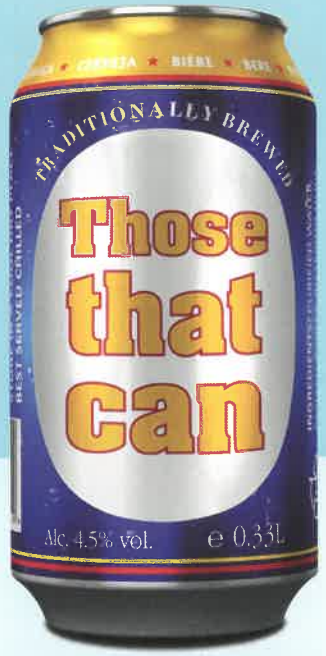
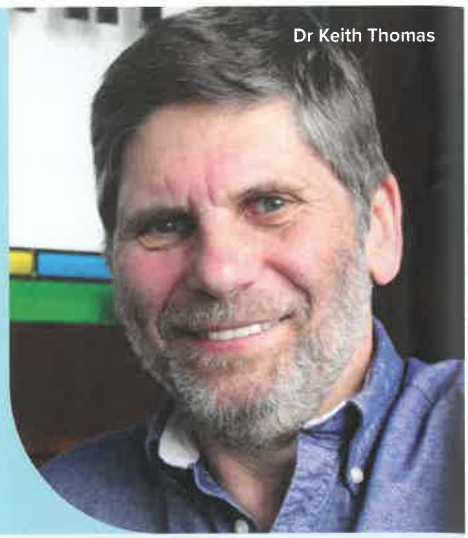
**With much of the excess cask and keg beer in small brewers' warehouses swiftly diverted into small pack at the start of the first lockdown this year, there has been exponential growth in canning even among brewers who previously sold 90% of their beer in cask. Brewlab's Keith Thomas takes a look at the technical challenges this new channel presents and how brewers might best overcome them...**





Dr Keith Thomas

An occasionally heard mantra in the moment of Covid is "those that can survive". Referring in brewing terms to the massive increase in interest in canning as a means of maintaining or even expanding sales and, hopefully, survival.

Come the moment come the technology and suddenly a plethora of breweries are offering cans as their major packaging choice. Once derided as street fodder cans are increasingly predominant and close to matching bottles in craft brew sales.

Considering their advantages it is perhaps surprising that it has taken so long for microbreweries to become adapted to cans. Lighter to transport, greater environmental credence, extensive area for package information even increasing customer acceptance and expectation. Textured labelling also has more impact than on a bottle.

Or perhaps it isn't surprising. Cans were for many years the provenance of large-scale production. Not just because of the cost of can filling technology but of can printing requiring an extensive minimum order and equally extensive space for their storage. Today this whole technology has been down-sized with small scale systems readily available to install on site and at contract packagers. Mobile canning is easily available with transportable systems to operate directly from your conditioning tanks. Canning was never so accessible, there are even single head seamers you can operate for home brewing.

How difficult is canning though? Preparing beer for canning has the same requirements as for bottling or kegging. Hygiene is a priority to prevent contamination with microbes, oxygen control to prevent staling and suitable filtration if clarity is required. All of these are second nature to general beer maturation and packaging whatever the container you choose. Where cans differ particularly is in the manner of their closure and the engineering of filling. The seams between the can body and the ends are particularly difficult to manage as tight seals are required. Early tin plate cans with top and bottom lids had greater propensity for problems but today's cans have a stretched body with just a top lid to attach. Although the sealing mechanism uses a similar pressure adhesion as for bottle caps there is a greater expanse to cover and an overlapping flange arrangement to ensure tightness. Inevitably the costs of equipment are higher but increasingly more affordable.

As in bottling counter pressure filling is essential to limit contamination and oxidation and with a larger fill opening cans have greater difficulty in minimising ingress than for the narrow neck of a bottle. In addition, there will be greater exposure of beer to the atmosphere between filling and sealing so making oxygen levels harder to achieve.

For some products filtration is not conducted and many craft breweries are proudly promoting beers with natural conditioning and inevitable haze. If you drink straight from the can this won't be so noticeable but will be seen clearly in a glass. It is with these drinks that can problems have potential to appear. As with bottle conditioned beer fermentation in package can occur. As with bottle conditioned beer careful management of residual fermentation is essential otherwise a flat or a gushing beer results. Mismanagement of secondary fermentation or contamination with diastaticus yeasts are easy causes of such problems. Unlike over-carbonated bottled beer cans will initially distort and eventually tear apart at their seam. This is arguably less hazardous than glass shattering from an exploding bottle but either way beer, and reputations, are lost.

A further fault of cans is the possibility of corrosion producing leakage. Although rare, cans do have the potential of aluminium corrosion by acidic products. Beer carries this potential but is limited by a lacquer lining preventing contact between the beer and the metal. Not all lacquers are effective though as evidenced by problems earlier this year with breweries canning sanitiser for Covid-19 protection. The WHO formulation of 80% ethanol with 1.45% glycerol and 0.125% hydrogen peroxide proved too aggressive for some linings leading to leakages as linings degenerated and metal was corroded.

Although cans have a high resistance to physical damage corrosion may also occur from the outside if certain bacteria colonise the surface. These species will grow if cans are kept in humid environments such as in non-porous shrink wrap resulting over time in digestion of outer surfaces, metal corrosion and leakage.

Despite these rare concerns cans have raised their awareness and reception with limited resistance from consumer choice today despite past reserve. Experiments in 2016 indicated that drinkers rated beer poured from bottles to be better quality than those poured from cans. However, when the same beers were presented without sight of the containers both were judged to be of equal quality. Perceptions of cans have certainly changed since then and today it certainly seems that those who can are well positioned for the future.