InfinityQS® enact®

Does Your Quality Data Make the Grade?

Prioritize improvement efforts with quality-grading capabilities.

As a quality professional, you're constantly being asked to find and address problems. You likely have visibility into, and responsibility for, many manufacturing sites and/or production lines. What if, instead of reacting to problems, you're asked to investigate solutions? Ideally, you'd like to present the opportunities that will have the biggest impact on your company. Which sites are ripe for easy wins? Where are the biggest challenges? Where do you start? There is an incredibly simple way to answer these questions, and many more like it, that you ask about your organization's performance all the time.

Imagine how great it would be to be able to compare the quality performance of each of your lines, or plants, or sites—at a glance. To determine in the blink of an eye where to aim your limited resources to provide the greatest impact to your business.

All you need is the performance-grading capability of *Data Stream Grading* found in the InfinityQS® Enact® quality intelligence platform. In short, grading is a powerful quality methodology that provides a unique way to roll up and interpret performance across many parts, processes, and sites—while still allowing you to quickly drill down to specific data streams.

Grading is easy to use and makes finding useful information fast. That's a major advantage, as today's quality professionals are stretched thinner than ever. And agile companies that can quickly determine where and how to allocate resources for the biggest impact fare the best in today's ultra-competitive marketplace.

Take Your Quality to Another Level

As a quality professional, you need an efficient method for comparing the performance and potential of all your production lines and/or sites so you can make informed, strategic decisions about prioritizing quality improvement efforts (and budget) for your organization. You need a way to quickly see where a problem may lie and where improvements may be needed. And it would be great to be able to quickly determine which of your lines is performing well, so you can transfer that knowledge to other lines.

You're looking for an edge. A way to take your manufacturing processes to the next level.

What if that edge were right in front of you? What if it were color-coded and extremely easy to read and use to make those decisions? And you could make the kind of changes to your processes that would transform your organization into the powerhouse that you know it can be. That edge is here. It's Enact Data Stream Grading.

Grading is a great tool for quality professionals who are ready to "interrogate" their quality data—dig deeper into it than they ever have before—but need an elegant way to prioritize their efforts. With an efficient grading solution, such as the one available only with InfinityQS Enact, you'll be surprised how quickly process improvements take shape, and how much easier it becomes to prioritize them.

Transformative Decisions Backed by Solid Analytics

When backed by granular data and proven analytics, grading offers a dramatic way to encapsulate ongoing snapshots of performance. Grading enables you to drill down, layer by layer, to investigate:

> › Sites
>
> › Processes
>
> › Parts
>
> › Features
>
> › Factors that might affect a process or part such as individual lots, shifts, or other conditions

Such investigations are the basis for discovering the cause of reduced yield and developing solutions. That's why it's important that our grading solution is part of Enact, a robust SPC-powered quality intelligence platform that can provide unification of data, potent analyses, and enterprise-wide insight. Let's take a closer look.

What might this grading look like? Below is a great example; here you can see a table that shows each critical feature in its own column and a row for each site. You can sort the columns by performance and then click on an individual cell to drill down and learn more about the individual processes and parts. At a glance, learn which facility or production line needs prioritized attention.

Figure 1. Enact grading at a glance.

Site(s)	Weight	Length	Width
Buenos Aires, Argentina	A1	B1	A2
Fairfax VA, USA	A3	C3	B3
San Jose, Costa Rica	A2	B2	B1
Stillmore GA, USA	A1	A2	C1
Toluca, Mexico	B1	A2	A1

A Closer Look at Grading

Digging into data can be overwhelming. Where do you begin to search for improvement opportunities? The ability to intelligently prioritize where to expend effort for the greatest reward is vital with limited resources or budget. Where should you start? How much—and which sort of—effort is needed? Will you be able to achieve results through operator training, or will you need to purchase new equipment or modify existing equipment?

Grading can help you find the answer. For today's manufacturers, grading provides a summary analysis of individual data streams. A data stream is the data provided by the unique combination of a single feature measured for a single part running on a single process. Individual data streams can be aggregated to provide a grade for each critical feature for an entire process, part, or site. This gives you the benefits of rolled-up comparisons without losing the granularity of the raw data. And Enact automatically does all of this work for you.

Enact's grading methodology provides a simple letter-number combination—for example, A3 or B1 in Figure 1 above—that represents both expected and potential yield. Together, these yield metrics reflect performance in a way that enables prioritization:

> › **Stream potential** is a measure of process yield assuming perfect centering on the target using the current level of variability. *It tells you how well you could be doing.* **This component is graded as A, B, or C.**
>
> › **Stream performance** is a measure of how much a process's yield is suffering *because it is not performing up to its potential*, for example due to being poorly centered. **This component is graded as 1, 2, or 3.**

The two components together create nine possible grades from A1 to C3, which paint a very clear and concise picture of your overall process performance and potential for improvement.

Digging a Little Deeper

Enact **Data Stream Grading** provides a competitive advantage through the following:

> › Surfacing meaningful, actionable site metrics for the critical features you measure
>
> › The ability to take a closer look at grades for specific processes and parts
>
> › A method to quickly determine which processes, parts, or personnel need attention and what kind of attention they need

Grading Tiles

Grading results are available through two tiles in Enact's intuitive dashboards, which require only a browser to access (so you can get these results on almost any device—how great is that?!).

> › The **Grading Matrix** tile (below) summarizes all the streams that meet each grade. Simply click any grade to drill into a list of all data streams with that grade. The primary benefit of this view is you can specifically target streams of a given type of effort (e.g., "easy wins" vs. major improvement initiatives).

	Performance		
Potential	**1**	**2**	**3**
A	255	210	15
B	105	88	12
C	65	31	7

The **Site Summary** tile (directly below) summarizes the site grade for each critical feature. The tile can be sorted by feature. You can click a grade to see layered details that reveal grades for individual processes and parts (second graphic below). For this example, we're honing in on (that is, clicking) the Fairfax, VA Weight grade—A3.

Site(s)	Weight	Length	Width
Buenos Aires, Argentina	A1	B1	A2
Fairfax VA, USA	A3	C3	B3
San Jose, Costa Rica	A2	B2	B1
Stillmore GA, USA	A1	A2	C1
Toluca, Mexico	B1	A2	A1

We've selected the Fairfax, VA Weight grade — A3 — to access layered details

| Stream Information		Stream Grading					
			Yield Potential (Centered Process)		Yield Performance		
Category	Piece Count	Grade	Grade	Percentage	Grade	Percentage	Expected Yield
▲ Weight	5400	A3	High	100.00%	Low	89.71%	89.71%
▶ Line 01	1080	A1	High	100.00%	High	98.22%	98.22%
▶ Line 02	1080	A2	High	100.00%	Moderate	90.97%	90.97%
▶ Line 03	1080	A1	High	100.00%	High	98.40%	98.40%
▲ Line 04	1080	A3	High	100.00%	Low	89.58%	89.58%
Product A	216	A1	High	100.00%	High	96.17%	96.17%
Product B	216	A2	High	100.00%	Moderate	90.42%	90.42%
Product C	216	A1	High	100.00%	High	98.52%	98.52%
Product D	216	A3	High	100.00%	Low	86.04%	86.04%
Product E	216	B3	Moderate	99.82%	Low	86.53%	86.37%
▶ Line 05	1080	B1	Moderate	99.86%	High	98.14%	98.00%

With these tiles, you can quickly determine:

> › How each line is performing
>
> › How various parts perform on each line
>
> › How parameters within a process measure up

Enact grading uses the vast store of aggregated data in Enact's *centralized data repository*, enabling a view of performance for a specified time window. Behind the scenes, Enact automatically performs the sophisticated SPC analytics that are required to interpret that data and bring the details you care about to the surface. Enact makes it all so easy.

Choosing Your Battles

So let's take a look at how use grading. Figure 2 below illustrates how an organization might use this tool. This company has five manufacturing sites, spread across the globe. The company grades each site for a critical measured feature, such as fill level. A grade of A1 indicates that two of the sites are in great shape: They are performing at the highest level possible, with minimal or no scrap.

Figure 2. At site level, grading provides executives with an immediate understanding of where potential improvements may have the biggest impact.
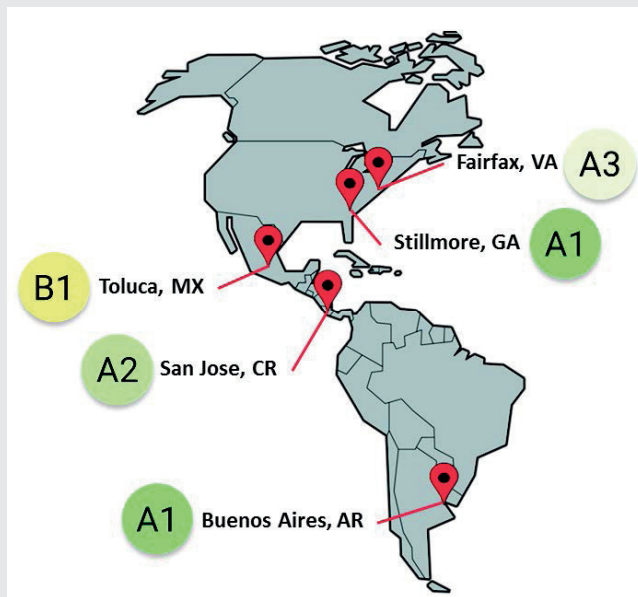
But let's look at the Fairfax site. Its grade of A3 indicates that this site is likely a diamond in the rough.

The A portion of the grade tells us that the site has the potential to perform at 100% yield. But for some reason, this site is performing far below that potential (at least for fill level). This site is worth investigating; taking the necessary steps to raise its grade to an A2 or A1 is likely to provide an easy win. Why easy? Because the likely solution is to simply retarget the process, which is often a matter of operator training or refining the process setup.

Once the process is set, it runs consistently. Improving a process with this behavior is much easier than improving a process that displays a large amount of variation, and provides a demonstrable financial impact.

Wouldn't you want to look at the "lowest grade" first?

So there's obviously more to the story. Wouldn't the enterprise be better served looking at the "lowest" grade first (i.e., Toluca)? Not necessarily. Remember, the letter portion of a grade indicates the *stream potential*. The Toluca site's performance is as good as it can be, given the site's potential.

Improving performance is often (though not always) a matter of improving operator training or correcting equipment settings—straightforward endeavors. However, improving potential can prove more difficult or expensive: you might need to replace outdated equipment, upgrade production lines, perform deep-dive analyses looking for the cause of variation, or hire more resources to move from a B to an A.

Grading, after all, helps you determine *how to best utilize your resources.* If you have a Six Sigma Black Belt that is looking for a new project, then looking for the "lowest" grade might make sense. However, if you're trying to maximize every resource you have and make the biggest impact with the least amount of effort, then going after those A3 grades is your best bet.

Targeted Problem Solving

The ability to look at performance at the site level is a primary benefit of grading. But after you decide where to focus your efforts, you can take a closer view and use grading within the site to help identify your best actions for improvement.

To continue our previous example, let's dig into the Fairfax site. By grading the lines within this site (graphic to the right), we learn that although most of the site's five processes have the potential to produce high yield, Line 04 has the lowest yield.

If we then grade the parts that are running on Line 04 (below), we can clearly see that Product D and Product E are the culprits for this poor yield. These products, then, are focal points for improvement.

Figure 3. In Enact, grading can be applied at multiple layers to enable users to drill down and discover underlying opportunities.
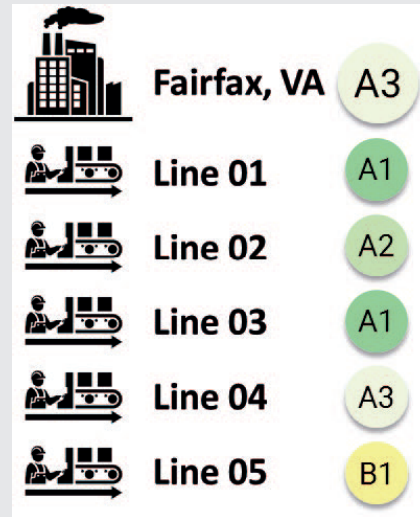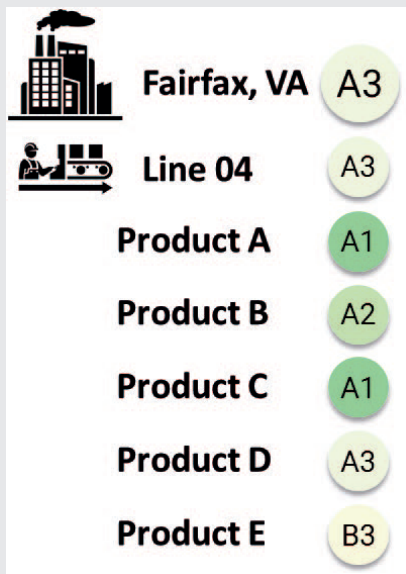

Figure 4. Digging into deeper layers helps pinpoint where to look for the root cause of an issue.

Concentrating your efforts on them enables targeted problem solving, with the goal being to understand why these products are problematic while others perform better on the same process.

Are these products new? Has there been a recent switch in raw materials suppliers? Is this the first time running these products on this production line (meaning that operators might not yet know exactly how to set up the line for the product)?

At this point, traditional SPC tools (e.g., control charts, box-and-whisker plots, capability analyses) can be used to determine the cause of this poor performance—and how to correct the problem.

You can see by all of our examples that Enact Data Stream Grading is visual, easy to use, and powerful. Wouldn't it be great to answer all the questions about your production lines, processes, sites, and more with just a glance and a click?

Make Grading a Part of Your Future

With an efficient and powerful grading solution, such as the one available with InfinityQS Enact, you'll be surprised how quickly process improvements take shape—and how much easier it becomes to prioritize them. *Data Stream Grading* is the tool for quality professionals and managers who are ready to take quality to the next level at their organizations. Enact makes determining the quality of your processes, parts, lines, and sites easier than ever before. Take the first step toward a great future for your business with Enact.

About InfinityQS International, Inc.

InfinityQS International, Inc.® is the global authority on enterprise quality. The company's Quality Intelligence solutions deliver unparalleled visibility across the enterprise, from the shop floor to the boardroom, enabling manufacturers to re-imagine quality and transform it from a problem into a competitive advantage. Powered by centralized analytics, InfinityQS solutions provide operational insight to enable global manufacturers to improve product quality, decrease costs and risk, maintain or improve compliance, and make strategic, data-driven business decisions. Headquartered near Washington, D.C., with offices in Seattle, London, and Beijing, InfinityQS was founded in 1989 and now services more than 45,000 active licenses with more than 2,500 of the world's leading manufacturers, including Ball Corporation, Boston Scientific, Graham Packaging, and Medtronic. For more information, visit www.infinityqs.com.

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