

The Fastener Industry Inspecting the Foundations Following the Covid 19 Quake

by Peter Standring

Many years ago, the Author was invited to a global automotive OEM manufacturing facility to advise on a production problem. When greeted by a Senior Supervisor, he was astonished to be met with the phrase, “We need things to be different but we don’t want to change anything.” This evidently nonsensical choice of words was, at the time, seriously perplexing. Since then and silly as it may sound, the same sentiments were found in contacts amongst many major automotive OEM’s.

To explain, every aspect of a vehicle description exists digitally within a computer database. To ensure total consistency, the Master File is utilised at every stage of manufacture through to legacy. The result; to alter a single dimension on a part CAD file would cost many thousands of US dollars to effect the change through the whole OEM network.

So, how can a difference be made without changing anything? Well, in this particular metalforming problem, it was the existing manufacturing process which was unable to consistently achieve the CAD dimensions.

The solution, change the process to obtain the required difference without any need to modify the component CAD file. This odd situation came to mind when reflecting on the after effects of the Covid 19 virus. Strangely, unlike the visible evidence of destruction left behind by a tsunami, the influence of Covid 19 will only be found in the statistical records of the time.

For the fastener industry this will not only be reflected directly by those who manufacture, distribute and use fasteners but also by the many more companies and their employees who are linked to its supply chain. This article reviews the likely manufacturing aftermath of the Covid 19 tsunami and seeks to identify the changes which may impact the fastener industry in its wake.

Pre Covid 19

2018 was perhaps a high watermark for the global fastener industry following the financial crisis of 2008/9. As many in the industry may recall (with some fondness) it was a time when, as sometimes stated, ‘availability’ was the issue, not ‘price’. 2019 had mixed messages. Politically there was the USA/China trade problems, conflict in the Middle East, variations in steel prices and in Europe, the Brexit issue. The recognised technical goal was the drive towards the 4th Industrial Revolution, ‘smart’ automated equipment and integrated digitisation. On the supply side, the key target was to provide a seamless, full service digital delivery capability and where possible to exceed the purchaser’s own demands. 2019 also recorded a general, global downturn in fastener demand which had a knock-on effect through the supply chain. This was partially due to lower consumer spend which, in turn, was reflected in reduced factory output and deferred investment.

In addition to the difficulties mentioned above, distinct nervousness over the technological developments in some markets were causing Boardroom concern. With a global usage approaching 30% of all fasteners, the automotive market being the second largest user of fasteners is naturally significant to the fastener industry. The apparently inexorable rise in the take up of battery driven electric vehicles spells angst amongst OEM’s who are also attempting to work their way into driverless vehicles. So, link this with the new/newer upstarts like Tesla now vying with Toyota at the top of the earnings tree and the on-line tech giants with apparently unlimited budgets who are also contemplating entry. Despite the constant rationalisation amongst the long standing auto OEM’s to obtain greater market share, their collective nervousness about the future is evident and justified. The commercial aircraft market was also suffering its own woes indicated by some airlines taking the Airbus A380 out of service and the problems Boeing had with the 737 max.

The Impact of Covid 19

Where and how the Covid 19 virus came into being is not a matter for this article. Its impact on the fastener industry is. A rolling lockdown in China following the New Year Celebrations was total. As a major fastener supplier to the world, distributors had in fact placed contingency orders before the lockdown to cover for possible delays due to the holiday period. Also, as 2019 had seen reduced demand globally, few serious supply chain issues were noted. As the roll out of shut downs took place across the globe, it became apparent that some sectors of all economies were experiencing unprecedented demand whilst others were at zero. Figure One shows, in general terms, the distribution of this famine or feast without any values or scale. A third axis indicating the timescale to ‘normalisation’ (whatever that might be) would be an interesting addition? Amongst the Sectors listed as economic winners in 2020 are those in the fastener market who supply: hospital/health equipment, the defence/military (generally first in the queue if ever supply lines are threatened) and DIY home makers unable to operate from their workplace. Communications, energy, logistics and construction are all in the neutral position where some players like, on-line messaging, delivery services and public works are required but others laid off. Those hardest hit have been big ticket item manufacturing industries like Aerospace, Automotive, Oil and Gas where the demand tap was simply turned off. Just as in the professional sporting world, recovery from the shut-down will at best remain patchy and for their recovery, dependent on how the Covid 19 virus continues.

The Covid 19 Wake

The key to any and every business success is demand. If the demand isn't there, no matter how good the offering, it simply produces negative equity and the business fails. Meeting high demand requires investment and, provided the demand remains, the investment pays off. However, like everything in life there is a risk and for any large investment that risk is proportional to the pay back. So, when the once in a 100 years pandemic shuts everything down and the income stream from the investment ceases to pay off the loans taken out to fund it, the good times can quickly turn very bad. The automotive industry is a classic case in point. The Japanese auto major transplants into the USA, UK and elsewhere, demonstrated how local employees could be equipped and trained to match Japanese homeland standards of quality and productivity.

The economic collapse of the former USSR opened previously untapped markets in Central and Eastern Europe to businesses from the West. Throughout the 1990's industrial transplants from outside these regions sprang up raising both the standard of living and quality of life. In return, the OEM's and their respective satellite supply chain partners benefitted from a lower cost, skilled and a stable labour force. When China became a member of the World Trade Organisation, the global auto OEM's and their supply chain partners entered that market. At every location new factories were built designed to produce a selection of models and their variants. Being designer built, these new premises incorporated state of the art equipment and assembly systems. Back in their own countries, the OEM facilities there, often being older and not designed to incorporate modern systems, failed to match the production of similar vehicles in China. Couple that with a less flexible, higher paid labour force and the bean counter's conclusions are self evident. Throw the Covid 19 into the already complex mix and there arises a problem which will literally shake the economic foundations.

The simple fact of life for all automotive assembly plants is that in order to break even they are required to operate at a minimum efficiency (throughput) of around 75%. Any measure of efficiency determined by output over input can never be greater than one. So, in the case of an assembly plant, the assessed throughput of ~75% must be based on line speed and numbers of stations which clearly are arbitrary values.

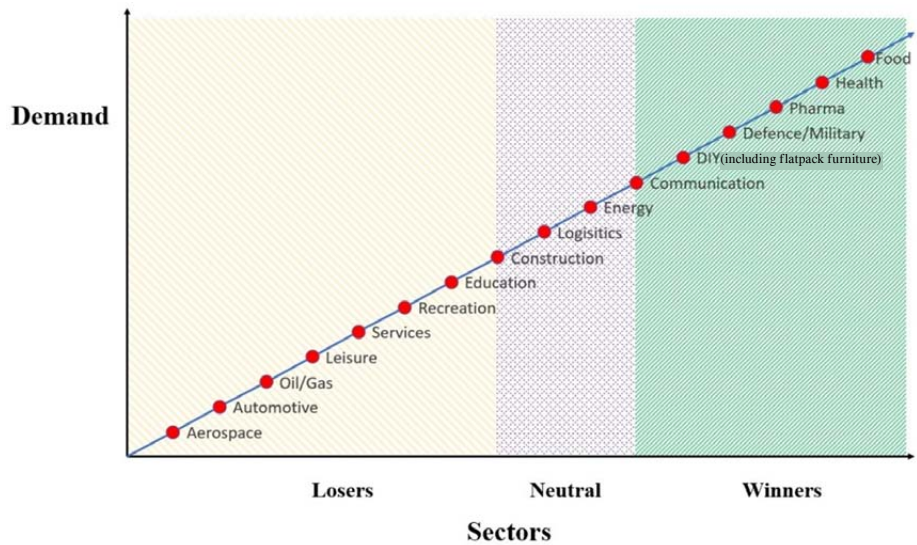


Figure One. Commercial Sector Demand During Covid 19 Lockdown

However, to run an assembly plant below this figure of efficiency, by definition, will be unprofitable. In August 2020, Tesla, which delivered under 400k vehicles last year compared with Toyota's 10.5m became the most valuable auto OEM in the World. Why? Because, in part, all its facilities are new, it also serves a market which is growing (electric only vehicles) and has a highly rated market image. According to figures from Yahoo Finance, on 1st September 2020, Tesla's Market Capitalisation of \$442.7b exceeded the combined values of its rivals: Toyota, VW, Daimler, Ferrari and BMW which collectively produced around a quarter of all of the world's vehicles. Madness? Maybe? But given that electric vehicles use only 33% of the components of a typical internal combustion vehicle, the supply chain and inventory must clearly be far more cost attractive. Perhaps of greater importance to those in the fastener industry, electric vehicles use just over one tenth of the nut/screw fasteners employed on an internal combustion engine.

Like all purveyors of goods, the market is best when the purchaser has money. For the automotive OEM's, buyers having the resources to spend will take up the existing new stock and place their 'build to orders'. However, in times of an economic recession, as has followed the Covid 19 lockdown, new vehicle demand will slump. The natural consequence will be a reduction on Just-in-Time call off of parts and a vacuum of reorder demand along the supply chain. So, the million dollar question must be, how many companies operating within the supply chain can afford to continue in business when their own direct and indirect costs exceed the income? For scale, the aerospace industry is much smaller in the number of units sold than the automotive industry but much larger in unit value. In terms of demand for distance travelled, the two industries are probably quite similar. Take away the passenger demand and, without substantial government support, the whole edifice is threatened. Learn to communicate, work, shop and 'be' fed on-line, then the need to travel, to attend the workplace and to regularly leave the home becomes unnecessary particularly if the person fears they could catch the Covid 19 virus.

Conclusions

The simple fact is that we are where we are and on this timeline there cannot be any conclusions. These must be drawn in the future when perhaps all will become clear. However, what is currently very clear, is that Covid 19 has shaken the human tree and lots of things have fallen from its branches. Like any food chain the strong rely on the weak. So, if those at the bottom can't survive then neither will those at the top. Today, it is very evident that the smaller companies which support those further up the chain are suffering from a lack of demand for the services they provide. If they have the option and capabilities to change direction and identify a different 'demand', they will stay in business. If not, they will close. Either way, the particular sector/sectors they served, will be less one: toolmaker, equipment provider, stockholder etc.. If you are a, too big to close global OEM negotiating with one or more governments to stay financially afloat, it is unlikely that the vision of your concern will travel much further down the chain than the Tier One suppliers. But reflect how much of your Just-in-Time demands you will be able to call on if there is no one lower down the chain out there to hear your call!