



Nothing but **HEAVY DUTY.**

Global Andon Board Overview





Milwaukee Vietnam

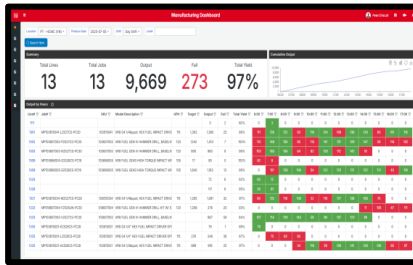
2025



Andon board

Project charter

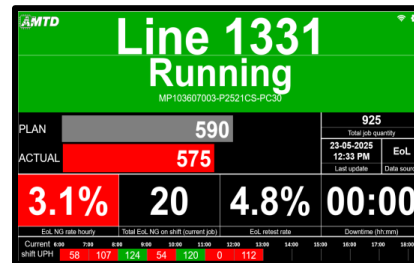
Problem		Scope		Key date	
Production output relies on highly manual tracking: <ul style="list-style-type: none">• Time-consuming and human error.• Difficulty in real-time monitoring.• Delayed corrective actions.• A manual approach limits transparency.		In Scope: <ul style="list-style-type: none">• Built in SHPT (F5 and F3)• Real-Time Production Data Display• Hourly Performance Monitoring• Downtime and Waste Time Tracking• User training and explaining	Out of Scope: <ul style="list-style-type: none">• Production planning and scheduling transparency• Workforce coordination• Immediate response execution	<ul style="list-style-type: none">• 31/Oct/2024: Complete prototype in F3• Feb/2025: apply for all rotor, stator, and battery lines• Jun/2025: Scale up for all connected lines.• Dec/2025: Complete for 42 lines in Console	
Value Proposition			Project objective		Metrics
<ul style="list-style-type: none">• Real-Time Visibility: Provides accurate, up-to-date production data for immediate insights.• For PRD,PM, QC: Improve issues awareness, enables proactive responses, reducing downtime and keeping production on track.• For manager: Data reliability, automates data collection, ensuring accuracy and consistency for trustworthy production tracking.			Build an ANDON board for production to visualize output and status of each line. <ul style="list-style-type: none">• Increase Line Visibility: Provide quick access to the status of production lines and the shop floor.• Promote Data-Driven Decisions: Enable informed, timely decisions with real-time production data.• Support QA control NG rate real-time actual: Continuously track defect rates and quality metrics to enable early issue detection.		<u>Baseline Metrics:</u> <ul style="list-style-type: none">• Manually update production progress.• Manually updated UPH• Manually change line status.• EoL NG rate NOT visualized.
					<u>Target Metrics:</u> <ul style="list-style-type: none">• Automatically update production progress: 100% lines• Automatically updated UPH: 100% lines• Automatically change line status: 100% lines• EOL NG rate visualized: 70% lines
Risk of Doing Nothing					
Without visibility into line status, quality, and production progress, line leaders will: <ul style="list-style-type: none">• Wasting time on report manual and missing early signs of risk.• Lack of data-driven insights leads to slower response issues.• Increasing operational costs.					
 Executive sponsor BH, HK, Hiep N	 Business owner Linh H	 Project leader Michael P	 Project partner QC, PRD, PM, AUT		



Global Operations Dashboard
(Global → Site Level)



Trace Forward
(Site → Line Level)



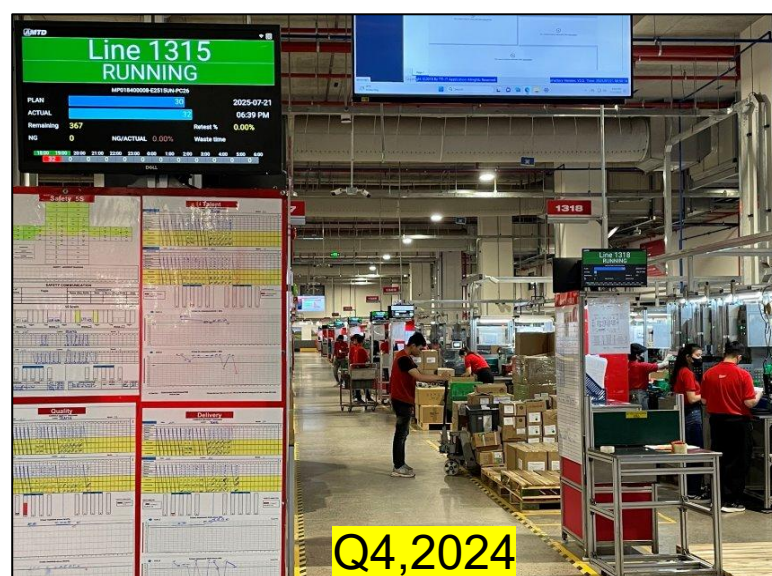
Factory Visual Management
(Line Level)

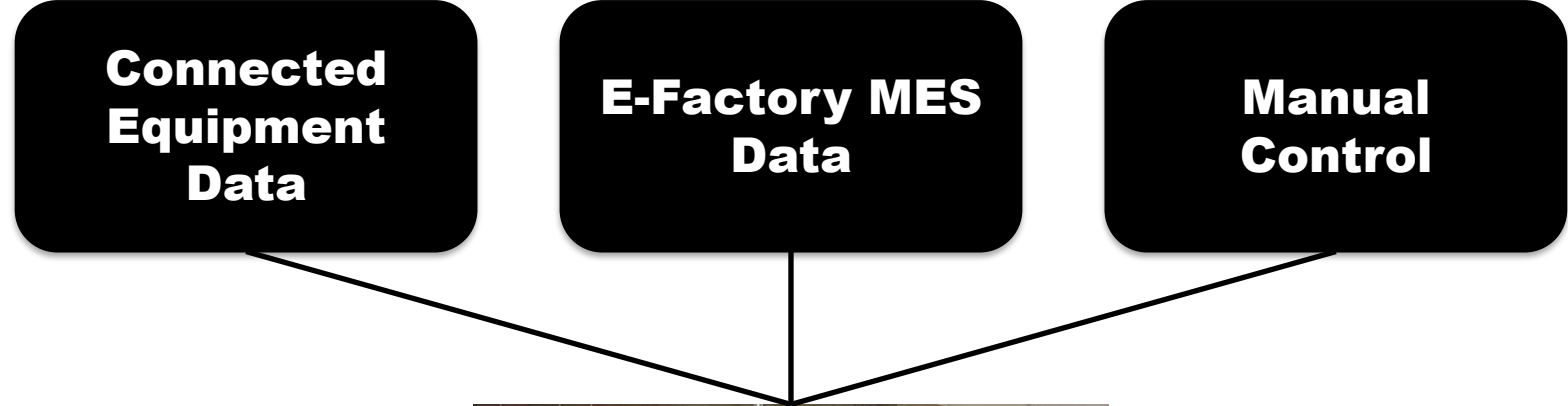
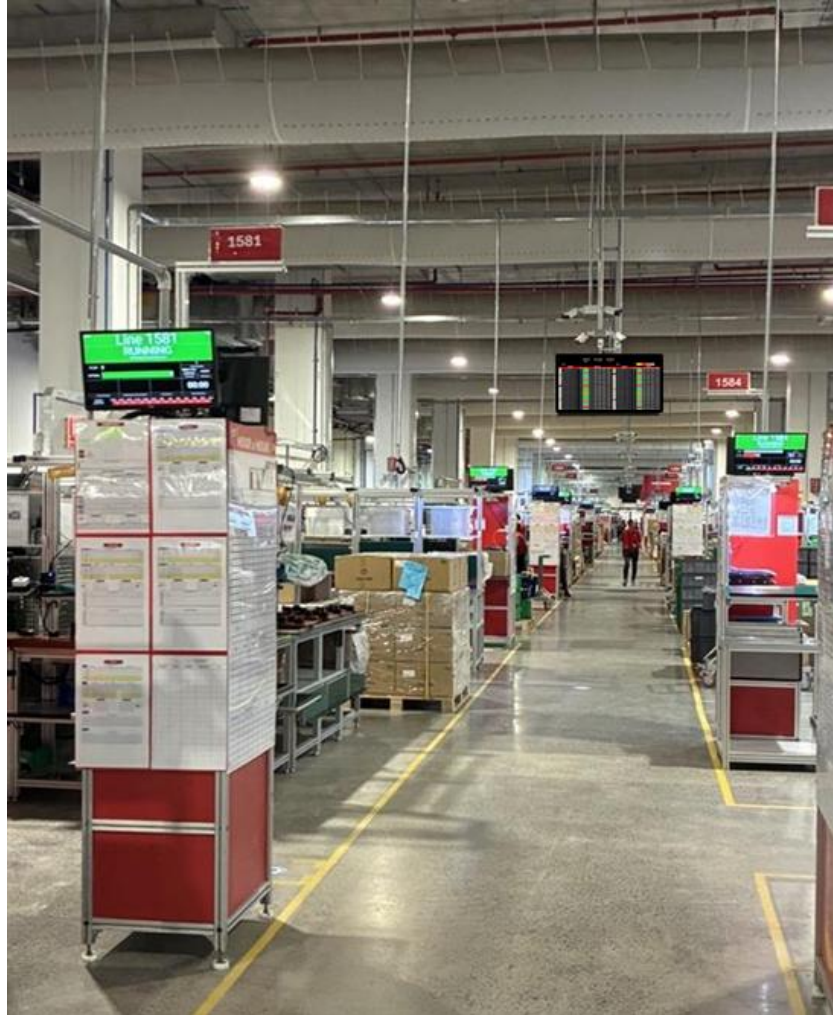


Battery & Tool Traceability
(Component Level)



Connected Hydraulics Platform
(Product Category Level)





Combines Multiple Data Sources For True Line Status



Global Site Tiers

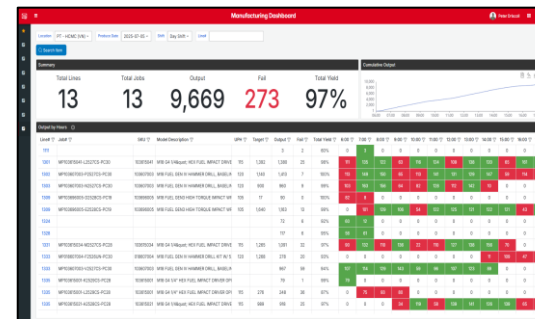
AMTD Tools Build For the Sites

Global

Monthly Site Trend Results Operations Scorecard													
Year	2024											2025	YTD
Category	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	
Sales & Volume													
Standard Cost of Production													
Actual	\$118,915	\$175,476	\$148,011	\$164,777	\$155,066	\$176,019	\$163,361	\$143,609	\$155,965	\$177,814	\$150,125	\$1,775,486	
Budget	\$118,915	\$142,418	\$118,758	\$127,114	\$151,095	\$168,840	\$179,749	\$150,587	\$128,719	\$149,629	\$124,965	\$1,553,919	
Prior Year	\$116,811	\$142,418	\$118,758	\$127,114	\$151,095	\$168,840	\$179,749	\$150,587	\$128,719	\$149,629	\$124,965	\$1,553,919	
Units Produced													
Actual	2,407	3,700	3,625	3,396	3,240	3,602	3,431	2,718	3,594	3,842	4,358	36,466	
Budget	2,108	2,519	2,517	2,247	3,029	2,913	3,316	2,449	3,159	2,627	2,263	28,147	
Prior Year	2,108	2,519	2,517	2,247	3,029	2,913	3,316	2,449	3,159	2,627	2,263	28,147	
Turned	2,380	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	36,466	
Turned Hours													
Actual	106	130	100	90	80	110	110	80	90	110	130	1,060	
Budget	873	844	370	166	875	367	1,059	875	779	889	724	9,179	
Prior Year	873	859	710	160	885	875	1,059	875	697	789	824	9,889	
Quality	873	7,810	847	848	719	852	823	697	687	789	824	8,629	
Incoming Quality (PPM)													
Actual	206	108	60	216	862	215	267	274	280	327	193	5,264	
Budget	200	200	98	173	128	215	250	67	348	237	405	204	
Prior Year	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
PPM (PPM)													
Actual	28	50	41	29	33	129	1,512	1,318	48	25	10	340	
Budget	200	200	200	200	200	200	200	200	200	200	200	200	
Prior Year	200	200	200	200	200	200	200	200	200	200	200	200	
PPM (PPM)													
Actual	10	48	37	20	62	15	11	4	20	6	107	60	
Budget	10	48	37	20	62	15	11	4	20	6	107	60	
Prior Year	10	48	37	20	62	15	11	4	20	6	107	60	

Digital Scorecard

Tier 3 – Site Level



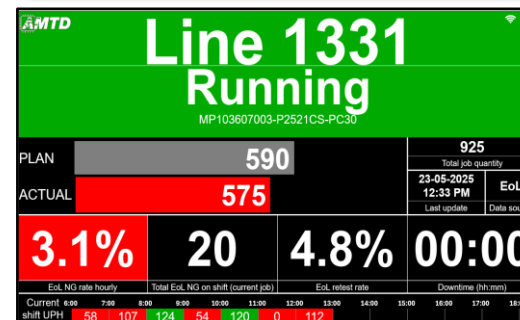
AMTD Dashboard - Site

Tier 2 – Area Level

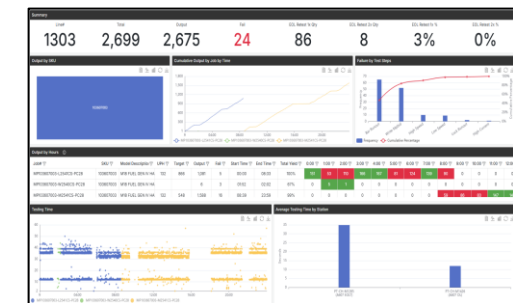
Andon Summary																											
Total Lines				Line Number				Downstream																			
67				57				33 : 40																			
Phase 1														Phase 2													
Information		Status		Production		Downtime		Information		Status		Production		Downtime													
Line	Job No	Model	Running	Uptime	Target	Actual	Downtime	Line	Job No	Model	Running	Uptime	Target	Actual	Downtime												
1301	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1311	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1302	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1312	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1303	MP10360700-A242C5-PC17	A617	No Plan	1300	0	0	0.0	1313	MP10360700-A242C5-PC17	A617	No Plan	1300	0	0	0.0												
1304	MP10360700-A242C5-PC17	A617	No Plan	1300	0	0	0.0	1314	MP10360700-A242C5-PC17	A617	No Plan	1300	0	0	0.0												
1305	MP10360700-A243C5-PC23	A615	Running	1300	1072	1075	0.0	1315	MP10360700-A243C5-PC23	A615	Running	1300	1072	1075	0.0												
1306	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1316	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1307	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1317	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1308	MP10360700-A243C5-PC23	A716	No Plan	1300	0	0	0.0	1318	MP10360700-A243C5-PC23	A716	No Plan	1300	0	0	0.0												
1309	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0	1319	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0												
1310	MP10360700-A243C5-PC23	A615	Running	1300	0	0	0.0	1320	MP10360700-A243C5-PC23	A615	Running	1300	0	0	0.0												
1311	CR13060006-A243C5-PC23	A615	Running	1300	700	700	0.0	1321	CR13060006-A243C5-PC23	A615	Running	1300	700	700	0.0												
1312	CR13060006-A243C5-PC23	A615	Running	1300	643	555	0.0	1322	CR13060006-A243C5-PC23	A615	Running	1300	643	555	0.0												
1313	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1323	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1314	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1324	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1315	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1325	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1316	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1326	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1317	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0	1327	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0												
1318	MP10360700-A243C5-PC23	A615	Running	1300	0	0	0.0	1328	MP10360700-A243C5-PC23	A615	Running	1300	0	0	0.0												
1319	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0	1329	MP10360700-A243C5-PC23	A615	Running	1300	1307	1037	0.0												
1320	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1330	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1321	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1331	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1322	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1332	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1323	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1333	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1324	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1334	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1325	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1335	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1326	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1336	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1327	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1337	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1328	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1338	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1329	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1339	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1330	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1340	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1331	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1341	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1332	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1342	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1333	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1343	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1334	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1344	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1335	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1345	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1336	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1346	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1337	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1347	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1338	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1348	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1339	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1349	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
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1341	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1351	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1342	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1352	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1343	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1353	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1344	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1354	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1345	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1355	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1346	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1356	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1347	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1357	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1348	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1358	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1349	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1359	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1350	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1360	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1351	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1361	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1352	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1362	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1353	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1363	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1354	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1364	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1355	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1365	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1356	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1366	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1357	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1367	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1358	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1368	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1359	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1369	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1360	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1370	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1361	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1371	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1362	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1372	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1363	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1373	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1364	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1374	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1365	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1375	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1366	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1376	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1367	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1377	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1368	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1378	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1369	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0	1379	MP10360700-A242C5-PC17	A617	Running	1300	1072	1075	0.0												
1370	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0	1380	MP10360700-A243C5-PC23	A615	Running	1300	1230	951	0.0												
1371	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0	1381	MP10360700-A243C5-PC23	A615	Running	1300	400	243	0.0												
1372	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0	1382	CR13060006-A243C5-PC23	A655	Running	1300	700	700	0.0												
1373	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0	1383	CR13060006-A243C5-PC23	A716	Running	1300	643	555	0.0												
1374	MP10360700-A242C5-PC17	A617	Running	1300</																							

Andon Summary

Tier 1 – Line Level



Line Andon



AMTD Dashboard - Site



ANDON Project

Display information

PM
Production
Quality

Office

Total lines 67 Line Running 57 Downtimes 33:40															
Phase 1										Phase 2					
Information										Information					
Line	Job No.	Model	Status	LPN	Target	Actual	Downtime	Line	Job No.	Model	Status	LPN	Target	Actual	Downtime
1301	CTR103606036-A2435CS-PC23	A615	Running	120	700	700	0.0	1311	CTR103615021-A2438CS-PC23	A615	Running	120	700	700	0.0
1302	CTR103606036-A2435CS-PC23	A606	No Plan	120	643	555	0.0	1312	CTR103606036-A2435CS-PC23	A606	Running	120	643	555	0.0
1303	MP103617001-A2422CS-PC17	A617	No Plan	120	0	0	0.0	1313	MP103617001-A2422CS-PC17	A617	No Plan	0	0	0	0.0
1304	MP103615001-A2423CS-PC23	A615	No Plan	110	0	0	0.0	1314	MP103615001-A2423CS-PC23	A615	Breakdown	120	643	0	00:10
1305	MP103615001-A2431CS-PC23	A615	Running	130	1072	1075	0.0	1315	MP103615001-A2431CS-PC23	A615	Running	130	1072	1075	0.0
1306	MP103615001-A2435CS-PC23	A617	No Plan	120	400	241	0.0	1316	MP103616001-A2435CS-PC23	A617	Running	120	400	241	0.0
1307	MP103615001-A2435CS-PC23	A616	Running	120	1230	951	0.0	1317	MP103615001-A2434CS-PC24	A716	Running	120	1230	951	0.0
1308	MP103760001-A2434CS-PC24	A760	No Plan	120	0	0	0.0	1318	MP103760001-A2434CS-PC24	A760	No Plan	0	0	0	0.0
1309	MP103761001-A2434CS-PC25	A716	Running	120	1307	1017	0.0	1319	MP103761001-A2434CS-PC25	A716	Running	120	1307	1017	0.0
1310	CTR103615022-A2438CS-PC23	A615	Running	120	700	700	0.0	1320	CTR103615022-A2438CS-PC23	A615	Running	120	700	700	0.0
1311	CTR103606036-A2435CS-PC23	A606	No Plan	0	0	0	0.0	1321	CTR103606036-A2435CS-PC23	A606	No Plan	0	0	0	0.0
1312	MP103617101-A2422CS-PC17	A617	Breakdown	120	1321	987	10:51	1322	MP103617101-A2422CS-PC17	A617	Breakdown	120	1321	987	10:51
1313	MP103615001-A2435CS-PC23	A615	Running	110	1302	1045	0.0	1323	MP103615001-A2435CS-PC23	A615	Running	110	1302	1045	0.0
1314	MP103615001-A2431CS-PC23	A615	Running	130	1072	1076	0.0	1324	MP103615001-A2431CS-PC23	A615	No Plan	130	1072	1076	0.0
1315	MP103615001-A2435CS-PC23	A617	Running	120	400	241	0.0	1325	MP103615001-A2435CS-PC23	A617	Running	120	400	241	0.0
1316	MP103615001-A2444CS-PC23	A616	Running	120	1230	953	0.0	1326	MP103615001-A2444CS-PC23	A616	Running	120	1230	953	0.0
1317	MP103760001-A2434CS-PC24	A760	Change over	120	1460	983	0.0	1327	MP103760001-A2434CS-PC24	A760	Change over	120	1460	983	0.0
1318	MP103761001-A2434CS-PC25	A716	Running	120	1307	1017	0.0	1328	MP103761001-A2434CS-PC25	A716	Running	120	1307	1017	0.0
1319	CTR103615021-A2438CS-PC23	A615	Running	120	700	700	0.0	1329	CTR103615021-A2438CS-PC23	A615	Running	120	700	700	0.0
1320	CTR103606036-A2435CS-PC23	A606	Running	120	643	235	0.0	1330	CTR103606036-A2435CS-PC23	A606	Running	120	643	235	0.0
1321	MP103617001-A2422CS-PC17	A617	Running	120	1321	987	0.0	1331	MP103617001-A2422CS-PC17	A617	Running	120	1321	987	0.0
1322	MP103615001-A2423CS-PC23	A615	No Plan	0	0	0	0.0	1332	MP103615001-A2423CS-PC23	A615	No Plan	0	0	0	0.0
1323	MP103615001-A2431CS-PC23	A615	Running	130	1072	1072	0.0	1333	MP103615001-A2431CS-PC23	A615	Running	130	1072	1072	0.0
1324	MP103615001-A2435CS-PC23	A617	Change over	120	400	242	0.0	1334	MP103615001-A2435CS-PC23	A617	Change over	120	400	242	0.0
1325	CTR103615021-A2438CS-PC23	A615	No Plan	0	0	0	0.0	1335	CTR103615021-A2438CS-PC23	A615	No Plan	0	0	0	0.0
1326	CTR103606036-A2435CS-PC23	A606	Breakdown	120	643	666	1:10	1336	CTR103606036-A2435CS-PC23	A606	Breakdown	120	643	666	1:10
1327	MP103617001-A2422CS-PC17	A617	Running	120	643	666	1:10	1337	MP103617001-A2422CS-PC17	A617	Running	120	643	666	1:10

Viewer:

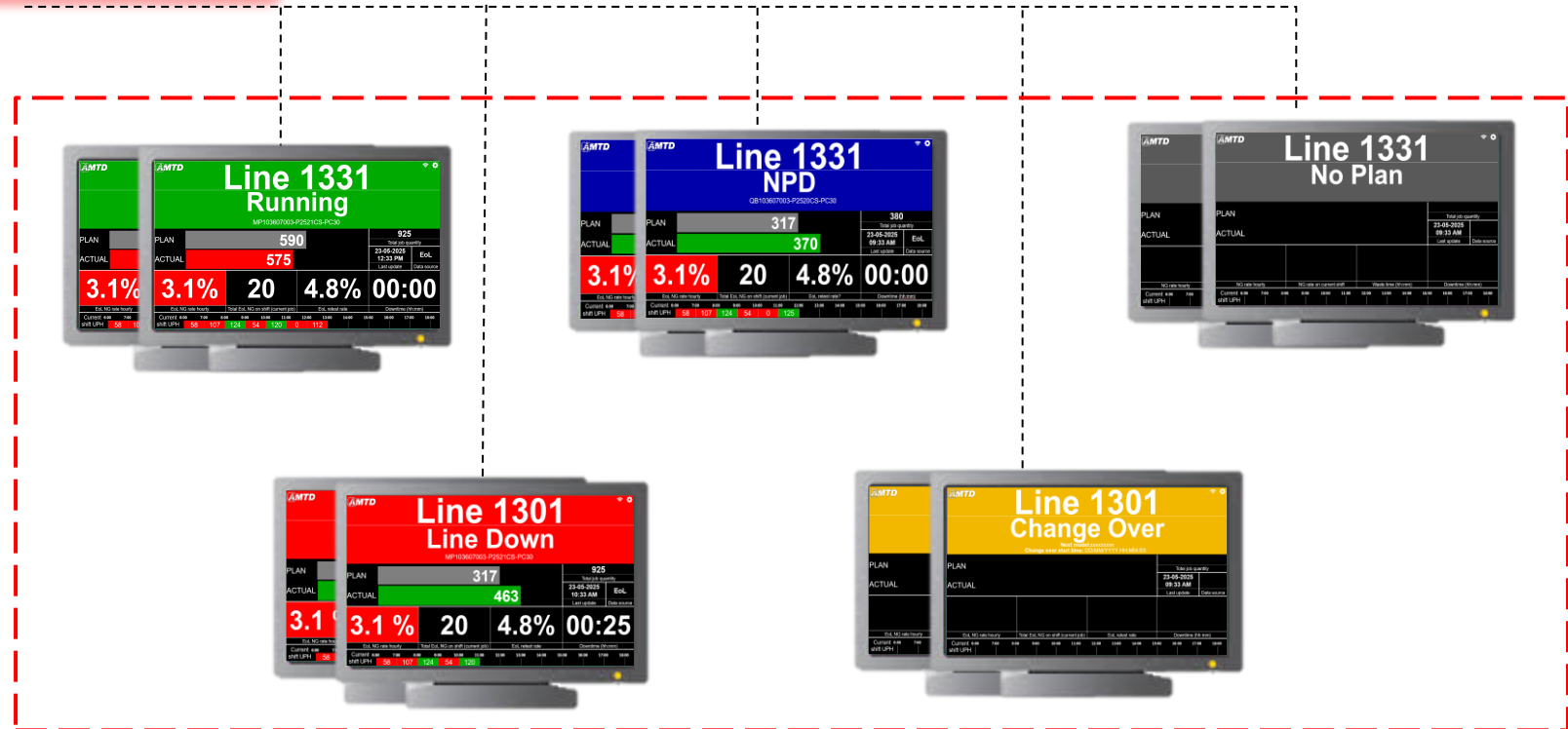
- Group leaders
- Production supervisor
- PM supervisor

Position: PM office, Prod office and QC office.

Information put on view:

- Total lines running
- Overall line status
- Model runs on each line
- Actual/target quantity

Production line



Viewer:

- Operators
- Line leaders
- Line QC
- Line PM

Position: at the beginning of the lines

Information put on view:

- Line number
- Line status
- Shift target quantity
- Planning quantity
- Actual output quantity
- Tracking information

