Wafer contamination detection:
An unsupervised learning approach

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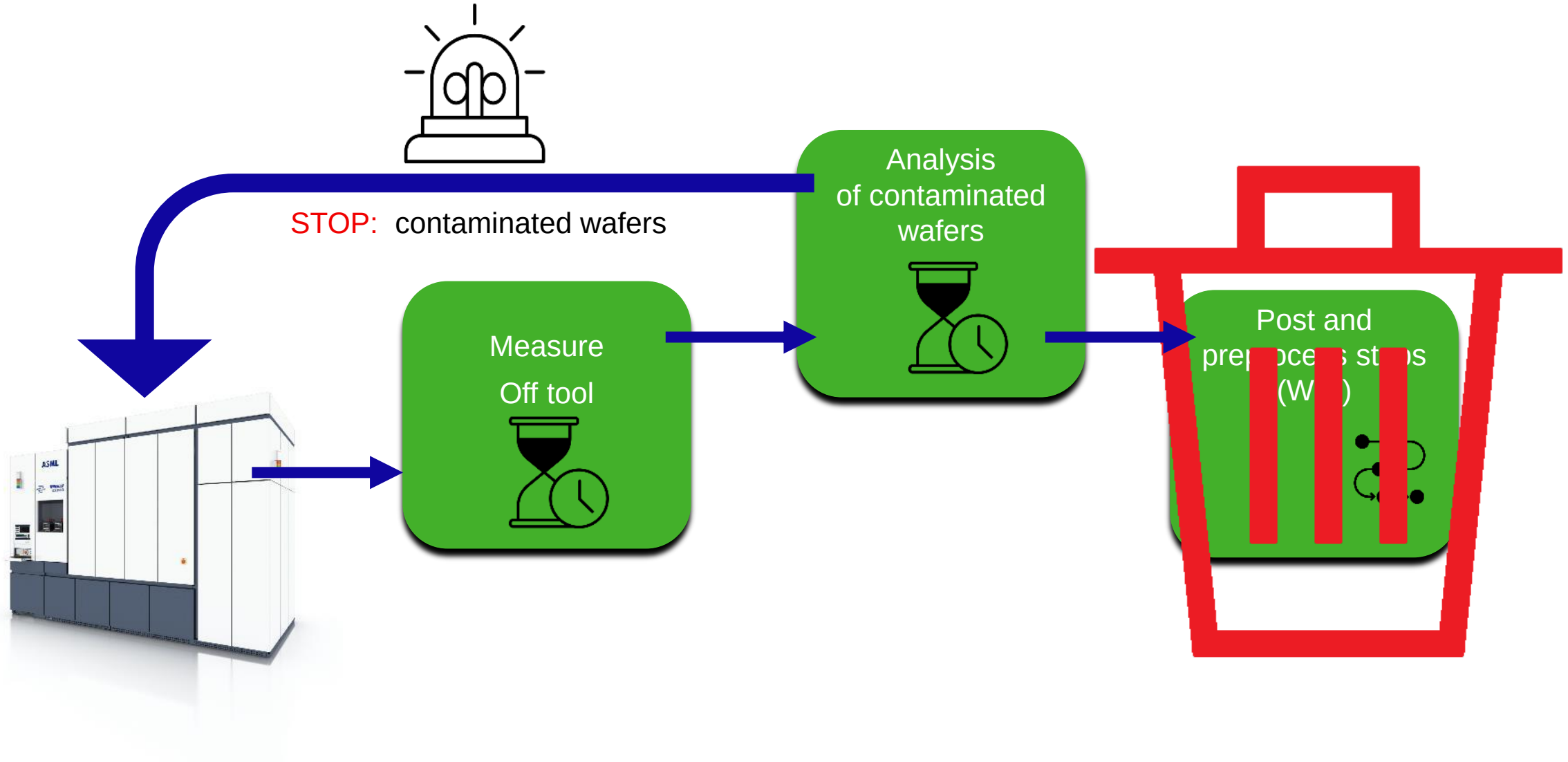
Problem statement



The solution

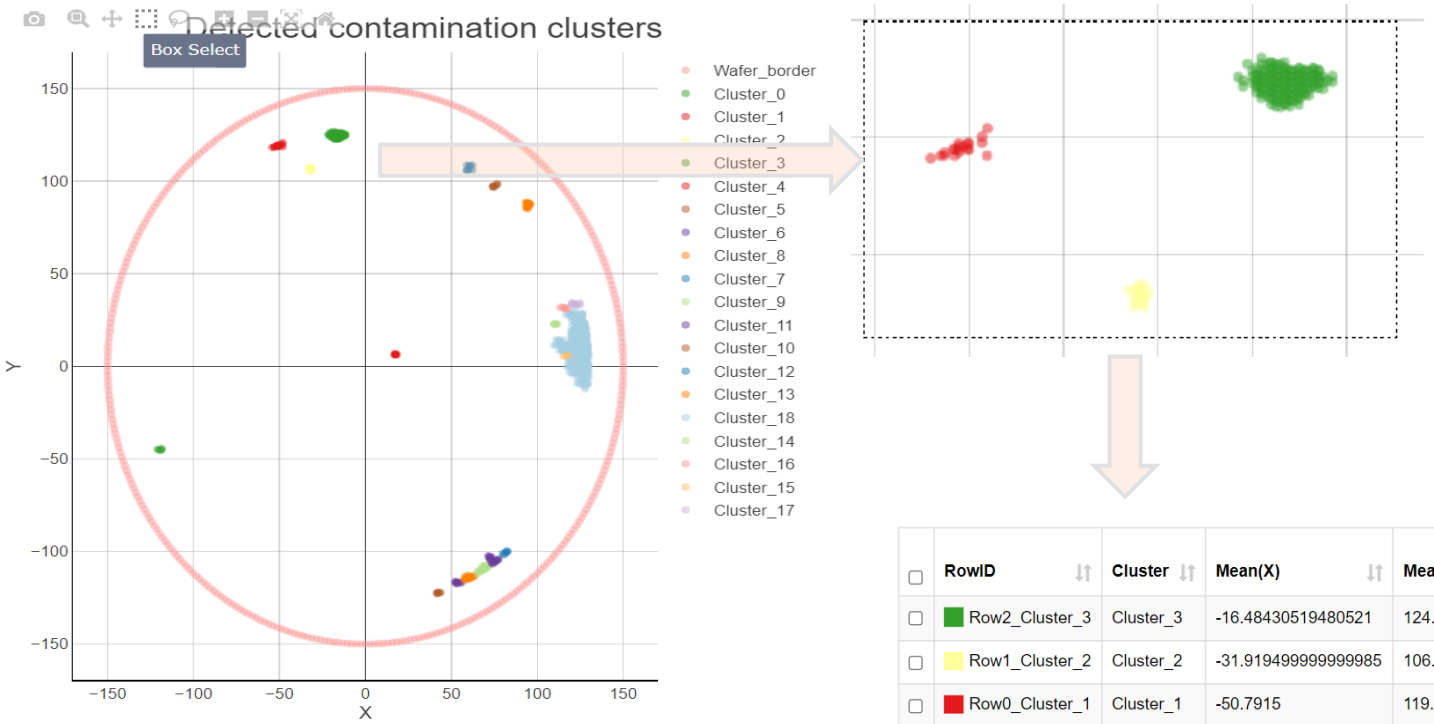
Inline- and continuous monitoring

This real time monitoring solution reduces wafer scrapping (with no need for off *Tool* measurements)

Wafer contamination detection demo

Single-wafer contamination analysis

- *Automatic clustering of contamination spots is performed using unsupervised learning without prior knowledge of number of clusters and without needing large training dataset*



RowID	Cluster	Mean(X)	Mean(Y)	Mean(height (nm))	Standard deviation(height (nm))	Max*(height (nm))	Min*(height (nm))	Count
Row2_Cluster_3	Cluster_3	-16.48430519480521	124.65509665216896	4.907402597402598	0.6465077682227109	6.47	4.01	154
Row1_Cluster_2	Cluster_2	-31.919499999999985	106.48286092619809	4.5076190476190465	0.44356402877041873	5.56	4.01	21
Row0_Cluster_1	Cluster_1	-50.7915	119.05816044042132	4.2325	0.2270607384541987	4.91	4.02	20

Showing 1 to 3 of 3 entries

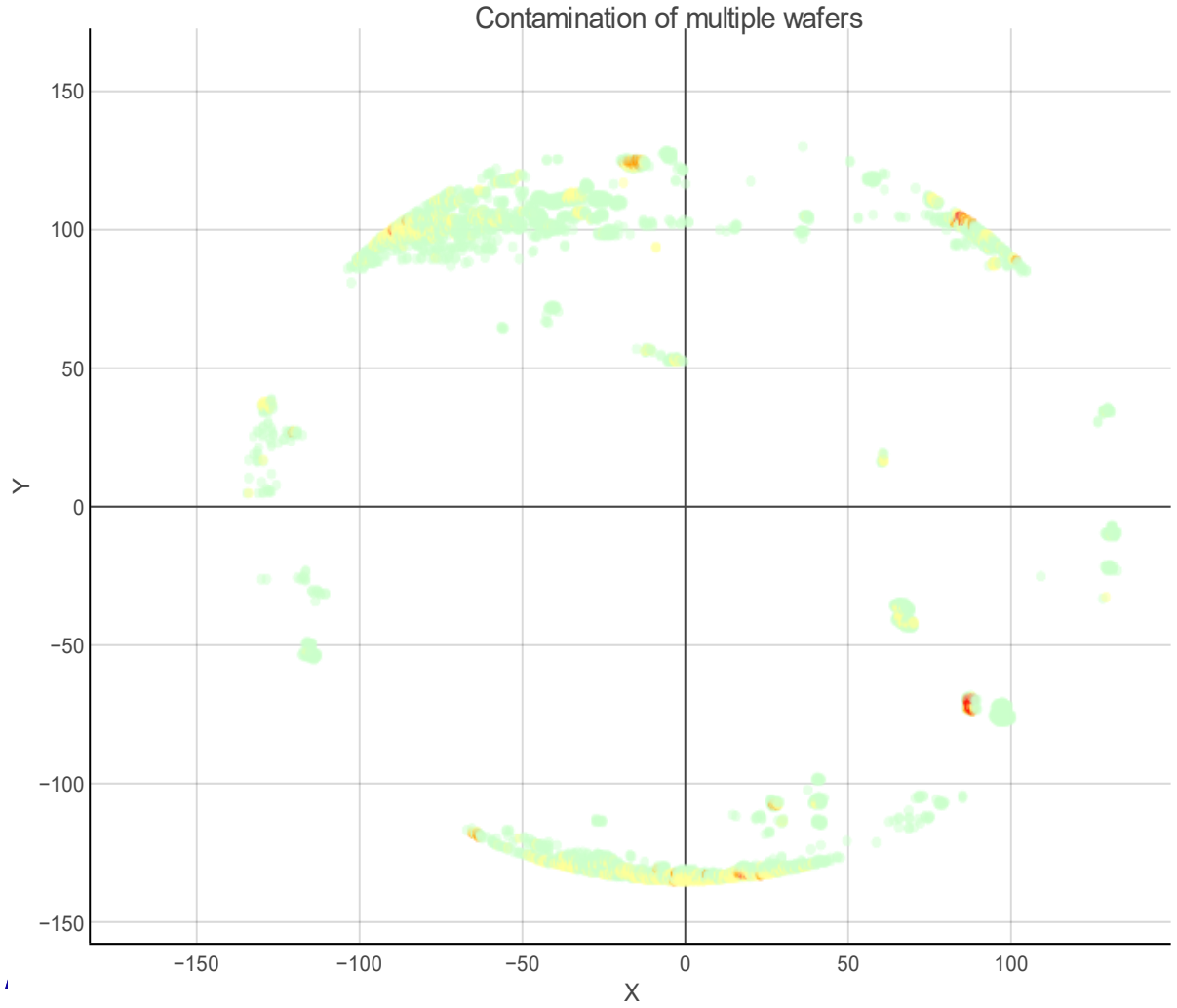
Previous 1 Next

Update cluster table

Wafer contamination detection demo

Multi-wafer contamination analysis

❖ *Data is accumulated over several wafers providing heat map on contamination*

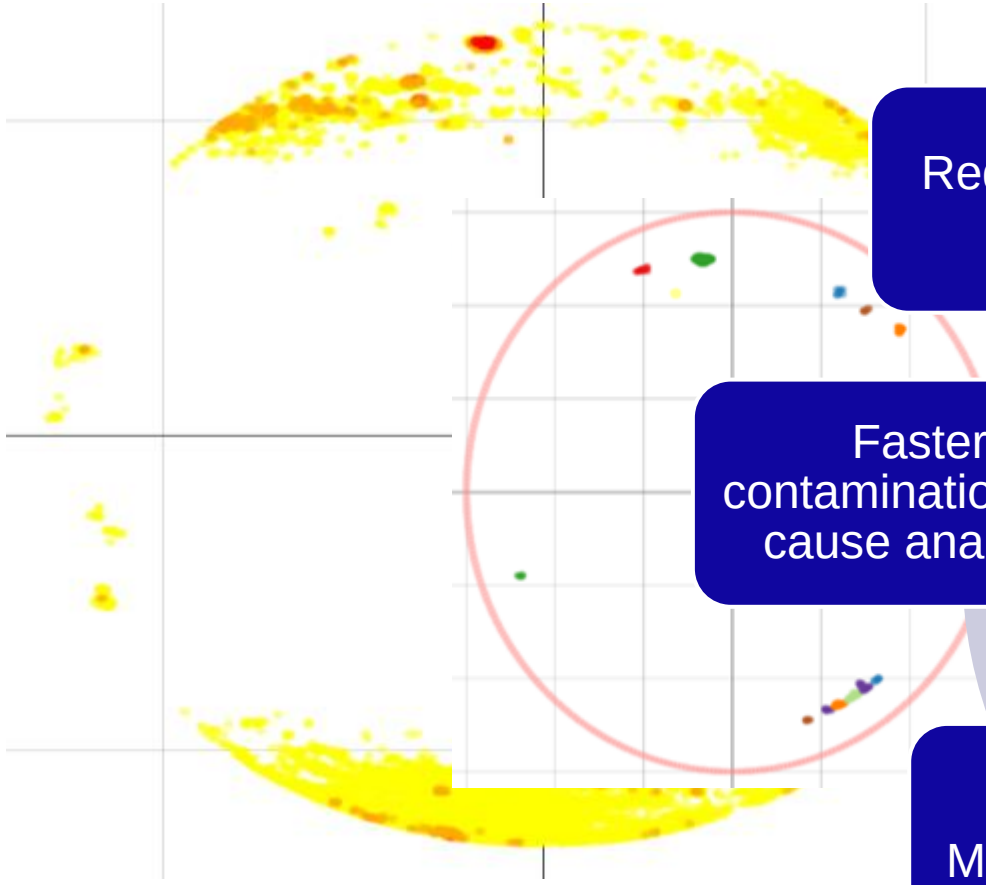


User can select combination of wafers/chuck/LOT/…
and combine results

- Contamination on 1 wafer
- Contamination on 2 wafers
- Contamination on 3 wafers
- Contamination on 4 wafers

Solution Benefits

Which customer value does the concept brings?



- Reduction install time
- Faster contamination root cause analysis
- Easy New Machine Learning
- Continuous, web based, real time monitoring
- Prevents scrap and rework

Thanks

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