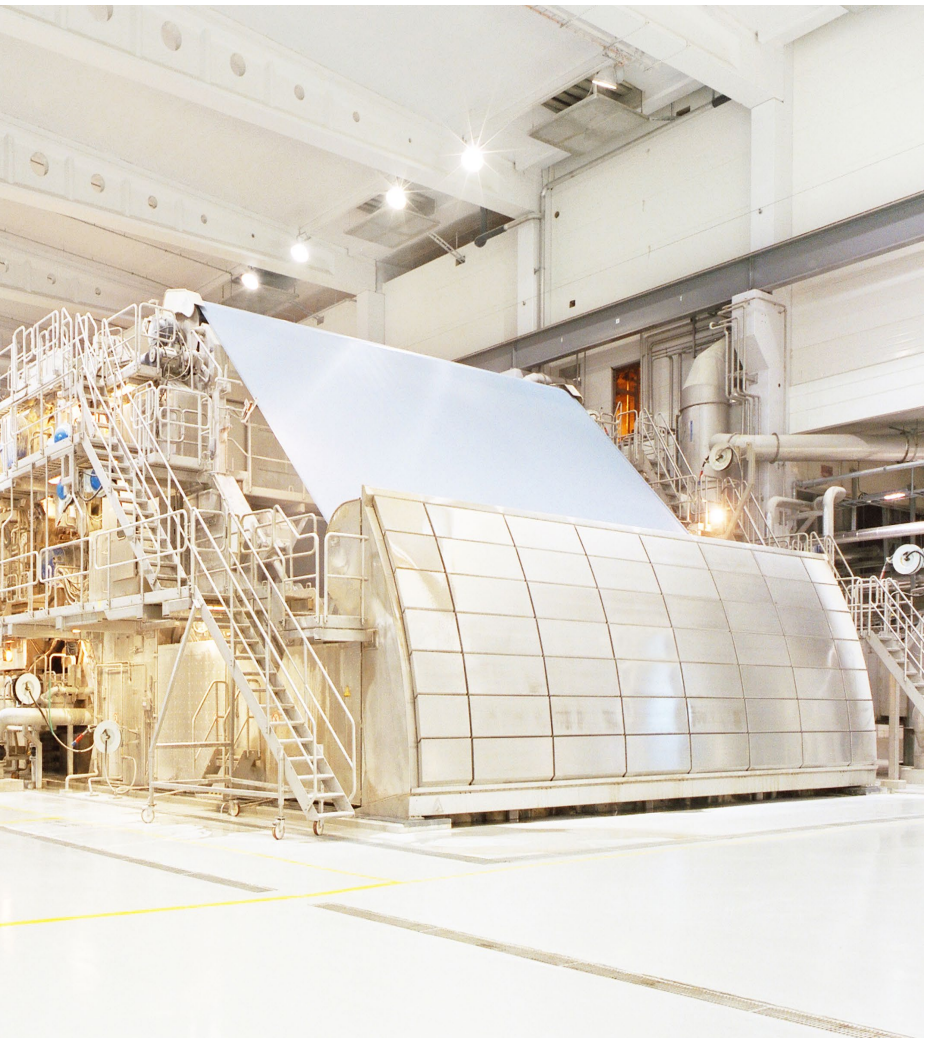
CASE STUDY

Scandinavian paper mill enhances productivity and quality with ABB Ability™ Advanced Digital Services

Variance partition analysis identifies issues, improves performance and increases product quality



When a paper machine suddenly exhibited signs of excessive moisture variations, ABB applied Advanced Digital Services to enhance production and product quality.

Sudden moisture increase threatens paper quality

Seven months after successfully installing a new ABB System 800xA control system to bring moisture variations under control, a Scandinavia paper mill's engineers experienced a sudden increase in moisture variations in the paper produced by a new machine. Puzzled by this unexpected and unwanted turnaround, mill managers turned to ABB to discover why.

Customer Challenge

- Identify source of unexpected moisture variations
- Get production back on track
- Maintain high paper quality
- Reduce product rejects
- Improve performance

Solution

To find the root of the problem, ABB engineers turned to ABB Ability™ Advanced Digital Services, ABB Field Service Management and variance partition analysis (VPA). VPA provides an overview of process variances that are grouped according to grade, time periods and weight range.

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01 After a consultant changed tuning parameters of the mill's new control system, ABB was called in to find and correct the problem.

02 ABB used variance partition analysis, a method for analyzing production data for variations, to find the root cause of a Scandinavian paper mill's sudden moisture variation increases. Disturbances in the machine direction had caused the largest variations.

The displays show how machine-direction long-term (top) and machine-direction short-term (bottom) data trends reflected product moisture variations, grouped by weight, over nine months.

ABB's engineers applied VPA to nine months of reel data consisting of machine-direction long-term variability (MDL), machine-direction short-term variability (known as MDS though it is also referred to as residual, or RES, variability), and cross-direction variability data sets to find variability increases in the three weight groups.

ABB engineers concluded that disturbances in machine direction were causing the largest moisture variations. Correcting these problems significantly decreased product rejects, improved performance and reduced costs.

But these were just symptoms. The root cause of the problem was a consultant who had changed tuning parameters – work that occurred right around the time the moisture variation problems began to increase.

Results

Once found, the mill had the information it needed to correct the problem. With the adjustments made, the mill was able to get production back on track and reduce costs by lowering product rejects and improving performance.

By investing in ABB Ability™ Advanced Digital Services, the mill was able to draw on the experience and specialized knowledge of ABB engineers who correctly identified and solved the problem.

Benefits

- Maintained productivity
- Reduced sheet breaks
- Decreased costs
- Diminished number of rejects

ABB Ability™

ABB Ability™ is our unified, cross-industry digital capability – extending from device to edge to cloud – with devices, systems, solutions, services and a platform that enables our customers to know more, do more, do better, together. ABB Ability™ connects our customers to the power of the Industrial Internet of Things (IIoT) and, through our services and expertise, goes further by turning data insights into the direct action that "closes the loop" and generates customer value in the physical world.

ABB Ability™ System 800xA

ABB Ability™ System 800xA is not only the industry's leading distributed control system. It's also an electrical control system, a safety system and a collaboration enabler with the capacity to improve engineering efficiency, operator performance and asset utilization.

Remote-enabled VPA

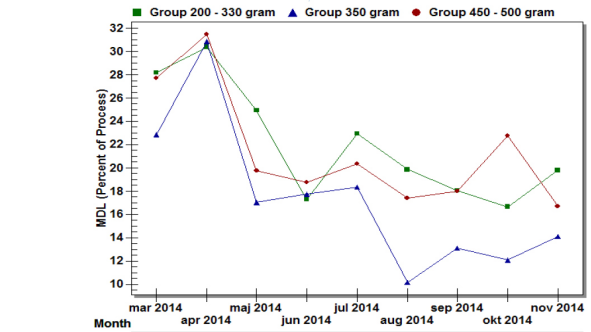
Variance partition analysis is an important and popular service delivered by ABB Ability™ Advanced Digital Services experts. Due to high customer demand, ABB now offers remote facilitation of many Ability™ Advanced Digital Services through the ABB Field Service Management service delivery platform and ABB Ability™ Collaborative Operations.

ABB Ability™ Advanced Digital Services

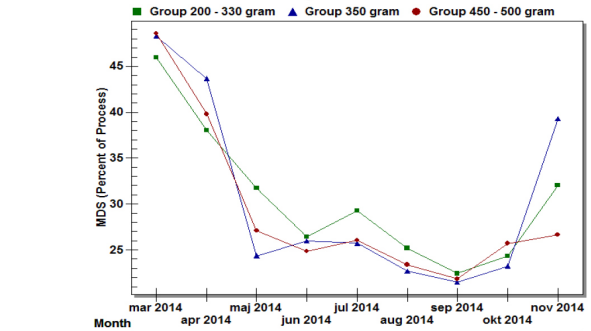
ABB Ability™ Advanced Digital Services identify sources of issues that inhibit peak performance in equipment and processes and provide recommendations to resolve issues quickly and systematically.

ABB Field Service Management

ABB Field Service Management empowers our service personnel to develop and evolve high-quality service procedures. These procedures are documented, collected, integrated and then deployed to make them available globally for continuous improvement at every facility.



Month	mar 2014	apr 2014	maj 2014	jun 2014	jul 2014	aug 2014	sep 2014	okt 2014	nov 2014
Group 200 - 330 gram	28.188	30.379	24.936	17.302	22.934	19.841	18.029	16.665	19.776
Group 350 gram	22.837	30.849	17.016	17.740	18.329	10.157	13.107	12.077	14.094
Group 450 - 500 gram	27.706	31.485	19.746	18.756	20.341	17.389	17.978	22.753	16.694



Month	mar 2014	apr 2014	maj 2014	jun 2014	jul 2014	aug 2014	sep 2014	okt 2014	nov 2014
Group 200 - 330 gram	45.951	38.043	31.739	26.458	29.263	25.178	22.439	24.348	32.044
Group 350 gram	48.282	43.675	24.381	26.000	25.739	22.699	21.500	23.243	39.307
Group 450 - 500 gram	48.596	39.779	27.101	24.841	26.076	23.388	21.843	25.723	26.670

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