

# Technical Talk

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## Never the same twice

### Ever brewed a beer by mistake?

Not intentionally but one where something goes wrong and can't be fixed. Too much grist, wrong hops, forgot to chill the fermentation, missed a specialist flavour addition and so on. Bit of a pain, particularly when marketing hears the news and rants on and on about consistency – or in this case inconsistency.

A common response from the brewhouse used to be that any difference is only minor and unlikely to be noticed in the heat of the bar. Such discussions may have cited an apocryphal case of a beer which, thanks to a blocked delivery hopper, reputedly went all the way from production to pub in the total absence of a hop charge. Equally worrying to the lack of production control was the fact that no customer complaints were received and the full gyle sold successfully. We are, of course, thinking here of an age when beer serviced thirst more than taste and when the majority of production was sold through tied estates.

Brew a different best bitter today to last week's and marketing can seriously mangle your terms of employment. In most cases with justification as once established a good brand needs to maintain and substantiate its expectation. This is critical for the national and international brands and, although to a lesser extent, to microbrewing. Once drinkers like your ale they don't want it wandering all over the flavour spectrum. Once hooked it pays to satisfy, delight and maintain sales – not least because sales pay wages.

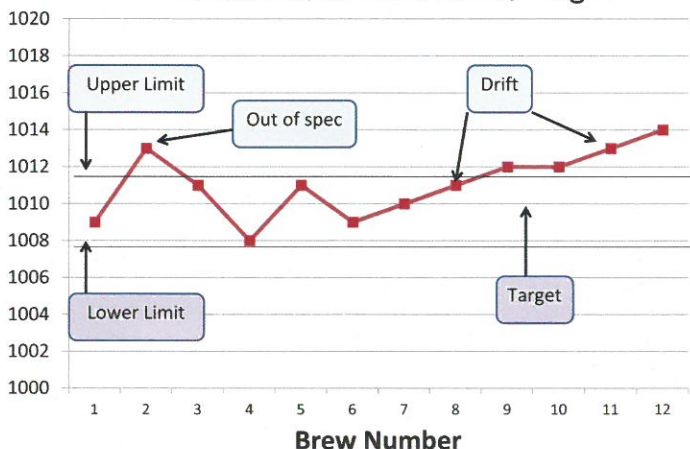
Today stricter limits can be specified for consistency and plotted as a trend analysis for different flavour components. This not only shows the point of deviation but also allows the causes of variability to be identified. A typical trend analysis plots the analysed value for each brew on a time profile and indicates how close it is to the target and to the agreed limits of deviation. Aside from showing consistency it also indicates trends in advance so adjustments may be made to avoid deviation. Some changes, for example, are sudden step changes where an error is made or a new ingredient is used. The deviation is immediate and, hopefully, a one-off. Others, however, develop progressively such as an increase in final attenuation due to yeast mutation as indicated in Fig 1. In this case the yeast can be replaced before the deviation is out of specification.

Laboratory analysis is typically used to determine the values of each characteristic but overall flavour matters more to drinkers so a true-to-type taste test may be equally important. In this a panel of tasters are given glasses of two separate brews and asked to identify if they are different or not. To be strictly objective the test should also be conducted with glasses containing the same beer to check individual accuracy. A more definitive version is the triangular test where two glasses contain one beer and one glass contains the different beer. The test requires careful management



Taste three, choose one: Triangular test with dark glasses to minimize visual clues

Trend Analysis - Final Gravity Fig. 1



ideally using dark glasses, clean surroundings and enough tests to be statistically valid. For example with 20 tastings 11 correct identifications of the odd beer are needed to say that the beers are different at a significance level of 5%.

All of this is typical of large scale production seeking to manage consistency across brews for national and international sales and where each brew has a high capital cost and also where deviant brews can be blended and not discarded. On a microbrewing scale checks on consistency are still valid but perhaps more as a feedback to production. Where extreme differences are found there is always the possibility of sales under a novel name.

This approach can be developed further to exploit the potential of variation as intentional distinction. Certainly in other products variation can be a valid cause of distinction giving marketing the opportunity to add the value of a vintage production – wine or spirits particularly but increasingly in lower value foods as cheese or cured meats. In a broader context inconsistency due to natural

variation is the mechanism of evolution. Without the variation no new species or products would appear.

In the now busy market place of specialist beers variety pulls drinkers almost as much as reputation. In fact a reputation in variety can have marketing value in itself. Not a few breweries produce beers with ingredients of the moment – fresh green hops, local barley, seasonal herbs, wild yeasts. Others brew a unique beer every anniversary of the brewery, limited edition - sales by personal collection only.

Some of these are successful in marketing at enhanced profit – not just reflecting interest in novelty but in the ingenuity of the difference. Beers continue to evolve.

**We still need the majority to maintain consistency but making mistakes can be essential to the natural selection of your portfolio.**

