

FACTORY 4.0 APPROACH AT TKE NORTE

Juan Carlos Rosas



┌
OUR
UNDERSTANDING
OF “SMART FACTORY”

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DIGITAL PROCESS

DIGITAL PRODUCT

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OUR
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DIGITAL PROCESS

Puesto de trabajo
digital: modern
workplace

Diseño de producto:
herramientas PLM
y CAD

Manufacturing Execution
System

DIGITAL PRODUCT

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INSIGHT Monitoring
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Visual Safety

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Digital workplace

 Windows 10

 Office 365

Microsoft
PowerApps 

 Power BI

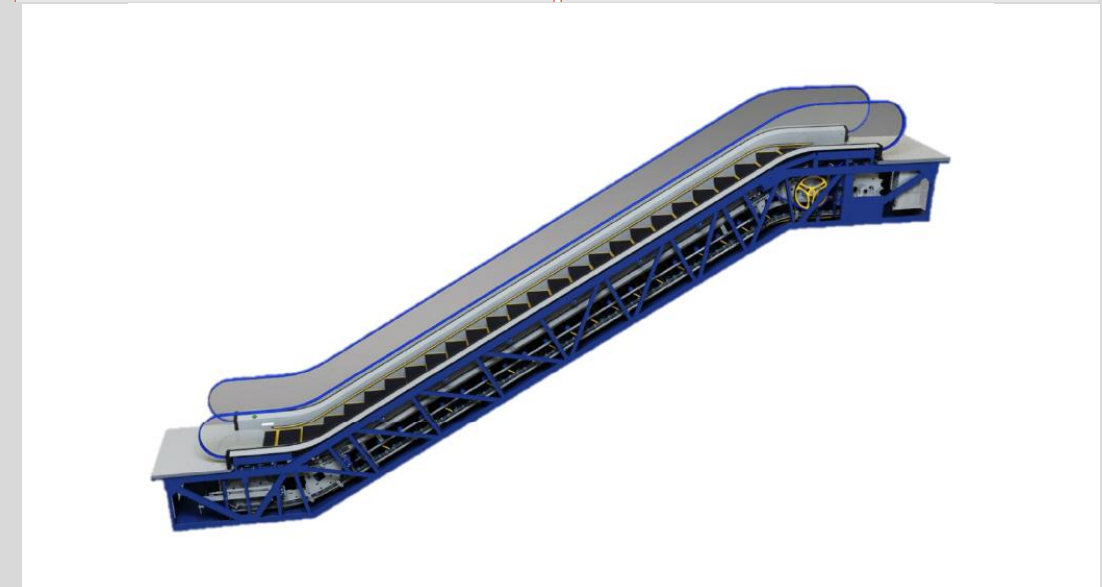
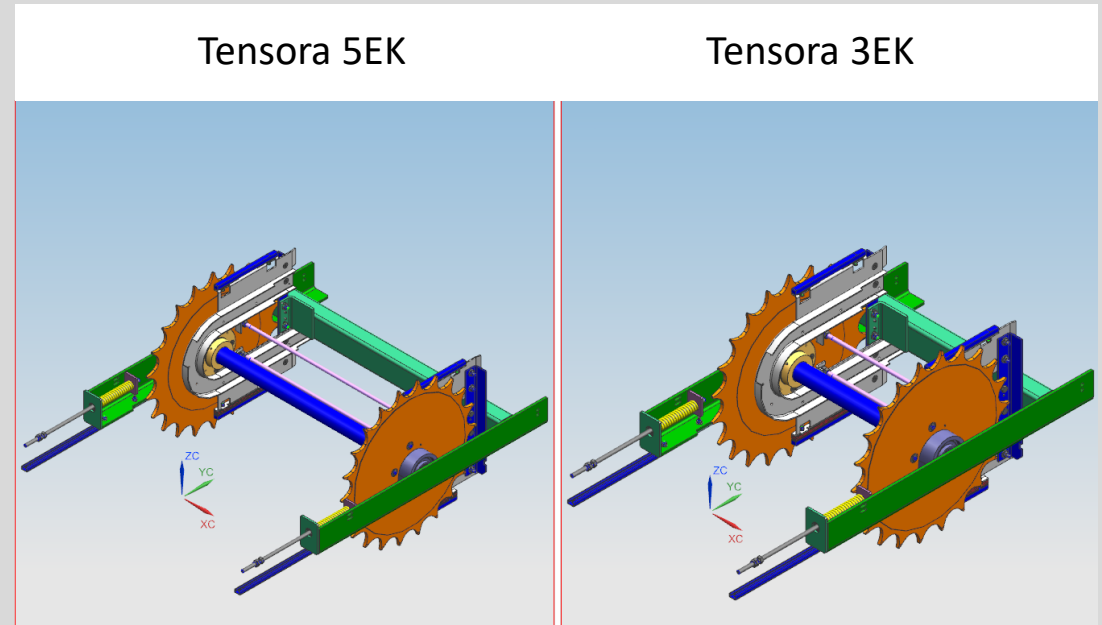
 OneDrive



DIGITAL PROCESS

Diseño de producto: herramientas PLM y CAD

- PLM/CAD, gestion completa de la documentación técnica del producto, incluyendo diseños 3D (BOM) conectados con la herramienta CAD
- CAD Parametrico 3D (Siemens NX), permite variaciones en el diseño en funcion de parametros (por ejemplo ancho 3EK, 4EK, 5EK)
- PLM (Siemens Teamcenter), gestiona con control de revisiones, las listas de materiales configurables segun parametros.
- Herramienta armonizada para todas las fabricas y centros de desarrollo de producto (SP, GE, CH)
- Servidores desplegados en la nube Azure (private Cloud)



DIGITAL PROCESS

Manufacturing Execution System

Before



All documents in paper

Printing Costs (Paper, consumables, etc)

Possibility of losses

Storing / Document scanning

Tremendous waste of time

Now



Paperless / Digital documents

Sustainable process

Loss prevention / Disaster proof

Space saving / Searchable / Easy to recover

One-click access to all information

DIGITAL PROCESS

Manufacturing Execution System

MOST COMMON PROBLEMS PER JOB WILL BE DRAMATICALLY REDUCED THANKS TO REAL-TIME CENTRALIZED INFORMATION SYSTEM.

Wrong handrail colour

Wrong truss paint colour

Wrong colour for step demarcation lines

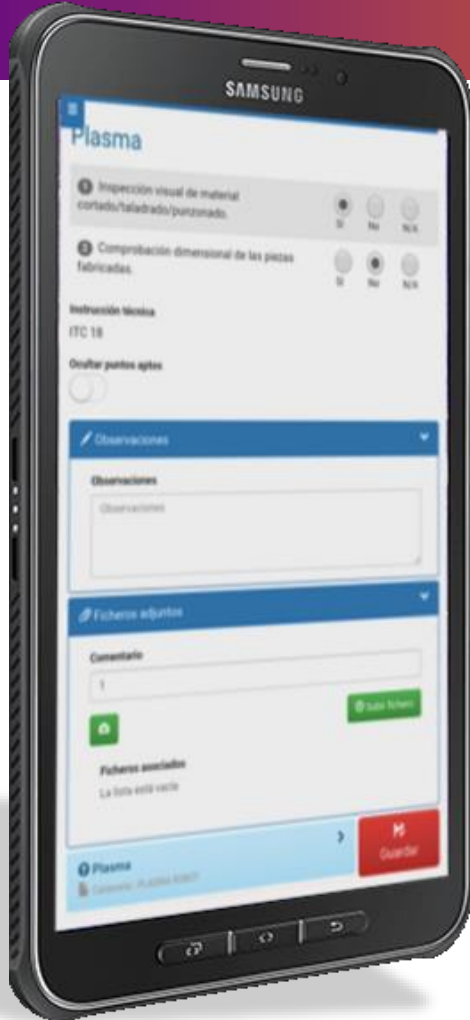
Wrong lighting option

Wrong step finishing

DIGITAL PROCESS

Manufacturing Execution System

Protocols and quality issues



Real-time customized quality protocols for every workstation and product

Guided step procedure

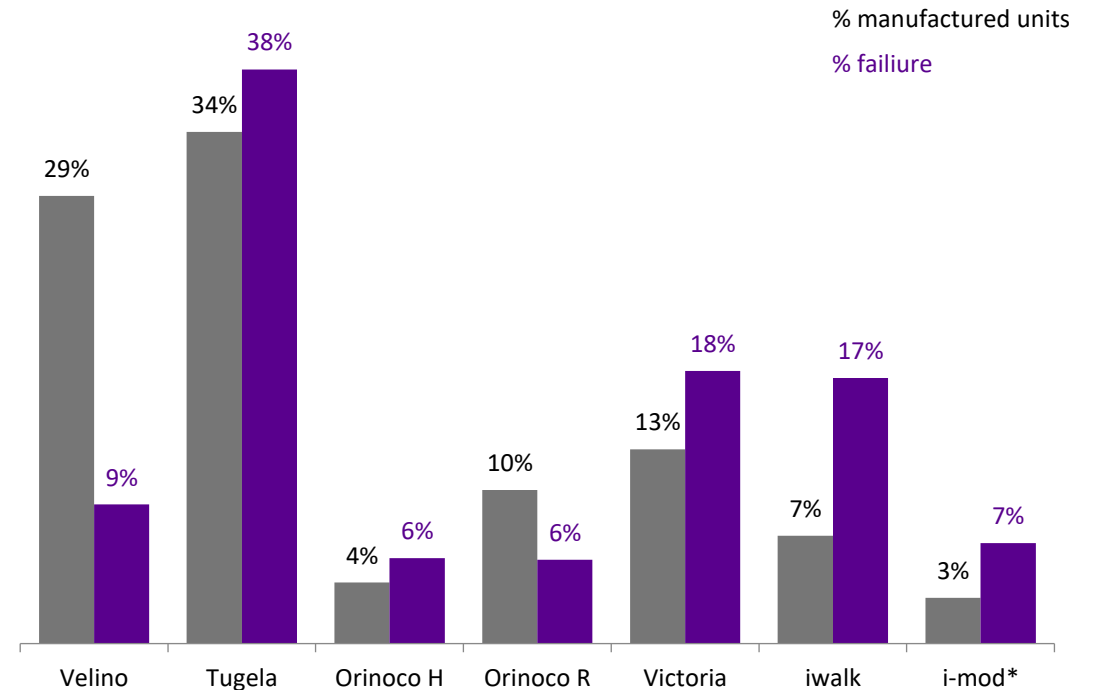
Add comments and photos/videos

Digitally signed protocols

Quality issues management

Business intelligence solution for online dashboards and quality protocols data analytics

Big Data Analytics Tools



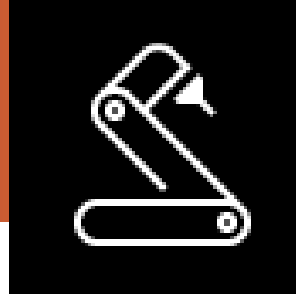
DIGITAL PROCESS

Manufacturing Execution System

Benefits of quality protocols digitalization



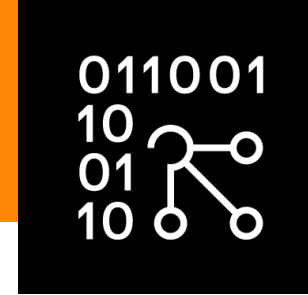
Paperless process



Increase productivity



Improve quality



Learning from data

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INSIGHT Monitoring System



MONITOR AND CONTROL YOUR UNITS

Real time monitoring, controlling and scheduling

Accesible from anywhere on all devices

Comprehensive live status update

Instant notification in case of malfunction or breakdown

Instant notification in case of malfunction or breakdown

Monitor statistic

DIGITAL PRODUCT

Visual Safety



OBJECTS / STATIC PEOPLE:

Detect people or objects on any embark, both entry or exit during a certain period of time. A specific algorithm has been developed for detecting and tracking people / objects. Analysis with images is used within the algorithm to detect non desired situations on entry and exit areas.

OUT OF LIMITS:

Detect people with any part of their body out of the safety area defined in the escalator or moving walk. An algorithm based on people natural pose has been used.

WRONG WAY:

Detect if people are moving in reverse direction to the escalator/moving walk moving direction. The detection is based on optical flow analysis and information about direction and speed of people can be managed.

SAME WAY:

Detect if people are moving in the same direction as the escalator/moving walk moving at a high speed pre-defined. The same analysis as wrong way case is used for managing these types of situations.

FALL DOWN:

Detect people that fall down in escalator or moving walk. Models based on people behavior are being used to develop the algorithm.

