DEMAND DRIVEN CASE STUDY COASA





July 2017
Presented at the Demand Driven World Conference
Lyon



Orense (SPAIN)

COASA - 2001

Technologies: Hand Lay Up

Main Equipments:

3 Autoclaves

2 C-Scan US Inspection Machines

Employees: 377

Max. Capacity: 450,000 man hours

Industrial Area: 13,000 sqm

Illescas – Toledo (SPAIN)

ACI - 2010

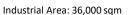
Technologies: Hand Lay-Up, ATL

Main Equipments:

- 3 Automatic Tape Lay-up (up to 6)
- 2 Autoclave 5x14 (up to 3)
- 1 Hotforming (up to 3)
- 1 Automatic Inspection Gantry (Up to

Employees: 225

Max. Capacity: 440,000 man hours









Vitoria – Alava (SPAIN)

FIBERTECNIC - 1986

Technologies:

• Hand Lay Up

Main Equipments:

- 2 Autoclaves
- 2 C-Scan US Inspection
- 1 CNC Drilling & Trimming

Employees: 218

Max. Capacity: 300,000 man hours

Industrial Area: 7,810 sqm

Toledo (SPAIN)

ICSA - 1991

Technologies:

Hand lay up FW, RTM

Main Equipments:

- 3 Autoclaves
- 2 C-Scan US Inspection
- 4 Filament Winding Machines
- 1 Hot Plates Press
- 1 Hotforming Machine
- 5 Resin Injection Equipments

Employees: 297

Max. Capacity: 350,000 man hours

Industrial Area: 20,000 sqm



☐ Location



Tecnopole, A San Cibrao das Viñas , 32901 Ourense, Spain

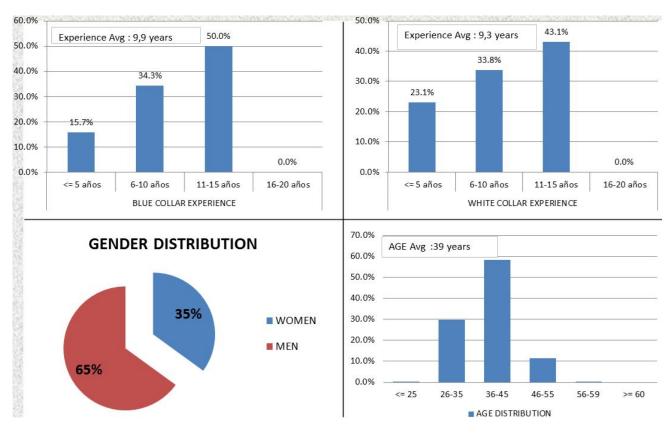


TOTAL	BUILDING	EMPLOYMENT	REVENUES
SURFACE	SURFACE	2015	2015
27.000m ²	13.000m ²	351	42,6 M€





■ Workforce





☐ Main figures — Background





AIRBUS	2015	36		
A350	2016	79		
	2017	92		

PRODUCT

Client: AERnnova Design and Built:

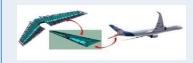
HTP: TRAILING EDGE PANELS, FAIRING COVERS, RIBS, CORNER FITTINGS.



Client : Airbus Nantes
Built To Print:

AIR INLET AFT BULKHEAD CFRP PANELS FOR V800/900.







Client: Airbus Harbin
Built To Print:

ELEVATOR: CARBON MONOLITHIC PARTS RIBS, PANELS, FAIRINGS.



AIRBUS A320	2015	507	
	2016	552	
	2017	600	

PRODUCT



Client : Alestis Built to Print:



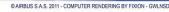
HORIZONTAL STABILIZER – SPARS 50% OF THE FULL RATE



MAIN LANDING GEAR DOOR 25% OF THE FULL RATE

75% MADE IN FBT/AERNNOVA









AIRBUS	2015	91	
A330/340	2016	64	PRODUCT
	2017	80	



Client: Airbus Operations
Design and Maintenace:

MLGD: MAIN LANDING GEAR DOORS/ CENTER LANDING GEAR FIXED PANELS



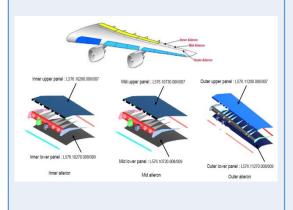
Client : Aciturri
Built to Print:

HORIZONTAL STABILIZER LEADING EDGE PANELS





2015	25	
2016	21	PRODUCT
2017	10	
	2016	2016 21



Client : Airbus Nantes
Built to Print:

ALEIRONS SKINS





AIRBUS	2015	27	
HELICOPTERS	2016	65	PRODUCT
EC 135	2017	65	
But to the second of the secon			Client: Airbus Helicopters Built to Print: TAIL CONE SKINS Sandwich sructure on CF+Tape with Honeycomb





 EMBRAER
 2015
 102

 2016
 100

 ERJ 170/190
 2017
 85

Client: Aernnova Design and Built:

RUDDER, ELEVATOR, LEADING EDGE

Carbon&Glass monolithic and sandwich parts.Also assembled aerostructures

EMBRAER	2015	13
	2016	13
ERJ 145	2017	4

Client : Aernnova Design and Built:

OUTER FLAPS, AILERONS, FAIRINGS Carbon&Glass monolithic and sandwich parts.Also assembled aerostructures







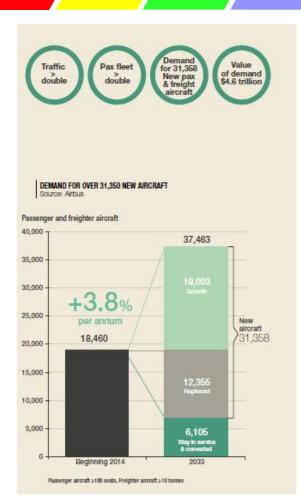
EMBRAER	2015	2	Client : Aernnova
	2016	0	Design and Built:
КС390	2017	2	ALEIRON, RUDDER, FLAPS.
			Carbon & Glass Monolitic with paintting.
			Client : Embraer (Evora) Built to Print:
			HORIZONTAL & VERTICAL STABILIZER PARTS (EVORA PLANT,



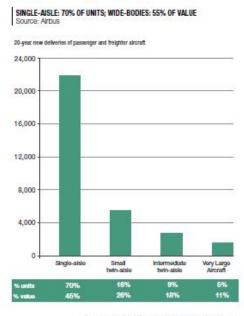


PORTUGAL)

3. AERONAUTICAL SECTOR



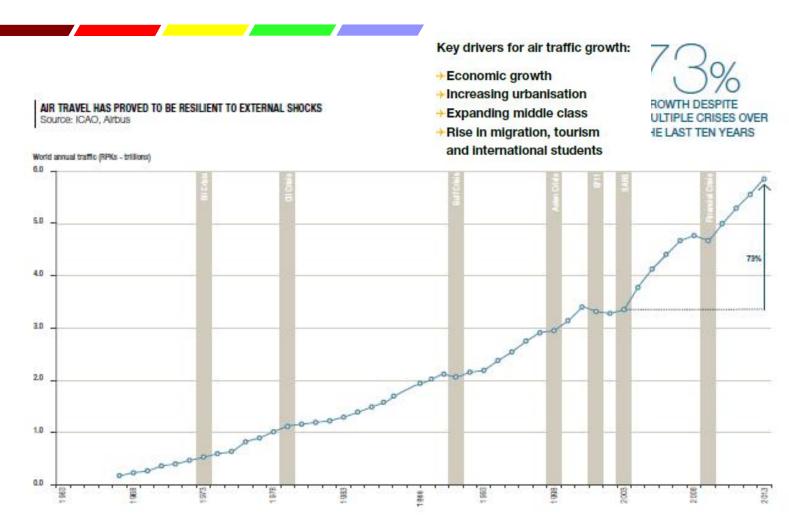
2014 - 2033 NEW DELIVERIES 31,358



Passenger aircraft (> 100 seals) and jet freight aircraft (> 10 tons)



3. AERONAUTICAL SECTOR





3. AERONAUTICAL SECTOR

Low manufacturing rates

Process with a very important manual component

High non-quality indexes. Typical of lack of automation

Reduction of MP stock

Avoid Stock Out

Anticipation to problems (Visibility)

Saving in urgent transport

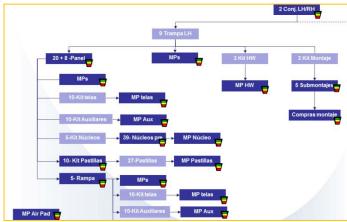
(*) Forecast Source : CCeV y AVK.



- □¿Why DDMRP?
 - ✓ High inventory level
 - ✓ Raw material with long LT
 - Necessities
 - ✓ Reduce inventory
 - ✓ Detect PO that need to be expedited



- ☐ ¿Changing to DDMRP
 - Strategic Inventory Position
 - ✓ Output of processes that produce common elements
 - ✓ End of the chain (Guaranteed availability)
 - ✓ Materials with long lead time
 - ✓ Materials with high variability in procurement
 - ✓ Materials common to different processes



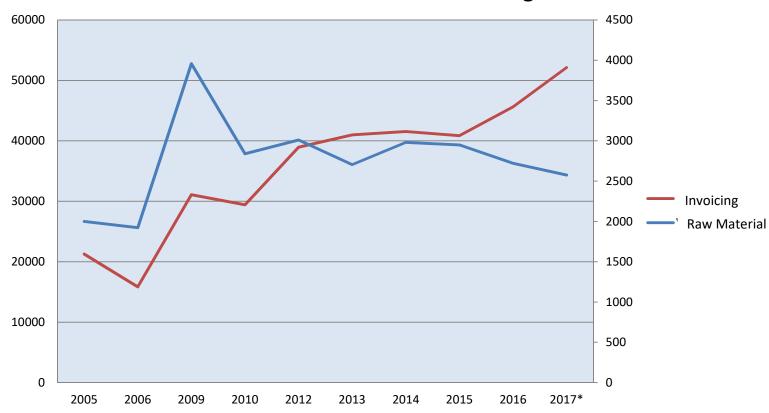


% RM/Invoicing



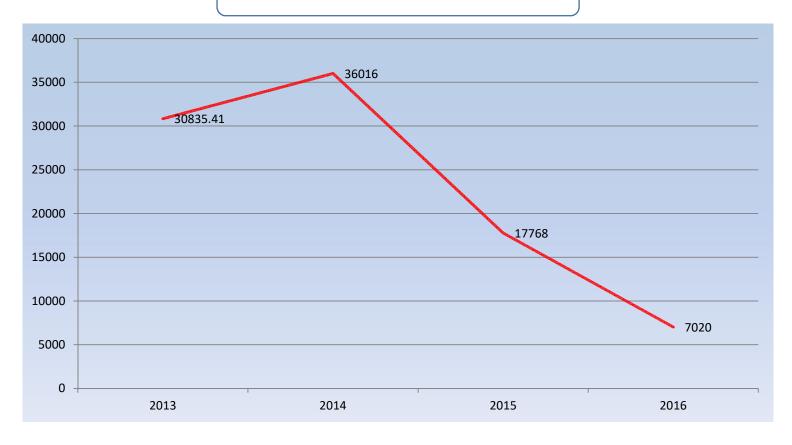


Raw Material & Invoicing





SPECIAL TRANSPORT COSTS €





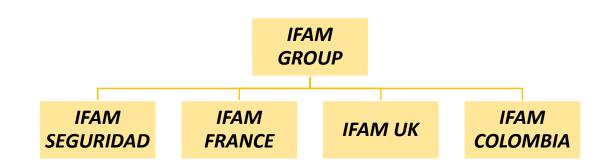
DEMAND DRIVEN CASE STUDY IFAM





July 2017
Presented at the Demand Driven World Conference
Lyon





- ✓ IFAM SEGURIDAD is the parent company of the IFAM Group
 - ✓ Founded in 1948
 - ✓ Leader in Spanish locksmith market
 - ✓ Started business as a padlock manufacturer
 - ✓ Production plan of 5000 m2
 - ✓ Present in more than 50 countries



☐ Location

IFAM SEGURIDAD is located in Mondragon. Mondragon belongs to Guipúzcoa (Basque Country), Spain.

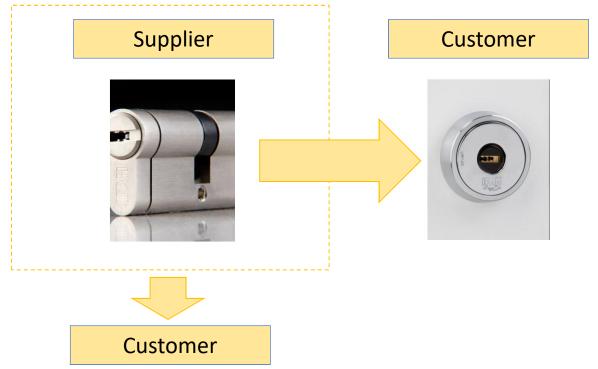




2. PRODUCTION PROCESS

✓ Merchandise distribution

✓ Modifying merchandise (adding parts or removing parts)





3. PRODUCTS

☐ Our products



Cylinder locks



Locks



Rim locks



Padlocks



Hasps



Safety Series



3. PRODUCTS

☐ Our products



Motorcycle locks



Bicyle locks



Digital door viewer



Key Cabinet



Stand



☐ ¿Why DDMRP?

- √ High inventory level
- ✓ Raw material with long LT (>76 days)
- ✓ Complex planning with excel
- ✓ Big MoQ
- Necessities
 - ✓ Implement a planning methodology
 - ✓ Reduce inventory
 - ✓ Detect PO that need to be expedited



- ☐ ¿Changing to DDMRP
 - Strategic Inventory Position
 - ✓ Due long lead times of supplier and short lead time to market most of the parts were placed with buffers or MM.
 - Buffer profiles and level determination
 - ✓ Grouping parts in families where supplier allows to order in the same MoQ
 - ✓ Inside each group:
 - ✓ Buffer: Parts with more rotation, green zone is MoQ of the family or similar .
 - ✓ MM: Green zone is equal to consumption in 1,2 or 3 months.
 - ✓ NB

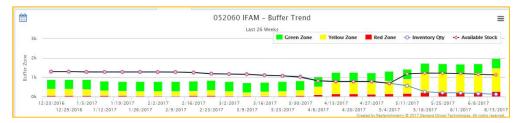


Buffer profiles and level determination

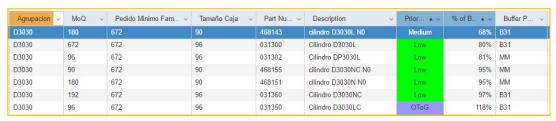




• Dynamic buffer



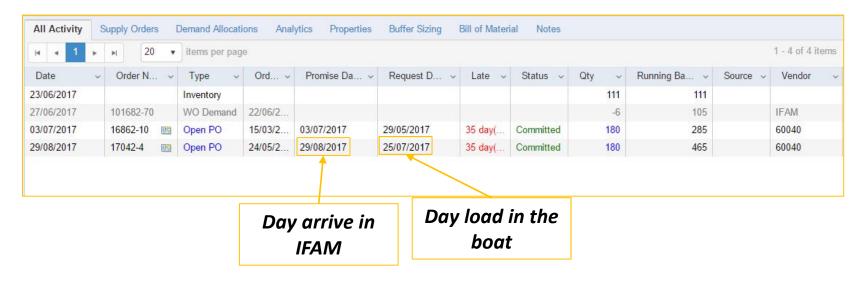
- ✓ <u>Quarterly review to vary green zones.</u>
- <u>Demand- Driven Planning</u>
 - ✓ Daily information updated vs bi-weekly information
 - ✓ Planning using filter "Agrupaciones (Groupings)"





Execution

- ✓ Which PO need to be follow
- ✓ Have knowledge if the order is on the boat or in the factory. With this
 information we are able to send by plane if is necessary.





- Reduce inventory
 - ✓ 25,6 % from 1.552.690 € (31/07/16) to 1.154.275€ (04/01/17).

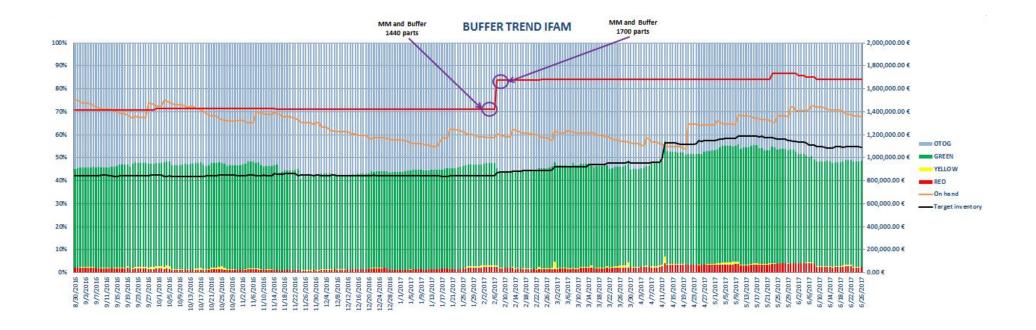




- Daily information updated vs bi-weekly information
- Expedites nearly eliminated
- Facilitate planning for new workers
- Reduce planning time
 - ✓ Due long lead times of supplier and short lead time to market most of the parts were placed with buffers or MM.



• Buffer trend IFAM (1 year)





DEMAND DRIVEN CASE STUDY INDAUX





July 2017
Presented at the Demand Driven World Conference
Lyon



- ✓ Indaux has been inventing, developing, manufacturing and commercializing hardware systems for furniture since 1962
 - √ 300 people working
 - ✓ INDAUX leads the furniture fitting sector in Spain
 - √ 4 Production facilities over 70000 m2
 - ✓ Present in more than 70 countries
 - ✓ 2000 customer around the world
 - √ +30000 parts



1. INTRODUCTION

☐ Location

Main factory of Indaux is located in Getaria. Getaria belongs to Guipúzcoa (Basque Country), Spain.





2. PRODUCTION PROCESS

- ✓ Merchandise distribution
- ✓ Several production process
- ✓ Technologies used in their factories
- Steel die & stamp: applied in steel drawers & hinges
- Steel extrusion & rolling: applied in runners
- Plastic Injection: applied in many elements and components

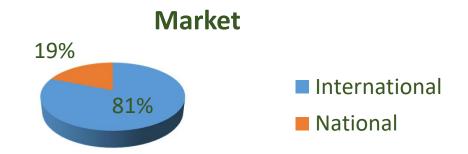


- Metal die-casting: applied in many elements and components
- Galvanic bath
- Powder Painting: applied in steel drawers
- Automated assembly machines





3. MARKET

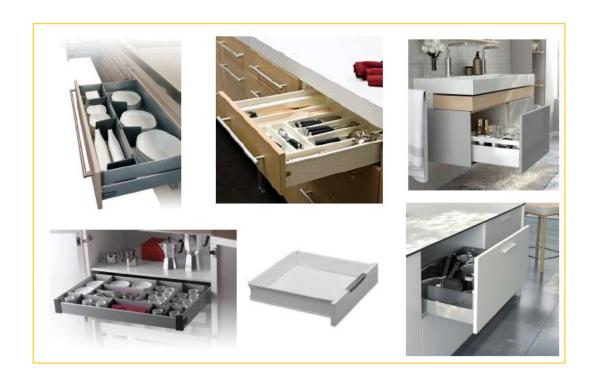






4. PRODUCTS

Metal drawers





4. PRODUCTS

Runners for wooden drawers





4. PRODUCTS

Hinges and Lifting Systems



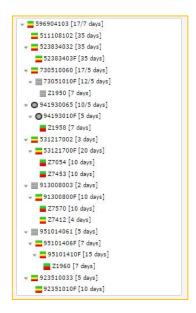




- ☐ ¿Why DDMRP?
 - ☐ Situation description
 - √ High inventory level
 - ✓ Low Service Level in some areas
 - ✓ Each planner planned differently
 - Necessities
 - ✓ Implement a planning methodology in all factories
 - ✓ Reduce inventory
 - ✓ Improve Service Level
 - ✓ Reduce expedites



- ☐ Changing to DDMRP
 - Strategic Inventory Position
 - ✓ Positioning the most important levels with buffers or MM
 - ✓ Parts with high commonality
 - ✓ Strategic Parts





■604161311 [35/25 days]
■ 653450313D [10/5 days]
■ 27514 [5 days]
■ 27514 [5 days]
■ 23027 [20 days]
■ 23027 [20 days]
■ 23046 [10/5 days]
■ E1043 [5 days]
■ E1043 [5 days]

= 21882 [7 days] = A0003 [5 days] = E1990 [20 days] = 27415 [5 days]

= 27514 [5 days]
= = (2045 [10/5 days]
= = R1995 [10 days]
= 27415 [5 days]

■E1043 [5 days]

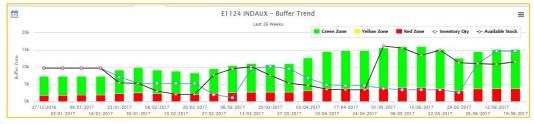


- Buffer profiles and level determination
 - ✓ Grouping parts in planners.
 - ✓ Different Buffer Profiles for planners group for example:
 - ✓ ITB: 6 planners →18 profiles
 - ✓ Inside each group:
 - ✓ Buffer:
 - Production parts has the red zone in days and the green zone in days or manufacturing batches.
 - o Buy parts we build red zone and green zone with %LT.
 - √ NB



- ✓ MM
 - ✓ "Dynamics": We used buffer profile file. We only used Red Zones and Green Zones.

 Example Buffer:
 - ✓ ZB: Buffer of Zamak B (Red zone 1 month of ADU, Green zone 1 months of ADU)
 - ✓ ZC: Buffer of Zamak C (Red zone 1 month of ADU, Green zone 2 months of ADU)



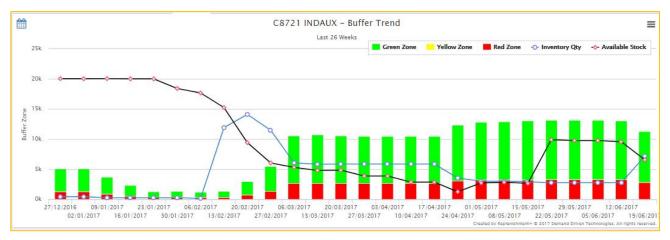
- ✓ Static: We used static buffers for:
 - ✓ Buy Parts of China (Irregular consumption and Spike)
 - ✓ Production parts we need to have Stock but they only need 3 or 4 times per year.

 They have demand every 4 months.



Dynamic buffer

√ "Dynamic" MM



✓ Using PAF for holidays in China

Name	Location	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Select Filter *													
віон	INDAUX	Description	200	200	100	100	100	100	100	100	200	150	100	100
VCHINA	INDAUX	Description	200	175	175	150	100	100	100	100	150	125	100	100



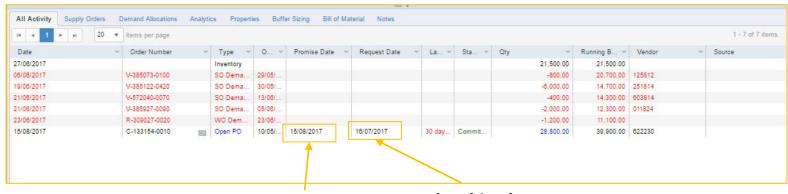
- <u>Demand- Driven Planning</u>
 - ✓ Daily information
 - ✓ Focus on the important parts





• Execution

- ✓ Which PO need to be follow
- ✓ Which WO need to be follow or expedite
- ✓ Have knowledge if the order is on the boat or in the factory. With this
 information we are able to send by plane if is necessary.





Day load in the boat



6. RESULTS

- Service level
 - ↑ Sales 12,58 % → ↑ producction (less resources). Similar service level

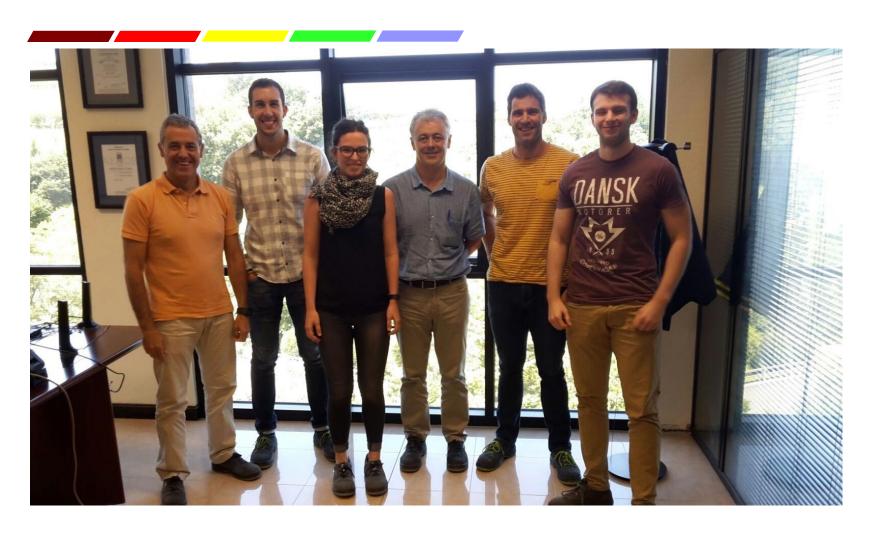


6. RESULTS

- Daily information updated vs weekly information
- Reduce expedites
- Facilitate planning for new members (3 new planners during the implantation)
- Reduce planning time
 - Improved planning quality (which part and what quantity)



6. RESULTS





DEMAND DRIVEN CASE STUDY COPRECI





July 2017
Presented at the Demand Driven World Conference
Lyon

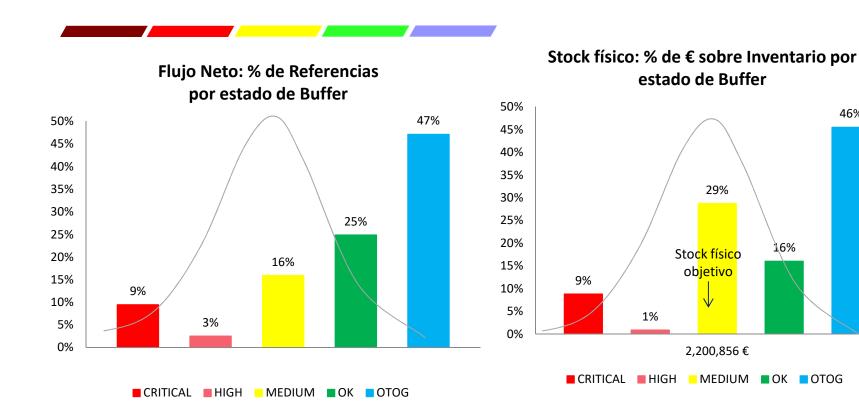


PRODUCTS – Washing & Drying





DISTRIBUCIÓN ACTUAL DE INVENTARIO



46%

16%



Número de Referencias totales	8534
Referencias válidas	1141
Umbral Replenishment: € de coste por LT	C
Replenishe parts	1141
% Replenished parts	100%
MOQ Driven Green Zone	747
Lead Time Driven Green Zone	394
Valor del Inventario Actual Total	2,200,856.3 €
Valor del Inventario Refs. Replenishment - Actual	2,200,856.3 €
Inventario Objetivo	1,521,573.6 €
Reducción de Inventario	679,282.7 €
% Reducción de Inventario sobre Total	30.9%
% Reducción de Inventario sobre Replenishment Demand Driven World	30.9%

transforming push and promote into position and pull

PRODUCTS - Induction

TOTAL CUSTOMIZATION & FLEXIBILITY

ADAPTABILITY & FLEXIBILITY

Our induction hobs can be integrated easily in any final application: free-standing, combi & built-in.





FREE-STANDING

COMBI

BUILT-IN

A WIDE RANGE OF VARIATIONS:



SIZE AND NUMBER OF HEATERS



DIFFERENT LAYOUTS, WIDTHS, COMBINATIONS...



DIFFERENT TOUCH CONTROLS: SLIDER, DIRECT BOOSTER KEY..

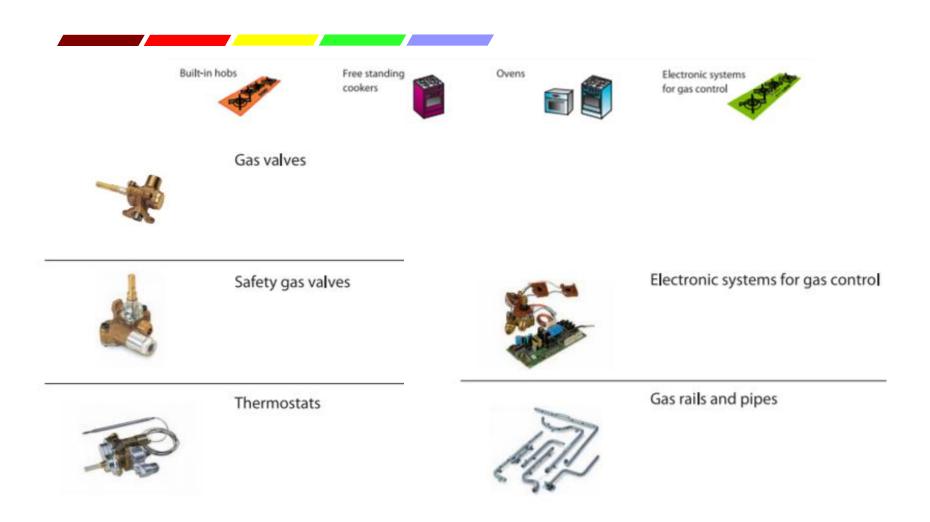


HYBRID SOLUTIONS: 1 RADIANT + 1 INDUCTION, 2 RADIANT + 1 INDUCTION, 2 INDUCTION + 1 RADIANT, 2 RADIANT + 2 INDUCTION



PRODUCTS – Gas Systems

Demand Driven World
transforming push and promote into position and pull

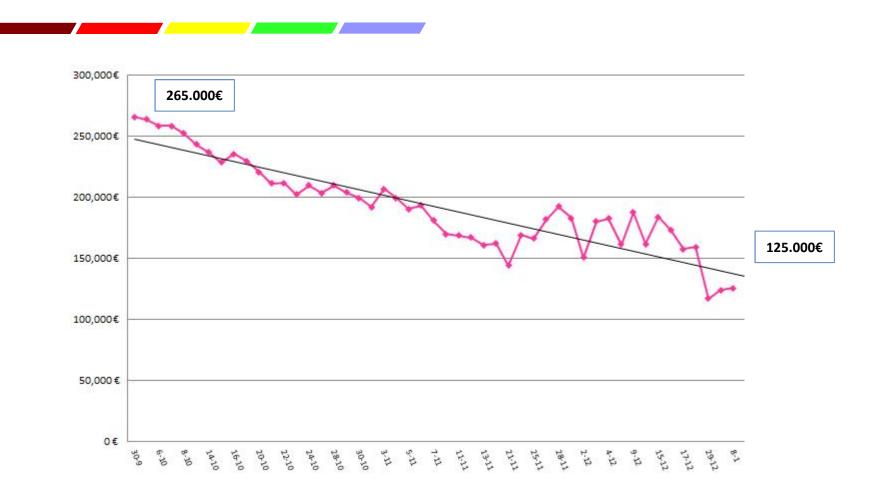


Washing & Drying – EBS line



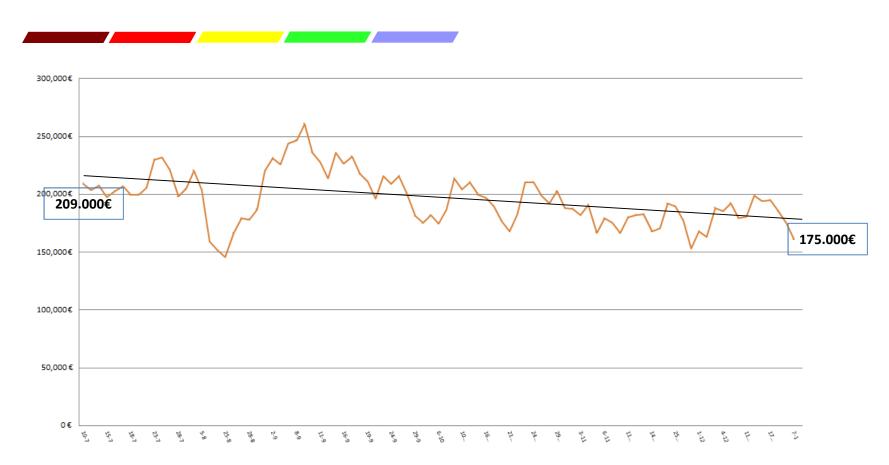


Washing & Drying – SKT line





Washing & Drying – BLP3 line

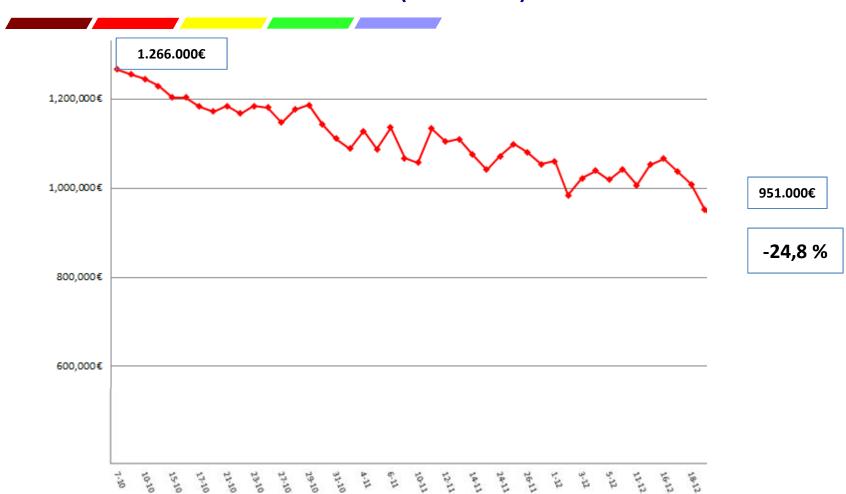


Focus on limiting schedule modifications by reducing the "bi-modal" stock distribution.



PHASE III – Inventory Trend

GLOBAL INVENTORY TREND - PHASE III (2.5 months)





DEMAND DRIVEN MRP

"Presentación Implantación de Proyecto DDMRP"





1 de diciembre de 2016





THE DDMRP* APPROACH IN VALLADOLID: ONCE AGAIN ENABLING TEAMS ON THE GROUND TO MANAGE INDUSTRIAL INVENTORIES AND FLOWS ALIGNED WITH ACTUAL REQUIREMENTS.

The approach from the perspective of the plant: Mariano Arconada-Calvo, Director of the Valladolid site

Valladolid is a plant with an established industrial culture for managing flows and also uses tools such as KANBAN.

Despite strong performance in terms of compliance with production commitments (overall and size-based) and useful and non-useful production, our level of service is not sufficient, especially for replacement tires.

Customer demand is increasingly variable in quantity and by dimension, which requires frequent changes to be made to the manufacturing requirement planning. With the conventional MRP rules, and despite growing flexibility, we don't manage inventory optimally, our service rate is low and we've significant costs related to urgent requests.

We've been implementing the Prod'Agile approach for a year now. It has enabled the team to grow and improve our level of service by factoring in our customers' concerns more effectively. But we should face up to the fact that we currently have a complex process with an array of stakeholders! As such, the customer signal which arrives at the plant still doesn't reflect real requirements.

We're working on both of these points using the DDMRP approach.

The method will enable our plant warehouse inventory to disconnect, over a short-term period, the Upstream Supply Chain of manufacturing, by consolidating the response to confirmed requirements. There are a variety of objectives:

- ensure a level of service of 100%
- establish a direct link between the plant and the new Customer Service structures implemented as part of the Upstream OPE (LEAN organization)
- improve the quality and level of stocks
- absorb fluctuations in demand and uncertainties by incorporating the industrial constraints of replenishment lead times and manufacturing batches

The plant will begin by working on the OE market (i.e. 40% of the site's production). Our goal is to be in a position to satisfy 100% of firm orders from customers by reducing unnecessary changes to the plant Production Plan and by improving inventory quality. To do this, we are pursuing the three steps outlined in the DDMRP approach:

- define the right customer signal in the plant with Customer Service and Supply Chain teams
- calculate the level of inventory
- define production orders

This challenge is underway with a cross-functional, committed, professional and motivated project team to ensure an ISL of 100% for our OE customers. And we are keen to extend the approach to the entire plant quickly!

* DDMRP: Demand Driven Manufacturing Requirement Planning

The approach from the perspective of Customer Service OE: Gilles Brunel, Customer Service OE Manager at La Combaude site

The DDMRP process is significantly improving the management of flows over the short term. Since the pilot phase was implemented in Customer Service last February, we have not identified any crisis and we have noticed an improvement in the plant's responsiveness. There is now greater closeness with Valladolid's planning, making it possible to make adjustments and discuss any drifts from the firm order.

Being in direct contact with the plant is a real plus but we need to go further in our organization.

The expected success should be confirmed by the end of the pilot phase.



BUFFER TREND- Evolución de % de CADs por cada Zona de Buffer

