized Box Recipes

*Compare Stored Setting with Real
Time Running Settings*

Allow or Block Recipe Editing

*Quick Change Mounting System
Eliminates Alignment*

Machine Drives the Process



QUALITY & COST CONTROL

Reduced Process Variables

Optimized Recipes

Low Operator Involvement

Repeatable Results

Process Control

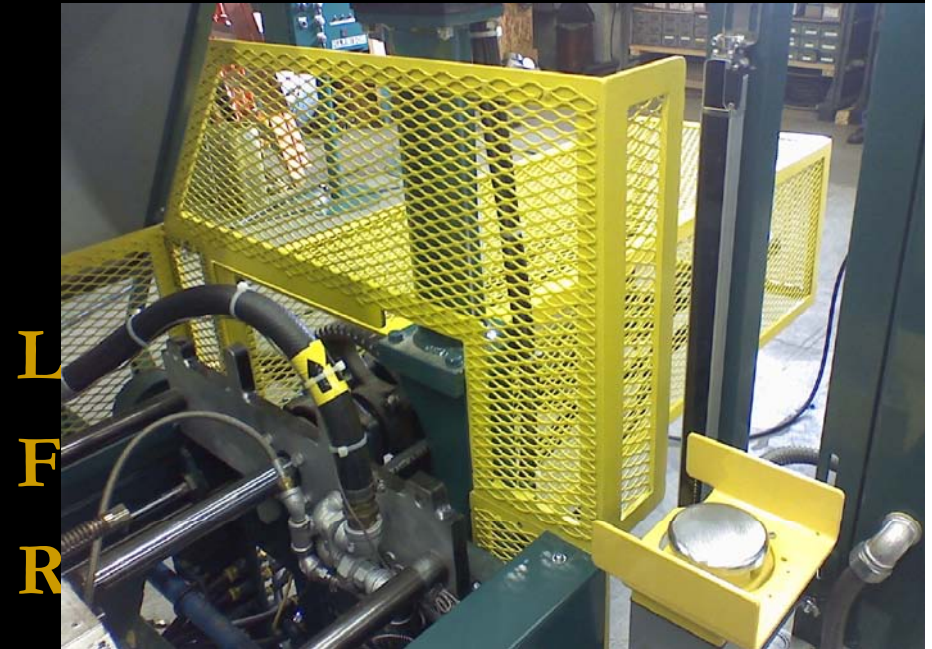
SAFETY

Guarding & Light
Curtains

Interlocked Doors

Auto-PLC Safety

Monitoring



Stop C.B. Process Door
Open

Stop Process Low Sand

Solutions

FEWER MACHINES

HMC technology Dual Station Productivity and Flexibility =
1 HMC can replace several existing machines.

INCREASED CAPACITY

High Utilization and Flexibility = higher output per hour and
energy unit to facilitate sales growth without overhead
growth.

LOWER OPERATING COST

Fewer Machines = Lower Energy Usage

Lower Energy Usage = Less Emissions

Less Emissions = Lower Compliance Cost

Less Machine = Lower Overhead

Harrison

Productivity, Flexibility, Utilization, Process Control,
Quality & Cost Control, Lower Operating Cost,
Lower Energy Usage, Lower Emissions

=

LOWER COST-per-CORE

=

COMPETITIVE ADVANTAGE



