PROJECT TITLE: TL2 Phase 2 – "He shoots, he cores"

G+O ref or phase number	Mfg Unit + Area	Champion	Manager	Date Started
Phase 2	X	Y	Z	

1) PEOPLE INVOLVED & THEIR DEPARTMENTS

A	Team Leader (Blue Shift)
B	Setter (Blue Shift)
C	Associate (Blue Shift)
D	Team Leader (Red Shift)
E	Setter (Red Shift)
F	Setter (Blue Shift)
G	Engineer
H	Maintenance

2) REASON IMPROVEMENT AREA WAS CHOSEN

X is a key machine in 1st Process to get flow through the section. The machine was making too many defects and starving downstream processes.

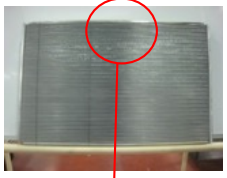
3) GRASPING THE CURRENT CONDITION

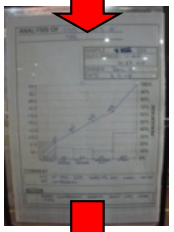
All data for 11 – 29th Aug

13356 cores made on X

359 defects

= 2.7%

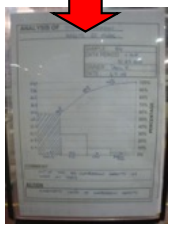




Pareto by defect type

84 Wire Compression (22%)
55 Wire damage (16%)
50 Fin damage (14%)

Action: investigate Wire Compression



Pareto "Wire Compression" by model type

49 Yaris (58%)
24 ZZ (29%)
9 CRV (12%)
2 Other (1%)

Action: investigate whether it is a problem with only Yaris cores

This ratio of defects is in line with the split of customer demand and the fact that CRV have 4 wires, not 3…so, it is affecting all models

4) SETTING THE TARGET

Initial target : 30% reduction in Wire Compression defects on all models by 30 Sept

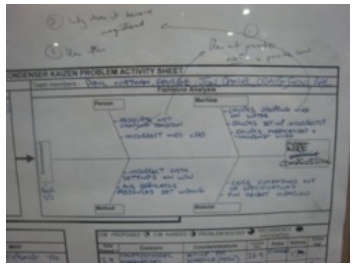
Stretch target : Eliminate the defect

5) INVESTIGATION & IMPROVEMENT ACTIVITIES

We wanted to understand more about wire compression so asked the associates to mark on a measles chart where the damage was occurring.

This confirmed that wire compression was not restricted to either one of the two chucks that do the wire winding.

We did a fishbone brainstorm as a team



(10) Poor 5s

(9) Incorrect wire used — X

(8) Associate not checking condition — !

(7) Incorrect data settings on wire wind

(6) Air regulator pressures set wrong

(5) Fin height too high / low — X

(4) Core dimensions out of spec

(3) Chucks set-up incorrectly — X

(2) Chucks magnetised + holding wire

(1) Chucks dropping wire on lifter

(3), (5) and (9) were ruled out quickly.
(8) Was judged to NOT be a possible cause…but was important in FLOW-OUT PREVENTION (See section 7)

(1) and (2) were felt to be the probable causes so were investigated using 5-Why

WHY ? are the chucks dropping wire on the lifter ?
Because wire is not being released into the chute at the right time
WHY ?
Because wire is "sticking" to the chuck and dropping off at random times
WHY ?
Because the chucks are magnetised
(Countermeasure - demagnetise the chucks)
WHY ?
The process is magnetising the chucks (still under investigation)

6) IMPLEMENTATION PLAN

1) FLOW-OUT PREVENTION = Change conveyor belt count PH 20/8 Completed – see section 7
2) Demagnetise the chucks and set-up TPM regime PH - Countermeasure not pursued – see next point
3) Change to demagnetised chucks - PR 1/9 Completed
4) Ensure data settings recorded - PH 3/9 Completed
5) Confirm whether countermeasure 2) Demagnetised chucks, works – tracking sheet – JL 1/9 Completed

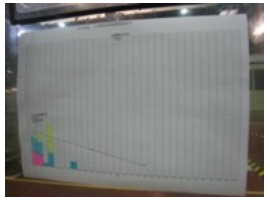
7) SUMMARY OF KEY COUNTERMEASURES

Demagnetised chucks (Zinc coated) were fitted at a cost of £40. Wire now being released into the chute at the right time NOT onto the lifter

FLOW-OUT PREVENTION
It was discovered that the conveyor belt count had been set at 12 = a possible 96 defective cores on a full conveyor. This original setting had never been challenged. It was reset to 4 on 20th Aug = 28 cores maximum on the conveyor.

8) RESULTS & FINANCIAL BENEFITS

Chart on the section showing daily Wire Compression defects (updated every shift)



BEFORE
84 Wire compression defects in 12 days

AFTER
3 Wire Compression defects in 12 days

= 97% reduction

1) Most can be reworked = 5 mins each
Before rate = 7 per day = 1680 cores per year
After rate = 0.25 per day = 60 cores per year
Difference = 1620 less @ 5 mins **= £1755 / year**

2) Short stops to clear machine reduced by 90% = 20 mins per week

9) CONFIRMATION – MAKING SURE THAT C / MEASURES ARE STANDARDISED + HOW WE CONFIRM REGULARLY

1. The problem has nearly been eliminated with a permanent countermeasure. Ensure that spec is changed for maintenance spares.
2. The 3% remaining means that we have to go back to our fishbone and think again (New idea = possible chuck condition over time ? TPM ?)
3. Continue Data Analysis to monitor and maintain improvement
4. Yokoten to other similar machines

10) REFLECTION - KEY LEARNING POINTS

1. Using a team from both shifts (and maintenance and engineering) really helped understanding of the problem and generated a good fishbone to solve our pain.

2. Data analysis and the pareto / measles chart really focused us on a specific problem that we could investigate, countermeasure and prevent recurrence.