CUSTOMER USE CASE

A Research & Development facility needed to address risks in the SubFab to drive innovation and ensure seamless customer demonstrations.

CHALLENGE

Ruling out the risk of failed customer demonstrations

The rapid pace of innovation in the semiconductor industry and increasing market expectations mean R&D environments must keep the pipeline of new process technology full.

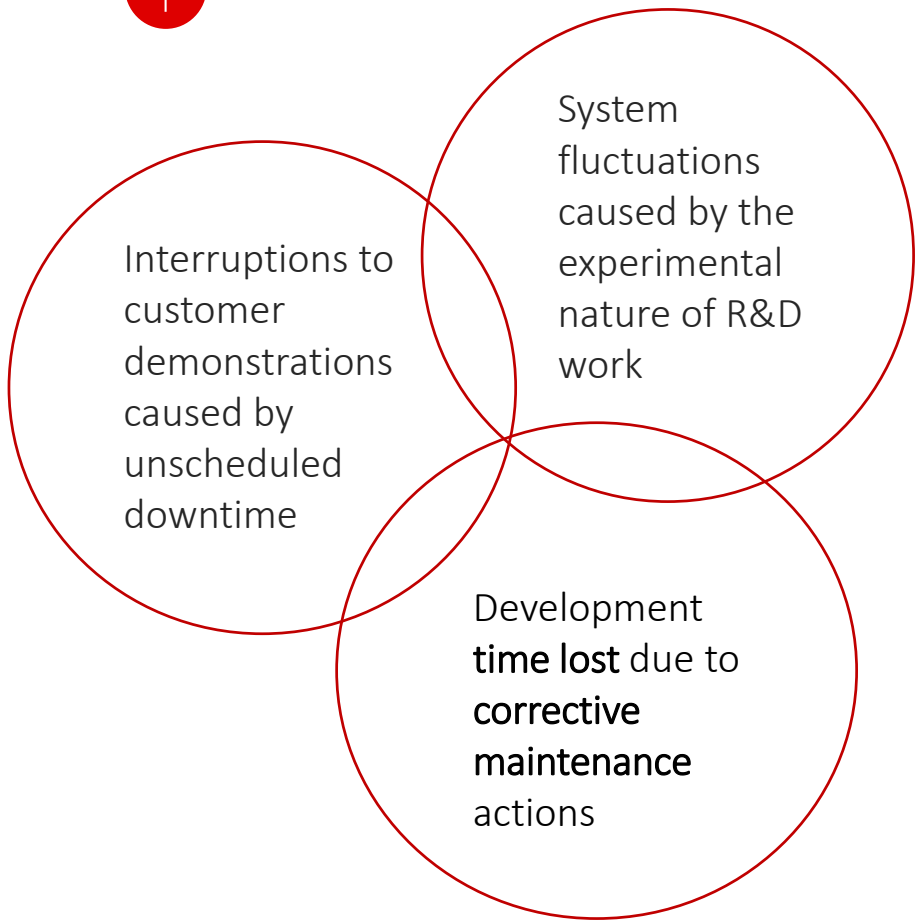
Setbacks to innovation

Prototypes and demo tools need to be available for testing and showcasing without interruption. The only acceptable product demo is a flawless one. A crucial experimental test run can make or break a new product development. Unscheduled abatement downs can make a difference of winning or losing the commitment of a major semiconductor manufacturer.

The experimental and variable nature of the research and development work creates unavoidable fluctuations in the vacuum and abatement system. The risk of an unexpected down event can't be prevented under a time-based maintenance schedule.

To prevent unscheduled down events in their main process and technology development lab, the SubFab team had to manually track the status of abatement equipment each day.

KEY PROBLEMS



This manual process of data recording was time consuming, subject to human error and only accessible to the SubFab team. The process tool managers, most affected by the performance of the equipment had no idea on the current status of the SubFab. In addition to this, neither teams could share maintenance schedules in an effective way.

Disorganised maintenance costs research time

To the frustration of both teams, there were several missed opportunities to co-ordinate the maintenance of SubFab equipment with the process tools, costing the Fab valuable time.

In search of a more effective and accurate method to eliminate the risk of down events, this facility enlisted our help.

UNSCHEDULED MAINTENANCE TAKES 65% MORE TIME

TYPICAL TOOL DOWNTIME FOR MAINTENANCE

UNSCHEDULED	SCHEDULED
31 HOURS	11.5 HOURS

Illustration on a typical batch processing tool

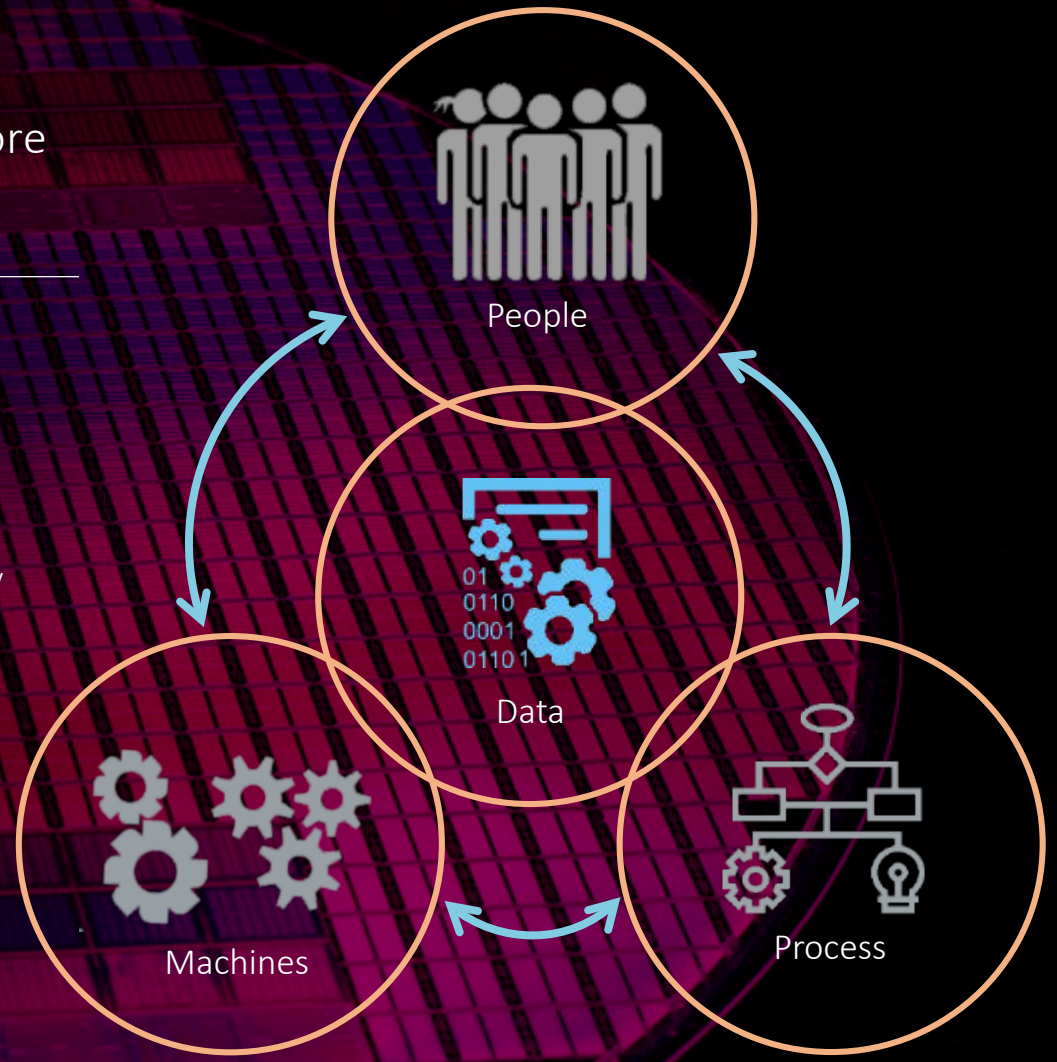
SOLUTION

Monitor and predict potential faults before they happen

Fab teams collaborated with our Operational Excellence consultants to work out how they can get the SubFab working to its maximum potential and free-up further resources for innovation.

For this facility we developed a predictive maintenance strategy focusing on abatement, perfectly tuned to monitor, detect and predict developing faults. This predictive approach responded to system fluctuations, specific to each environment, and covered a wide array of abatement faults, including liner degradation, nozzle blockage among others.

Leveraging advanced data analytics and our domain knowledge on SubFab performance, this strategy went beyond maintaining machinery, it focused on creating an environment where people, processes, machinery and data work to their full potential.



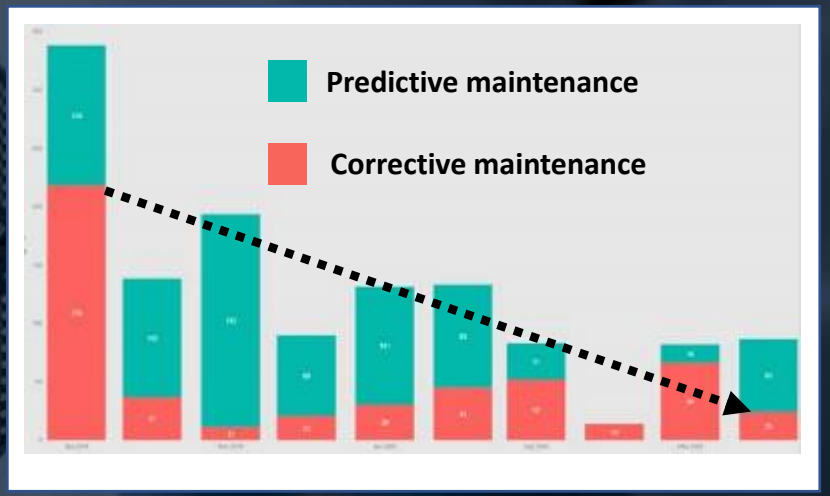
Visibility on performance data

The SubFab team had central and secure access to all performance data via an online platform. This enabled 24/7 data collection and monitoring.

The process tool manager had direct feedback on status of vacuum and abatement performance, helping them visualise the risk of an unexpected down event and allowed for plenty of time to align maintenance with other process equipment.

Advanced maintenance warnings also meant equipment engineers could prioritise any crucial experiments or customer demonstrations, without the risk of a down event.

80% REDUCTION IN CORRECTIVE MAINTENANCE



OUTCOME

Less time on maintenance creates valuable opportunities to innovate

Within the first month, two unscheduled down incidents were avoided by identifying problematic abatements units for corrective action.

Unique **discoveries** and valuable learning on **degradation of abatement equipment** was taken from what appeared to be seemingly identical test environments. The variations in maintenance warnings proved just how different the by-products of these test environments can be.

Valuable research and development time has been saved by applying predictive maintenance on these two abatement systems, **time** now **available** for **process tool innovation**.

Planned rollout across other R&D facilities

Fab and SubFab teams had concrete evidence on performance improvements for senior management to back a proposal to rollout changes across other R&D facilities. This proposal is just the starting point in bringing the SubFab closer to support the wider Fab objectives.

FEEDBACK

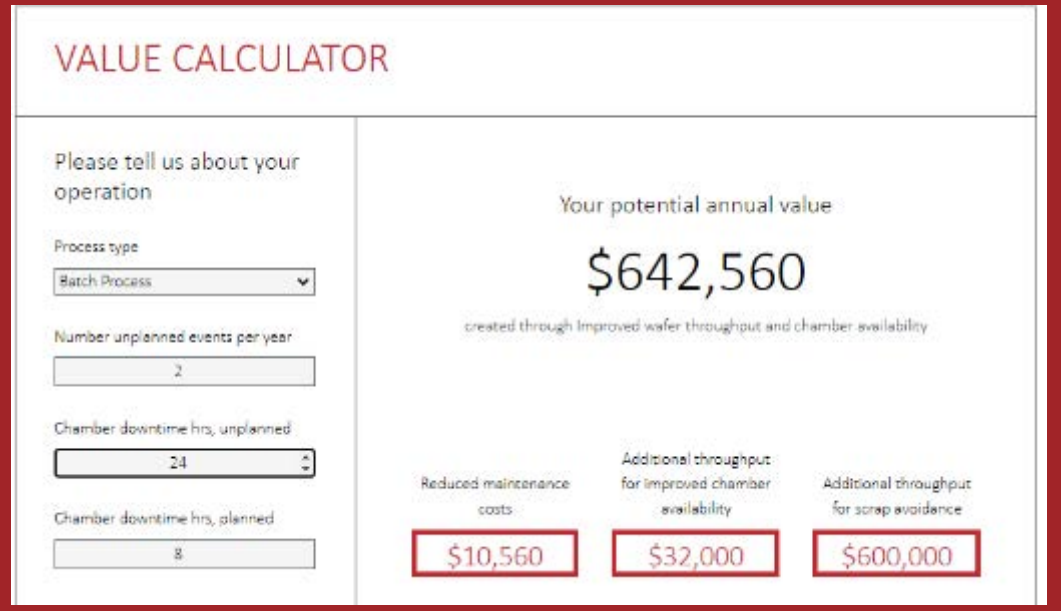
"This facility's approach to Operational Excellence continues to **give** them the **edge over** the **competition**. Learning from test environments and freeing-up maintenance time for R&D, puts them in a perfect position to make that **next technology breakthrough**"

CONSULTANT,
OPERATIONAL EXCELLENCE TEAM
EDWARDS

NEXT STEPS?

READY TO REVEAL THE POTENTIAL VALUE IN YOUR SUBFAB?

Learn more with the Value Calculator



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