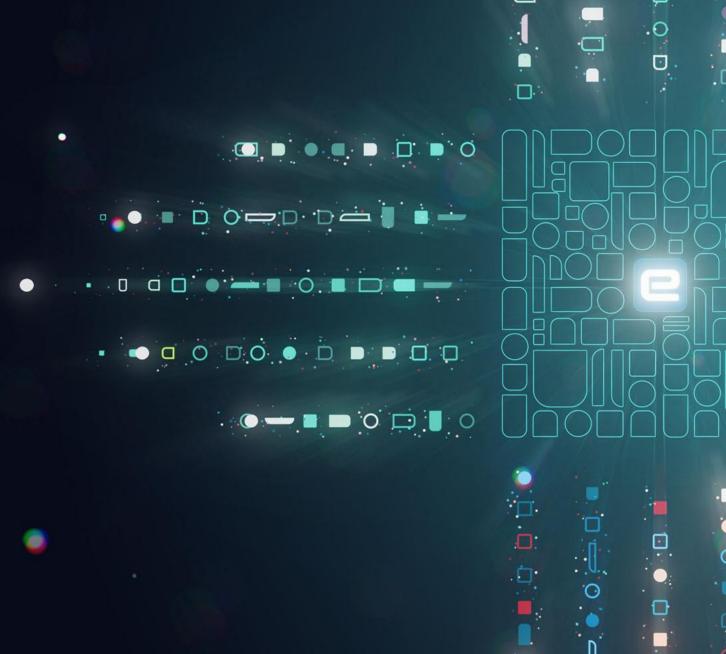


Production Activity Summary & HMI Integration

Deepak Babu

Phone: 262.352.3591

May 2024



Agenda



Business Context	01
The Challenge	02
The Solution	03

Technical Solution

- Architecture
- PLC/HMI Configuration
- ERP Configuration
- Bridge Application
- Results

Business Context

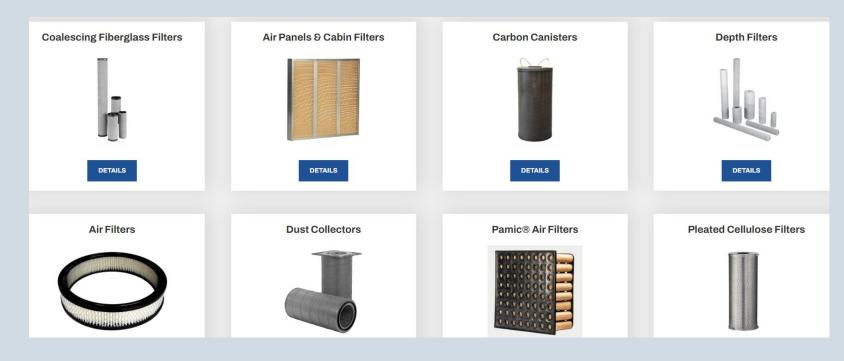


The Company..

- Founded in 1980
- Waukesha, Wisconsin



Products







Real-Time Feedback



Diagnostic Analytics

Environment & Considerations



Manual data collection is inefficient and expensive

Epicor ERP and MES already deployed

Market conditions demand higher volume

HeatPress step is a known constraint

The Solution





Automate Data Entry



Use an HMI for Factory Floor Display

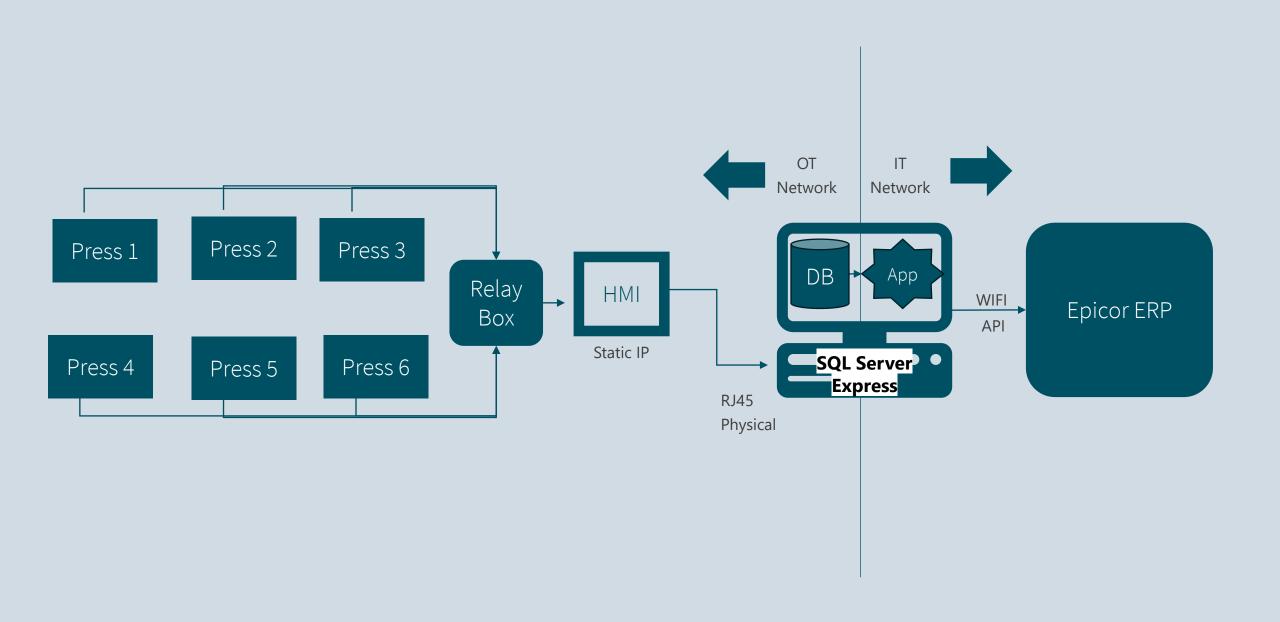


Leverage Epicor ERP Core capability

Technical Solution

Technical Architecture

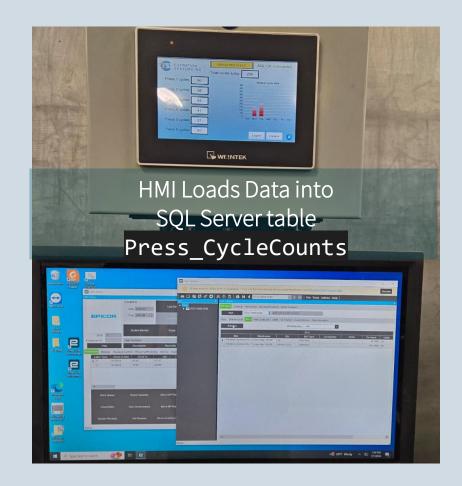




PLC/HMI



```
VAR GLOBAL
                               GVL.Station5Cycle
                                                                   ADD
//IO Map variables
                                        -\|\mathbf{n}\|
                                                                        ENO
   // SLOT 1 INPUT 0
                                                                             - GVL.Station5CycleCount
   input0:BOOL;
                              GVL.Station5CycleCount -
   // SLOT 1 INPUT 1
   input1:BOOL;
   // SLOT 1 INPUT 2
   input2:BOOL;
   // SLOT 1 INPUT 3
                               GVL.Station6Cycle
   input3:BOOL;
                                                                  ADD
   // SLOT 1 INPUT 4
                                        -||N||-
   input4:BOOL;
                                                                             - GVL.Station6CycleCount
   // SLOT 1 INPUT 5
   input5:BOOL;
                              GVL.Station6CycleCount -
   // SLOT 1 INPUT 6
   input6:BOOL;
   // SLOT 1 INPUT 7
   input7:BOOL;
                                                                        ADD
   // SLOT 1 OUTPUT 0
                                                                              ENO
   out0:BOOL:
                                    GVL.Station1CycleCount -
                                                                                   -GVL.TotalCycleCount
   // SLOT 1 OUTPUT 1
   outl:BOOL:
                                    GVL.Station2CycleCount -
   // SLOT 1 OUTPUT 2
   out2:BOOL;
                                    GVL.Station3CycleCount -
   // SLOT 1 OUTPUT 3
                                    GVL.Station4CycleCount -
   out3:BOOL:
                                    GVL.Station5CycleCount -
   // SLOT 1 OUTPUT 4
   out4:BOOL;
                                    GVL.Station6CycleCount -
   // SLOT 1 OUTPUT 5
   011±5 • BOOL •
```



Technical Details

ERP Configuration





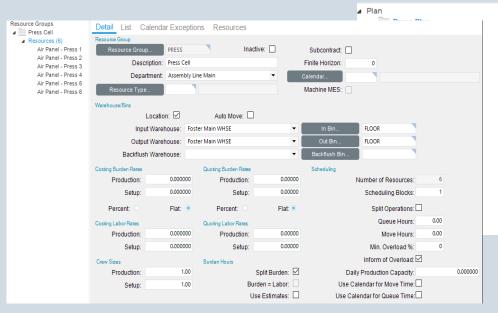
Define Your Resource Groups



Define Your Plan



Define Your Production Activity



Detail List Plan Det	tail
ID	PP
Description:	Press Plan
Resource Group	Press Cell
Resource	
Week ID	1
Week Description:	Production Activity
Labor Hours:	2.00
Burden Hours:	0.00
Indirect Hours:	0.00
Rework Hours:	0.00

	Production Activity Day Maintenance									
			Detail List Day Detail							
			I'''			D1				
			5							
				Desc	ription:	Day1				
					Type:	Shift		-		
						,	, File	Edit	Tools	Acti
	vity We	ek Main	tenance							
Cour.		1								
Desci	ription:	Product	ion Activity							
Sunda	у	D1			Day1					
Monda	ıy	D1			Day1					
Tuesda	ıy	D1		_	Day1					
Wednes	day	D1			Day1					
Thursd	ay	D1			Day1					
Erida	,	D1		-	David					

Bridge Application



Query SQL Express Publish to Epicor using API

```
//ProdActivities

data = {
    "Company": COMPANY,
    "PAPlanID": "PP",
    "Description":f"{dateNow[:10]}-{pa['ResourceID']}",
    "ResourceGrpID": "press",
    "ResourceID" : pa["ResourceID"],
    "ActivityDate": ActivityDate
}
sendERP("Erp.Bo.ProdActivitySvc/ProdActivities",
data)
```

```
//PActDtls

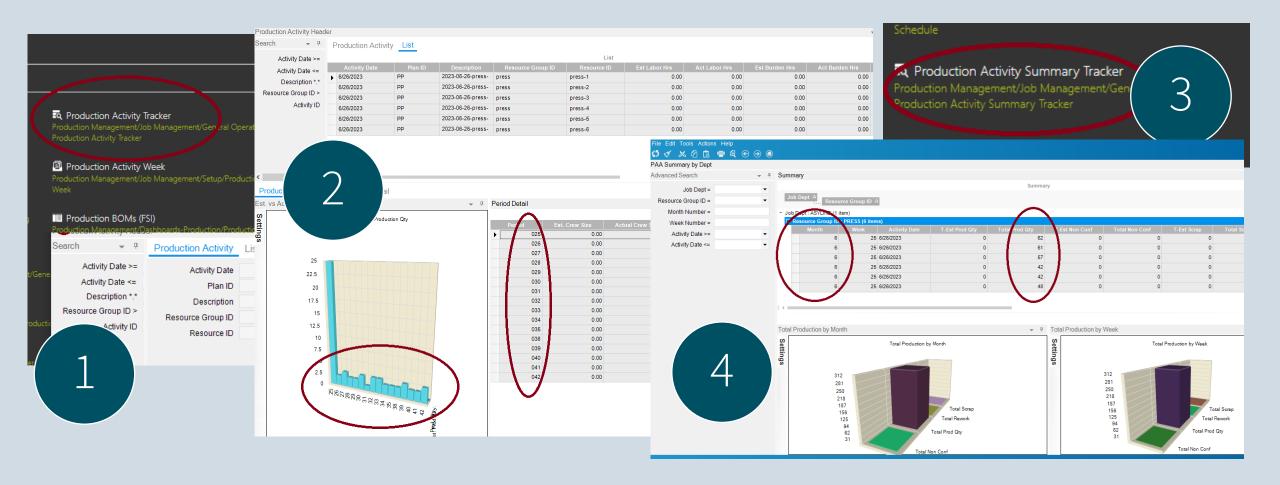
data = {
    "Company": COMPANY,
    "ActID": ActID,
    "PAPeriod": dtlItm["PAPeriod"],
    "ActProdQty": dtlItm["ActProdQty"],
    "EndTime": EndTime
}
sendERP("Erp.Bo.ProdActivitySvc/PActDtls",
data)
```

Results



Production Activity Tracker

Production Activity
Summary Tracker





1

PLCs & HMIs can be connected with ERP using a bit of Technical Expertise

2

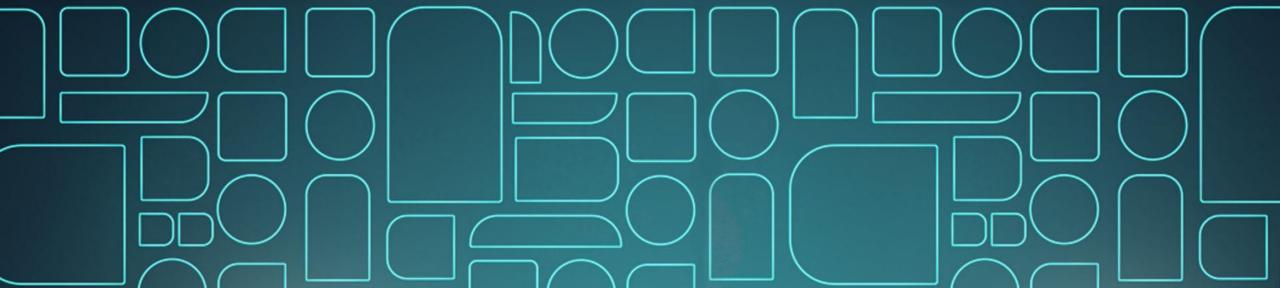
Epicor ERP already
has advanced
capabilities to
record and manage
production activities

3

Start the project with a Business Problem.. Not a Technical Solution

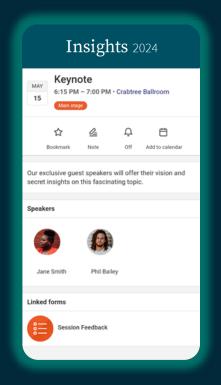


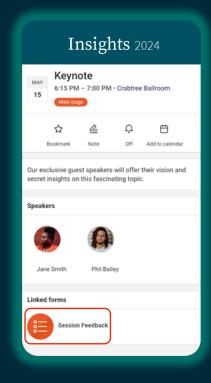
Questions?

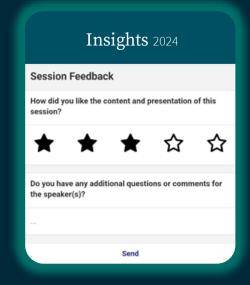


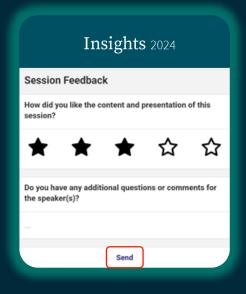
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