

Frontline Cloud-Powered Drill Path Optimization

Optimized Drilling Productivity



The Hardest Problem We Solve

Mechanical drilling can be a major bottleneck in your PCB production process, greatly impacting throughput, capacity and yield.

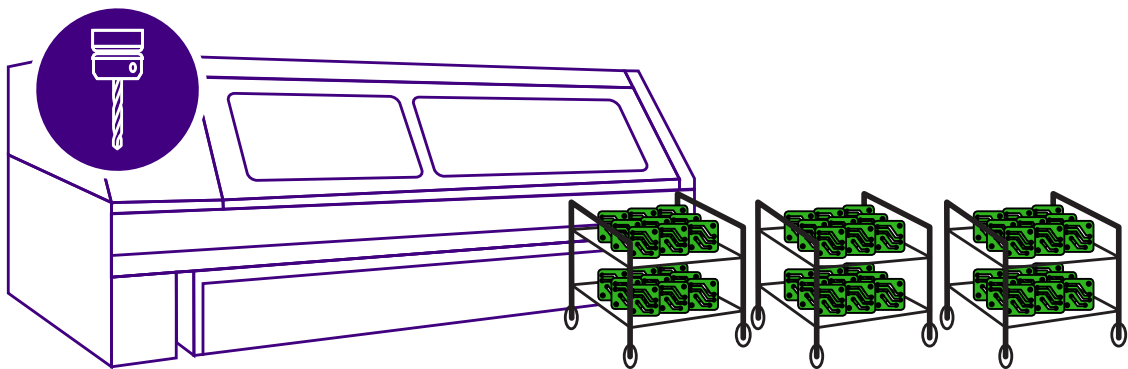
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With the growth in advanced PCB manufacturing technologies and the increasingly high number of drill holes per panel, mechanical drilling bottlenecks are negatively impacting throughput, capacity and yield.

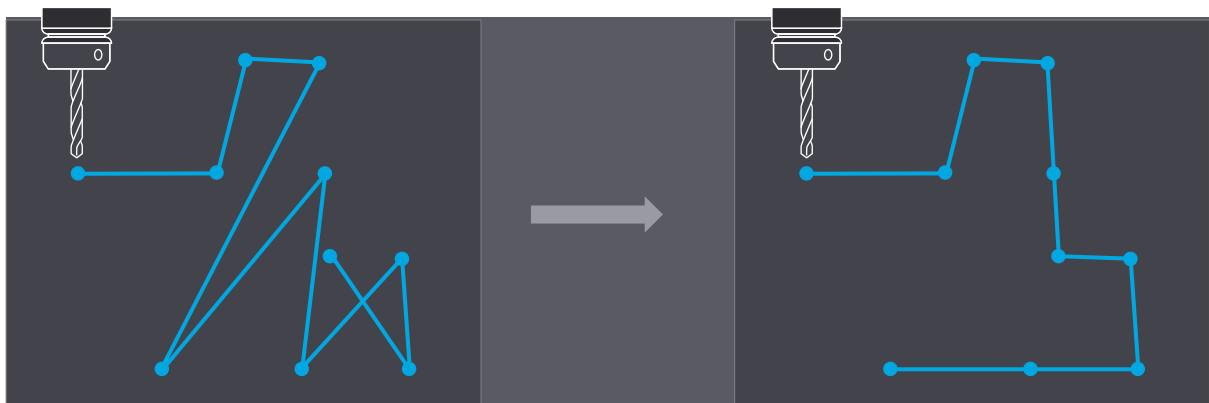
Frontline cloud-powered Drill Path Optimization (DPO) is a new offering for Frontline InCAM® Pro customers that optimizes mechanical drilling productivity to reduce drill time, improve production yield and lower the total cost of ownership.

Combining Frontline's next-generation DPO technology with the calculation capabilities of cloud computing, cloud-powered DPO delivers the highest-ever drilling throughput and operational capacity flexibility, while improving yields.



Highest-ever Drilling Throughput

DPO significantly improves production efficiency without requiring fabs to invest in additional machines. Clever algorithms shorten the drill path, which in turn, shortens drill time by an average of 3.5%*.

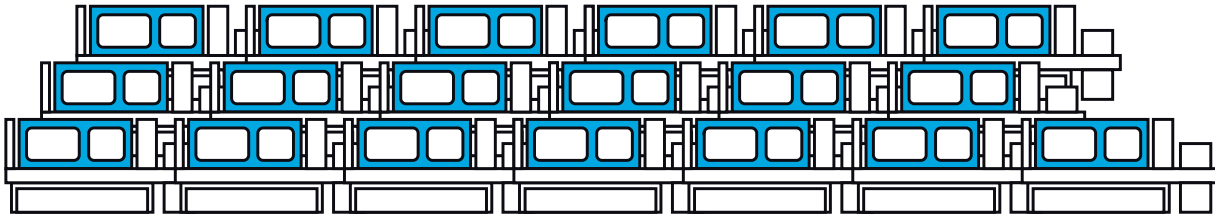


*Average percentages based on hundreds of jobs.

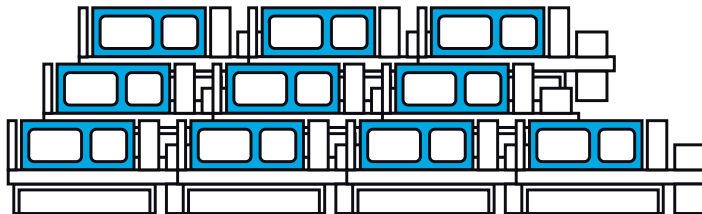
Capacity Flexibility

DPO enables an elastic drilling machine infrastructure so manufacturers can scale up – or down – as required and adjust their total cost of ownership to reflect real-time business needs.

- **High demand?** Ramp up capacity without adding machines or outsourcing drilling.



- **Low demand?** Lower the total cost of ownership by increasing production with fewer machines.



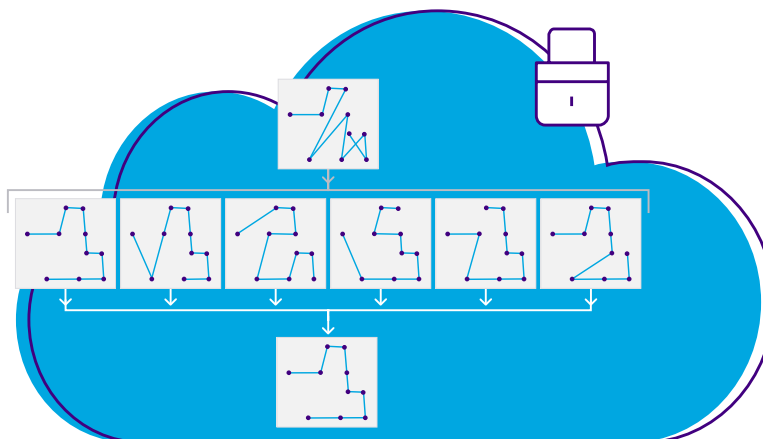
Uncompromised Yields

DPO generates an optimized drill path that factors in cool spread requirements to prevent thermal-related quality issues and improve production yield.

Harnessing the Power of the Cloud

Cloud-powered DPO harnesses the virtually infinite capacity of the cloud to deliver unique capabilities:

- Runs multiple drill path simulations in parallel to deliver the optimal drill path
- Factors in cool spread calculations to enhance quality and yield
- Uses unlimited cloud computing power to easily handle jobs with millions of holes



The Cloud Power You Need With the Security You Deserve

Cloud-powered DPO protects manufacturers' data using the highest cloud security standards in the industry. No actual PCB design data is stored on the cloud.

Secure Access at the Factory Level

- Every factory uses an individual encryption master key
- Internet access is restricted to a single port and URL
- Frontline InCAM® Pro users cannot access the factory's cloud credentials

Secure Access per Job

- Each job is encrypted using a unique key
- Job uploads and downloads are done using random, time-bound addresses
- Secure channels for job data: HTTPS or the web
- Secure socket for status notifications