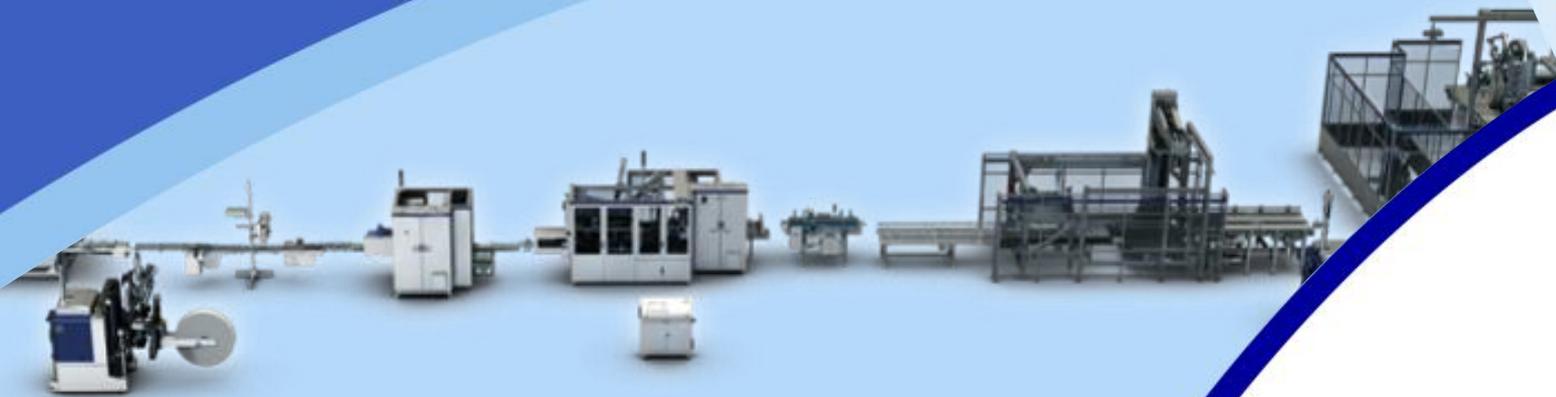


Tetra Pak

PackML from a machine and solution providers point of view





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□ **Filippo Serafini**
Development Engineer A

First Name: Filippo
Last Name: Serafini
Known As: Serafini Filippo
NT-account: ITSERAFINIF
Title: MR
Birthday:
Personnel Number: 90030455

Phone:
+39 059 898994

IP Phone:
3918994

Mobile Phone:

Fax:

Email:
Filippo.Serafini@tetrapak.com

Visiting address

Via Delfini, 1
41100 Modena

 [Show on map](#)

Country:
Italy

Site:
Modena

Building:
I0

Room:

Manager:
[Claudio Donati](#)

Assistant:

Contact Person:

Functional Area:
S&E Science & Engineering

Department:
[PROC Plant Automation & Information Solutions](#)
[Browse Organisation](#)

Company:
[Tetra Pak Packaging Solutions S.p.A.](#)



Tetra Pak Vision



- Home
- About Tetra Pak
- Products & Sales
- How We Work
- Collaborate
- Local Information
- About Me

- + About Tetra Pak
- Identity & Values
 - Our Brand
 - Vision & Mission**
 - Core Values
 - Visual Identity
- + Sustainability
- History
- + Excellence Awards

Vision & mission

We commit to making food safe and available, everywhere



Our vision

Our Vision, “*We commit to making food safe and available, everywhere*”, is the aspirational goal that drives our organisation. It shapes our role and purpose in the outside world. Internally, it gives us a shared, unifying ambition.

Our mission

We work for and with our customers to provide preferred processing and packaging solutions for food.

We apply our commitment to innovation, our understanding of consumer needs and our relationships with suppliers to deliver these solutions, wherever and whenever food is consumed.

We believe in responsible industry leadership, creating profitable growth in harmony with environmental sustainability and good corporate citizenship.

Global - English





Tetra Pak in summary, January 2016

- ▶ Employees: **23,600**
- ▶ Net sales billion €: **11,9**
- ▶ Countries where Tetra Pak[®] packages are available: **>170**
- ▶ Packaging material and closure plants: **37**
- ▶ Filling machine assembly plants: **5**
- ▶ R&D units: **6**
- ▶ Technical training centers: **11**





Reliable carton packaging machines

8,850 carton packaging machines in commercial operation in January 2016





Tetra Pak Group, January 2016

Machines in operation



74,450
processing
units

8,850
packaging
machines

19,570
distribution
machines



Line Deployment Needs

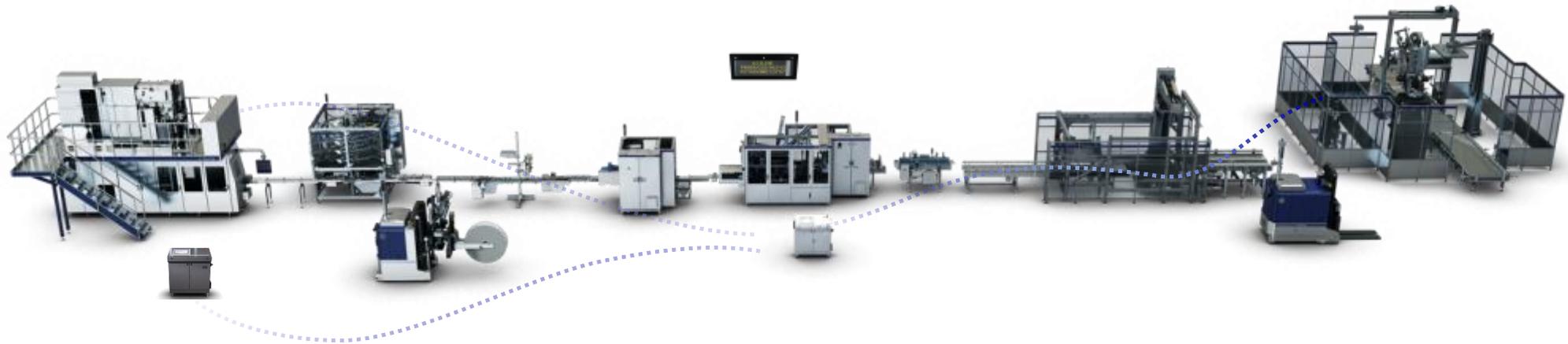
- ▶ **Reduce the deployment effort:** the overall time spent to install, start-up and fine tune the line is really huge and usually requires skilled personnel. The aim is to reduce the installation to performance time.
- ▶ **Minimize the engineering tasks:** when a line is installed and configured some engineering activities has to be performed to make machines working properly together. Typically system specialist are used for such tasks. Simplify and automates those tasks is a must.
- ▶ **Manage the complexity:** the line layout can be very different based on customer needs or building constrains. The objective is to be able to manage all the possible layouts avoiding to develop customized solutions all the time



Line and Plant integration



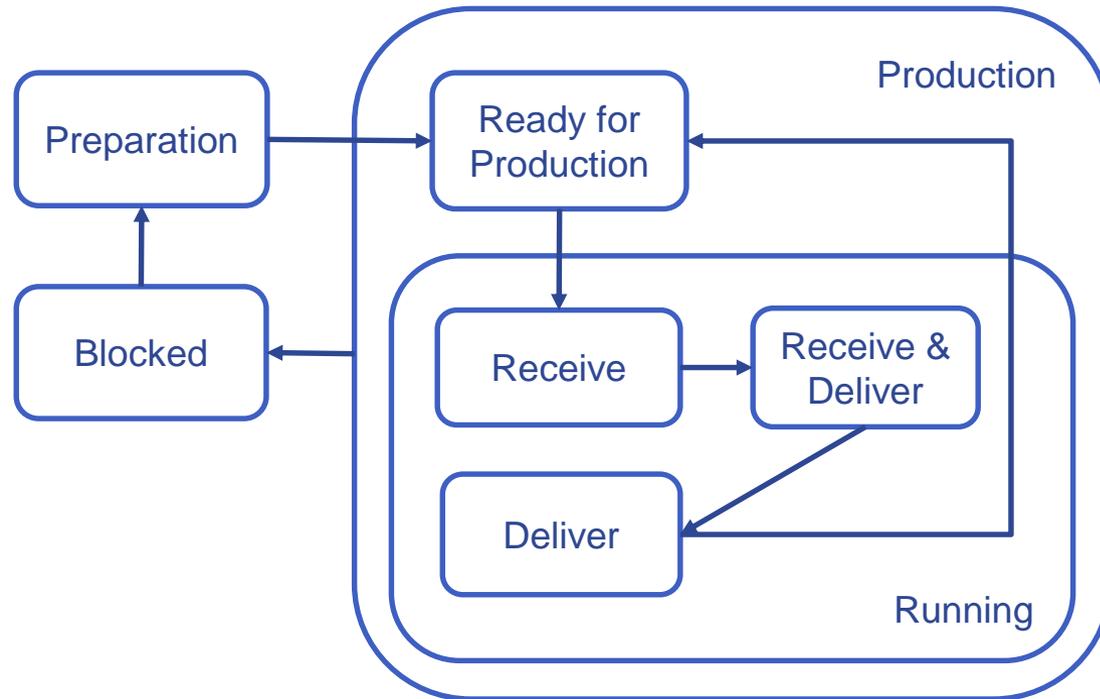
- ▶ The functionality of the entire packaging line is centralised within Line Controller and plant system can access to line information directly from the Line Controller





Line Interface

Line State Machine

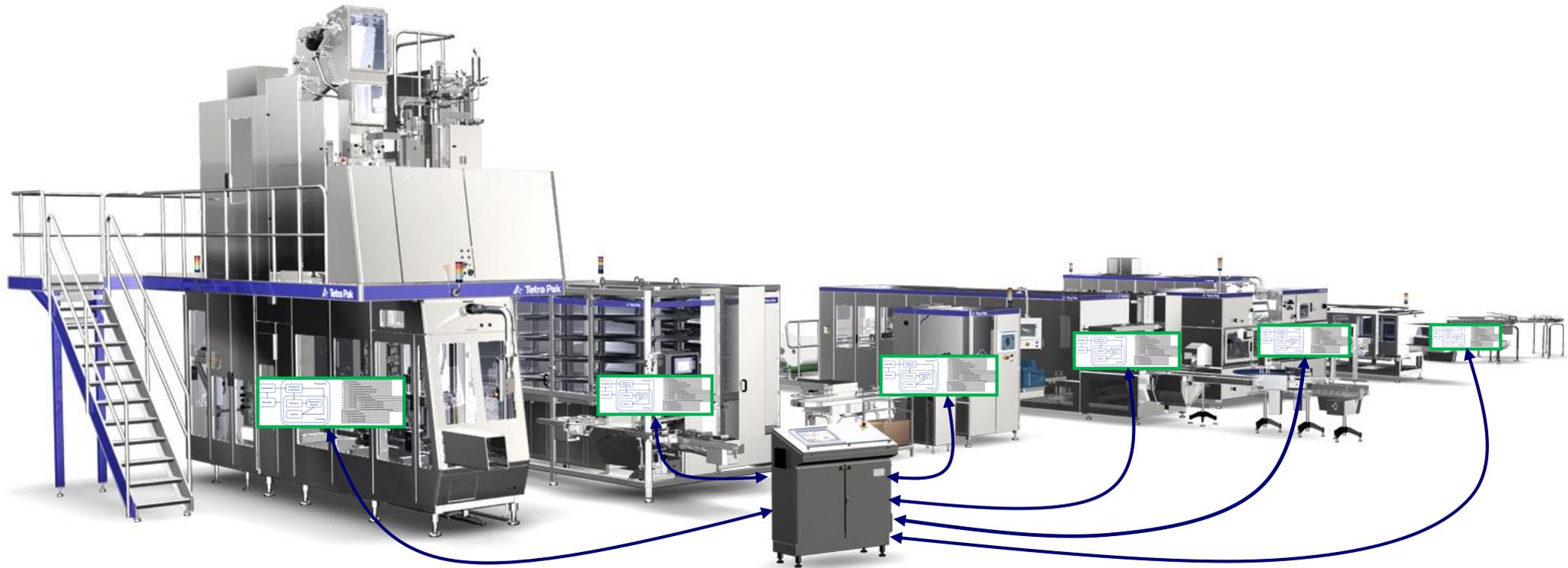


Line Tags

- MC_ModuleState
- MC_ModuleState[0]
+ MC_ModuleState[0].MachineStates
+ MC_ModuleState[0].OutFeedActualCapacity
+ MC_ModuleState[0].InFeedActualCapacity
+ MC_ModuleState[0].BufferLevel
+ MC_ModuleDescriptor
+ MC_ModuleDescriptor[0]
+ MC_ModuleDescriptor[0].DeEquipNr
+ MC_ModuleDescriptor[0].ModName
+ MC_ModuleDescriptor[0].NickName
+ MC_ModuleDescriptor[0].NumberOfModuleInEquip
- DELC_ModuleCommand
- DELC_ModuleCommand[0]
- DELC_ModuleCommand[0].0
- DELC_ModuleCommand[0].1
- DELC_ModuleCommand[0].2



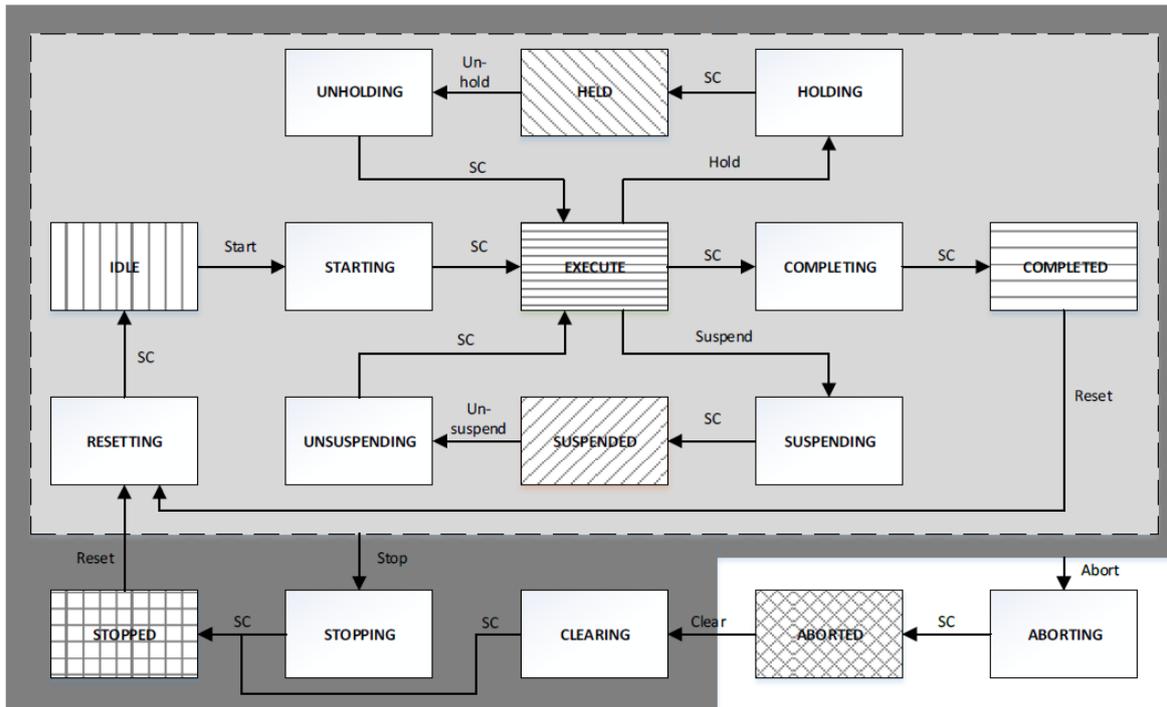
Tetra Pak iLine[®]





From TP Line Interface to PackML

PackML State Machine



Pack Tags

PackTag type	PackTag	Example of End user term	Datatype	TR 88.00.02 Minimum tags	End user Minimum tags
Status	StateCurrent	State	INT(32)	X	X
Status	UnitModeCurrent	Mode	INT(32)	X	X
Status	MachSpeed	Nominal Speed	REAL	X	X
Status	CurMachSpeed	Current Speed	REAL	X	X
Status	EquipmentInterlock.Blocked	Blockage	BIT	X	X
Status	EquipmentInterlock.Starved	Starvation	BIT	X	X
Status	Parameter[#]	Machine data/parameter	Array Structure		X
Status	Parameter[#].ID	Parameter ID	INT(32)		X
Status	Parameter[#].Name	Name of parameter	STRING		X
Status	Parameter[#].Unit	Unit of measure	STRING[5]		X
Status	Parameter[#].Value	Value of parameter	User Defined		X
Status	RemoteInterface.Parameter[#]	Additional production data	Structure		X
Status	RemoteInterface.Parameter[#].ID	Parameter ID	INT(32)		X
Status	RemoteInterface.Parameter[#].Name	Name of parameter	STRING		X
Status	RemoteInterface.Parameter[#].Unit	Unit of measure	STRING[5]		X
Status	RemoteInterface.Parameter[#].Value	Value of parameter	REAL		X
Admin	Warning[#]	Warning	Array Structure		X
Admin	Warning[#].Trigger	Trigger	Bool		X
Admin	Warning[#].ID	ID	Int (32bit)		X
Admin	Warning[#].Value	Value	Int (32bit)		X
Admin	ProdDefectiveCount	OEE.Bad count	INT(32)	X	X
Admin	ProdProcessedCount	OEE.Total count	INT(32)	X	X
Admin	StopReason.ID	Event and stop reason	INT(32)	X	X
Admin	StopReason.Value	Detailed Error Information	INT(32)		X

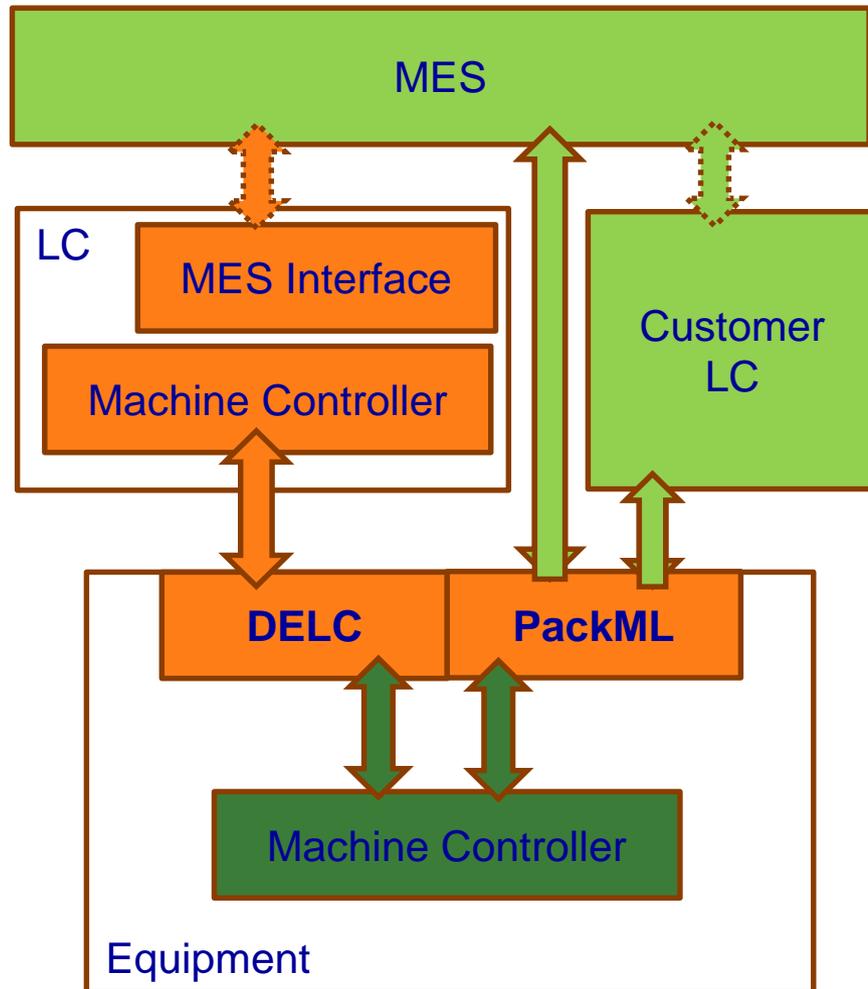


Challenges

- ▶ Use generic tags for specific purposes makes the standard not anymore standard
- ▶ We weren't able to control the line with the same accuracy as with our interface
- ▶ PackTags not cover use cases where one controller is hosting several equipments
- ▶ The openness of the specification, such as the possibility to define modes and states, is in contrast with Tetra Pak needs to have standardized equipments



Next Steps



- ▶ Install base machines have a Line Controller Interface and we need to maintain for line automation
- ▶ Pack ML interface can be added to equipments to get data from each machine (read only)
- ▶ PackML can be used to control equipment excluding the LC interface
- ▶ PackML routine could be customize/configured for eventually satisfy different customer request