



CLAAS Tractor : Industry 4.0, an answer to complexity

Pierre Grondin, Manufacturing Director

CLAAS – a family company



Dr. Helmut Claas, Président of the Shareholder Committee and Cathrina Claas-Müllhäuser, President of the supervisory board

- Founded by August Claas in 1913 (www.claas.com), the company is one of the world's leading manufacturers of agricultural engineering equipment
- World Top player in Ag-equipement (n°5)
- Turnover : 3,8 billion
- R&D costs/Sales : 5 %
- 11 500 employees
- 12 production sites in the world

CLAAS in France : 3500 employees (CLAAS France/Fresnes, CLAAS Tractor (4 sites), UCF (Woippy-Metz), GIMA Beauvais, CLAAS Réseau Agricole



CLAAS



Product range – premium brand, technology leader



Combines



Foragers



Tractors



Forage harvesting machines



Telehandlers



Balers



Aftersales & Parts



Development and integration
of software and systems



CLAAS Tractor SAS

- Development & Production - Tractors
- 1000 employees (730 in Le Mans) – 5 sites



Pré-development & Engineering CLAAS Tractor
CIT Paderborn



GIMA Transaxles
Development &
Production JV CLAAS /
AGCO - Beauvais

2003

- Lean Workshop



2008

- New cabs assembly line (5M€)



2010

- New paintshop (10 M€)



2012

- New test and validation center (3,5M€)



2013

- SKD



2014-2015

- New investment Trangé (6,5 M€)



4 posts and Driveline test benches



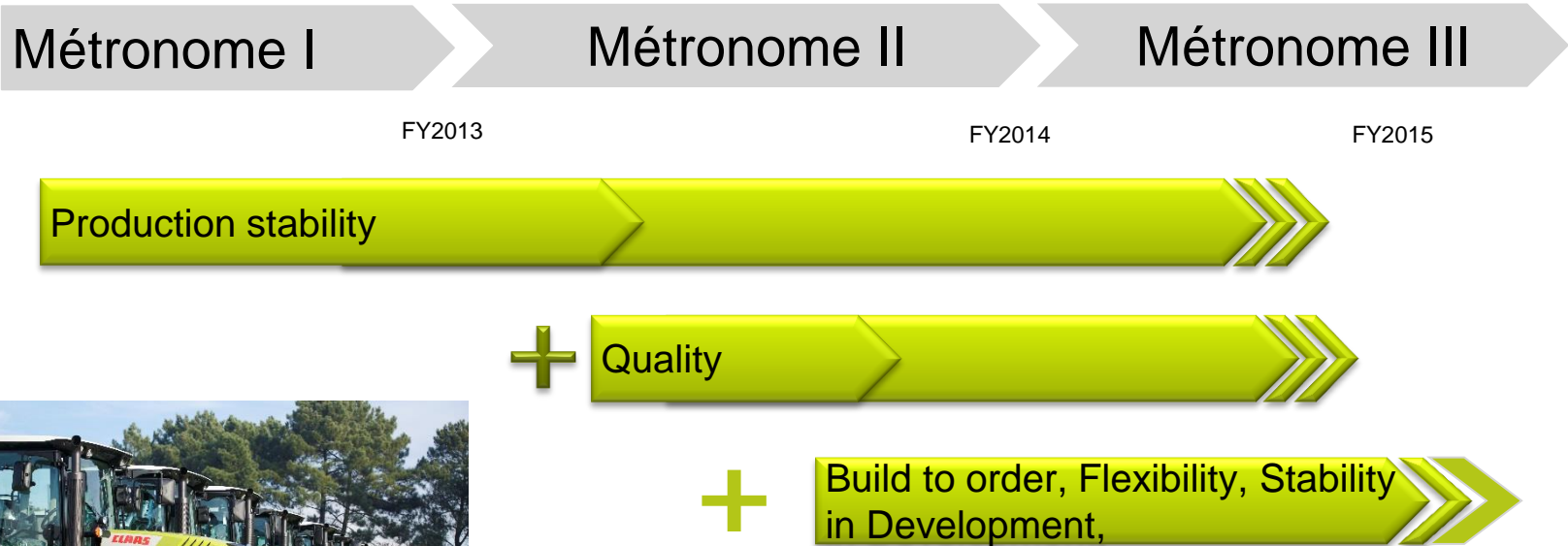
- Market gate (2 M€)





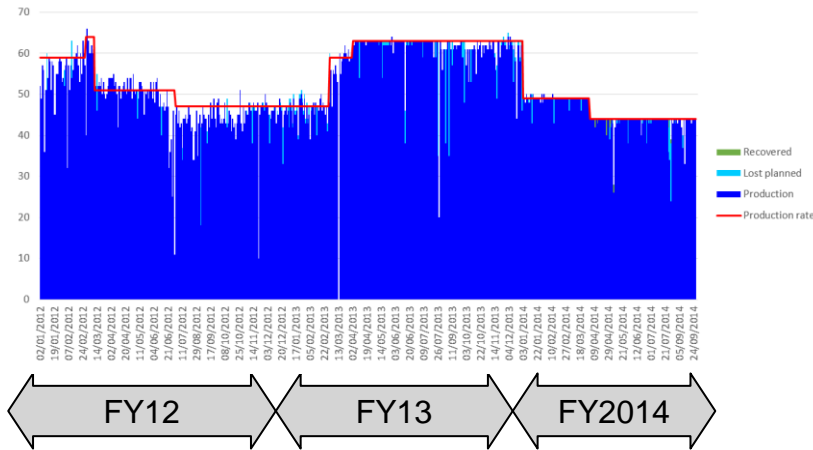
Digitalisation : an opportunity

Continuous improvement : Métronome, a 3 years programme



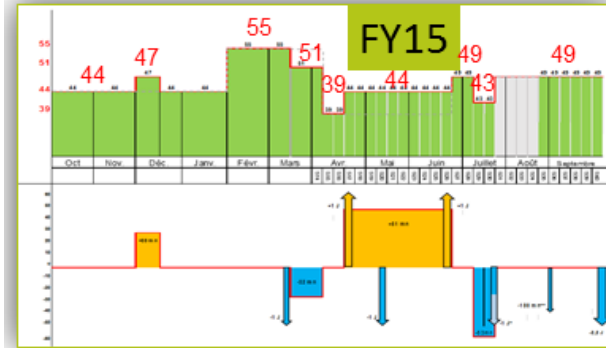
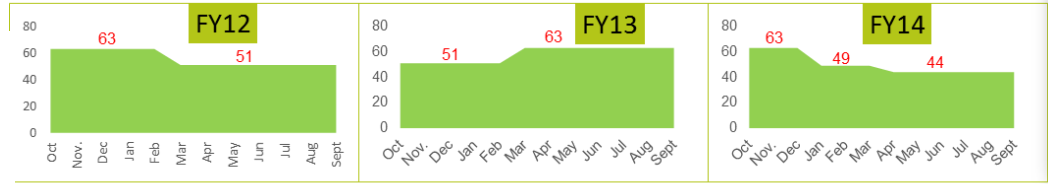
Continuous improvement : Métronome, a 3 years programme

■ Reliability



2015 : no loss

■ Flexibility of production plan



METRONOME 4.0 : 11 transversal axes in order to better perform in 7 areas of improvement



Transversal Axes

Areas of Improvement

	Agility	Empowerment	Right First Time	Trust	Digital	Customer orientation	Speed of execution
Processes improvement :	✓	✓	✓		✓	✓	✓
Transverses Management :	✓	✓		✓		✓	✓
Product conformity :			✓			✓	
V-Cycle :		✓	✓			✓	
Digital Manufacturing			✓		✓	✓	
Extended company :			✓		✓		✓
Complexity	✓				✓	✓	✓
Manufacturing	✓				✓		✓
Motivation & Attractiveness :	✓	✓	✓	✓	✓	✓	✓
Problem solving			✓		✓	✓	✓
Field RPM (Reliability Process Management) :			✓			✓	
	KPI	KPI	KPI	KPI	KPI	KPI	KPI

**Digital
Manufacturing**

**Manufacturing Change
Order**

Motivation, Attractivity

Digital will change our business and operations

Business

Configurator



Leasing

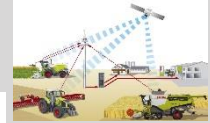
Portail 365FarmNet



Order To Delivery

Products

GPS



ICT



Telematics



Industry 4.0



Manufacturing Process

Organisation

CATIA

ENOVIA

DELMIA

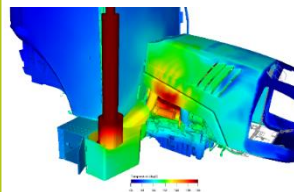


Digital already in the heart of our manufacturing process

Customer

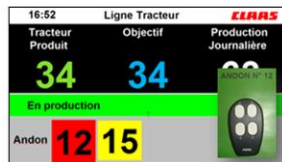
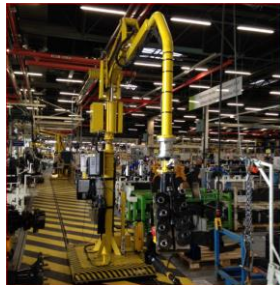


Design
Validation



Design

Electronic Screwdrivers
Andon



Manufacture

E-quality gate
E-Kanban



Control

Geolocalisation



Deliver

Dassault
Product/
Process

ERP SAP

Customer



CLAAS



Digital as a powerful tool for addressing growing complexity



110 models

2004 : NECTIS 200
2005 : ARES 500/600
2005 : ATLES 946 275 hp
2006 : AXION 800
2007 : ARION 500 / 600 / 600C
2007 : AXION CMATIC

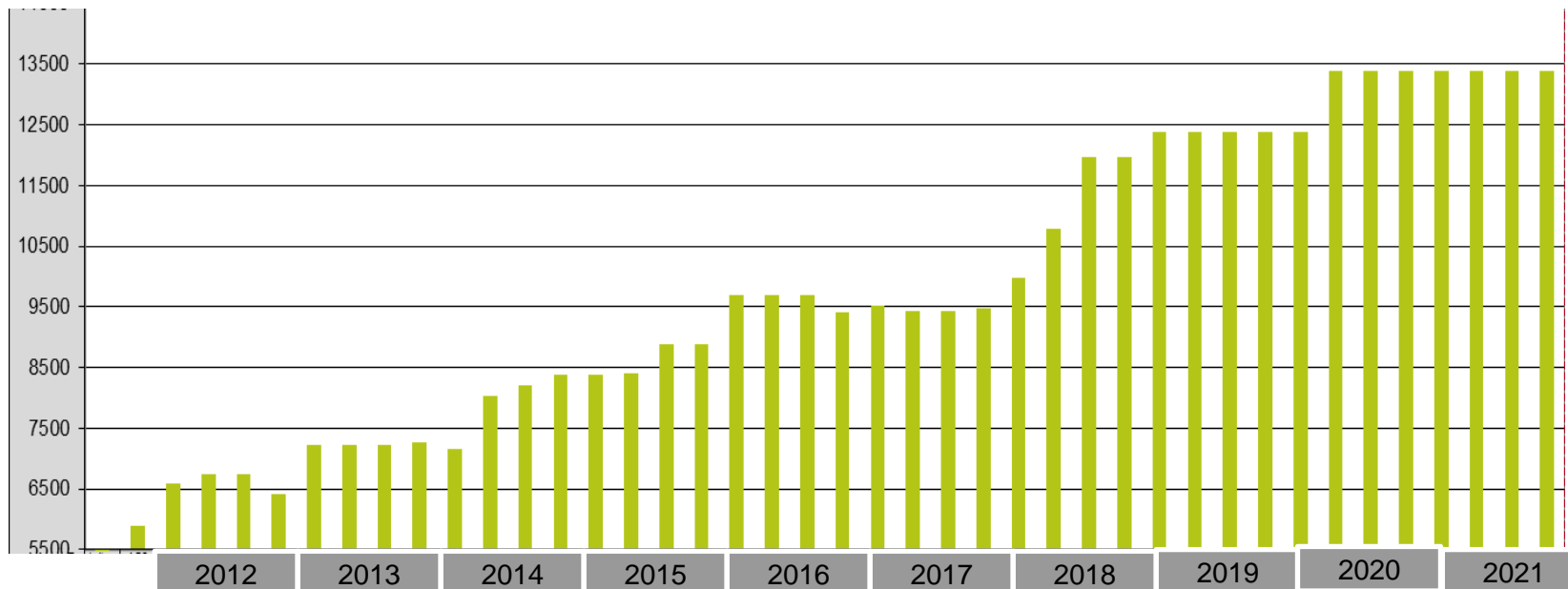
2008 : AXOS 300
2009 : ARION 400
2010 : NEXOS 200
2010 : ELIOS 200
2010 : TALOS 100 / 200
2011 : AXION 900 Stage 3 b

2012 : ARION 500 / 600 HS Stage 3b
2013 : AXION 800 Stage 4
2013 : ARION 500 / 600 CMATIC Stage 3b
2014 : ARION 400 Stage 4 – ELIOS 200 3b
2014 : ATOS 200/300
2015 : AXION 800 / 820 / 870

Digital as a powerful tool for adressing growing complexity

Mix Production + Internationalisation + increasing multiple standards = Complexity

- Number of parts to handle development



Digital as a powerful tool for addressing growing complexity

Mix Production + Internationalisation + increasing multiple standards = Complexity

- Higher cognitive workload through the addition of new products and an increasing number of features for one product

Tanks preparation

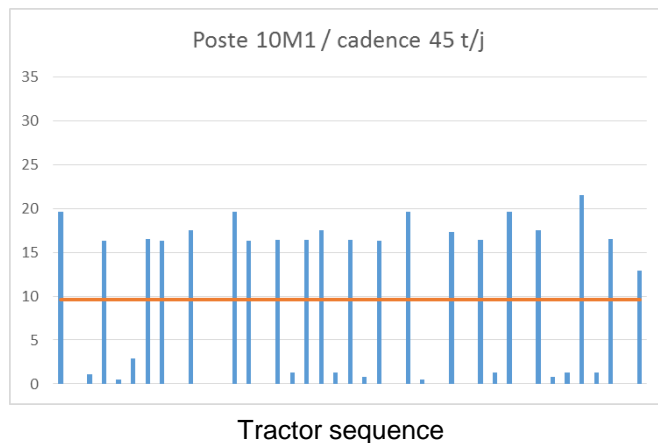
Former model AXOS 300 : 5'

ARION 400 : 40'

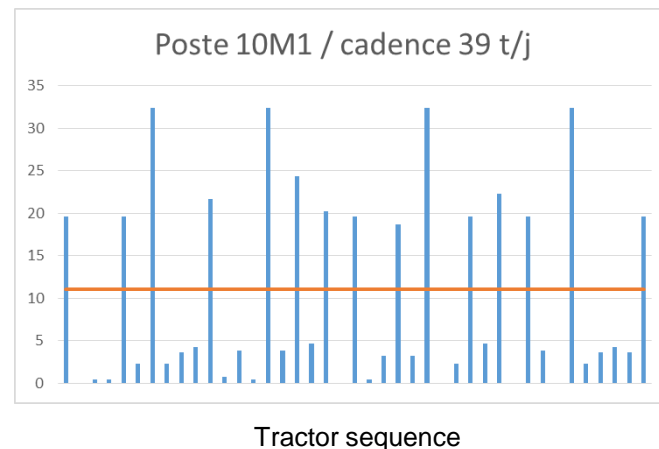
ARION 500/600 : 20'

AXION 900 : 60'

min



min



Digital as a powerful tool for addressing growing complexity

Challenge : an answer has to be found to the expected **cognitive workload** increase

- **Actual situation**



Screws



Brake flexible tubes



Pipes

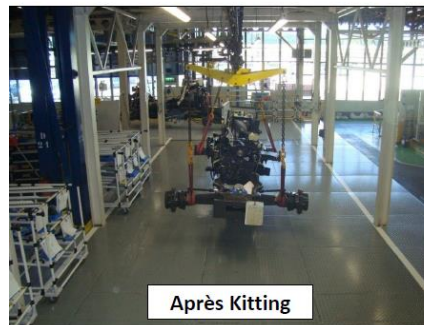
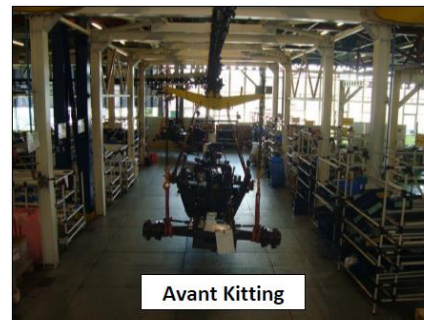
Digital as a powerful tool for addressing growing complexity

Challenge : an answer has to be found to the expected **cognitive workload** increase

■ Achievements



Kitting



Digital as a powerful tool for addressing growing complexity

■ Next step



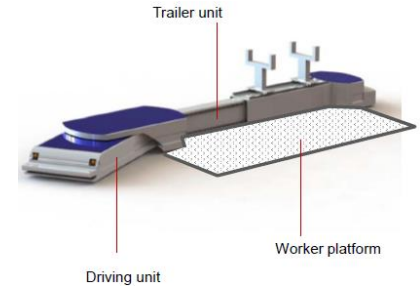
- Proof of concept (POC) at start of main assembly line

Key elements :

- AGV conveying system
(autoguided vehicles)

- Kitting / Balancing

- MES
(Manufacturing
Execution System)

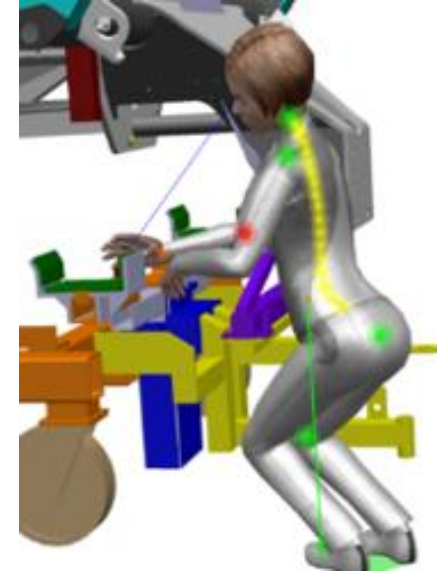


Pick by light



- **Next step :**

Proof of concept (POC) : simultaneous engineering (DELMIA)



DELMIA enables virtual optimization of work situation : anticipated risk assessment

Proof of concept (POC) : simultaneous engineering (DELMIA)

Today : main systems

Product Definition



Process Definition

Lots of tools

Execution informations

Paper



Modifications management

Procurement & logistic process



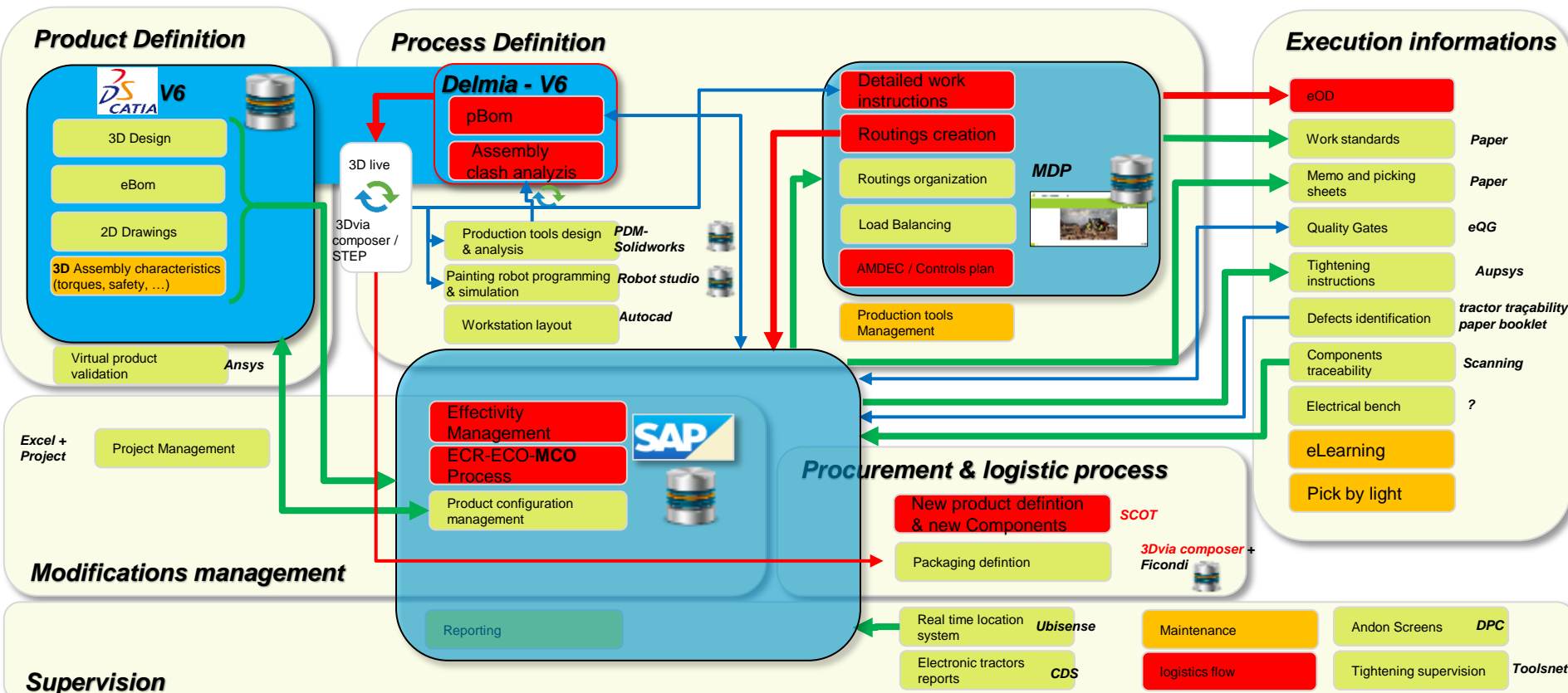
Supervision



Proof of concept (POC) : simultaneous engineering (DELMIA)

First steps in progress to FY2017

Project
POC / CDC
New flow



Our jobs will change !



CLAAS

