Cold Chain Barriers for Innovators and Pioneers

In the commercial transport sector, we always seem to be following a long and winding road, with multiply twist's and turn's that needs to be navigated to allow the continuation of the journey to deliver the vital goods around the UK and beyond.

But sometimes we hit barriers to our progress.

These barriers could be natural, regulatory or economic, and each one has to be addressed to allow the passage through, much like a vast and complex escape room with some slippery phase down slopes and if you are unlucky, you hit the really bad ones "Thou shall not pass".

The transport refrigeration sector is no different, as we are attached to trucks and trailers, thus we are subject to the same applied physics of this expansive freight escape room.

We could also consider that the three applied barriers intertwine.

1- We would not have the natural barriers if we sorted out climate change.
2- We might not be in this regulatory mess is we had invested in clean technologies.
3- The economic fallout could be associated with the issues with regulatory and natural issues.

A real cauldron of debate and cross arguments that I am not even going to entertain going into. (I get enough constructive feedback as it is)

However, the other area to watch for is that when a barrier is created for whatever reason then with the tenacity of the human spirit, we look to create a bypass or tunnel or bridge to allow further safe passage.

Step forward innovators. (Definition below)

*The word 'innovative' originates from the word 'innovate'. Innovate derives from the Latin word innovatus, which is past participle of innovare. 'Innovare' means '**to renew' or 'to change'**.*

Obviously another case of what did the Romans do for us.

So we know what they are thanks to the Latin to English translation, but in the sole context of the transport refrigeration industry, (I have to make a clear and stated point that there

are great innovators in the whole of the freight industry) the transport refrigeration innovators are becoming very active.

Coming back to the three barriers.

Barrier type - Refrigerant Gases

Natural –

The opening of the ozone hole was the start of a barrier with a slippery slope to remove the old Chlorofluorocarbons (CFC) refrigerants from the transport sector and beyond.

Regulatory -

This then opened up a further regulatory slope with a worldwide focused phase out of the higher global warming potential gases (GWP) like CFC's and now includes hydrochloro-fluorocarbons (HCFC) and Hydrofluorocarbons (HFC). Looking further in the barrier cauldron we can also see the rising issues with perfluoroalky and Polyfluoroalkyl (PFAS) also known as "Forever chemicals" that are included in all synthetic refrigerants like Hydrofluoroolefins (HFO), with active regulatory and legal cases rising in the EU and USA.

Economic -

The costs of the gases due to the phase down then increases and the value of old equipment with old gases decreases, with other associated issue like the opportunity to export equipment with barrier issues, also starting to emerge as a new barrier raises with some developing countries looking to stop imports of old refrigeration equipment in its current form.

Bring on the innovators.

The innovators spotted the issues and got to work and we are now seeing multiply cases of transport refrigeration units using Natural Refrigerants like C02 and Propane effectively and efficiently, all this alongside phase change materials, air barriers and improved insulation types for the truck and trailer bodies. A barrier is now ready to be bypassed.

We could apply the same thought process to the emissions barrier.

Barrier Type – Emissions.

Natural –

The cost to environment and to the health of individuals is a well-proven legal case, with limits being set by the United Nations and commitments year on year at the COP conferences.

Regulatory -

For the transport refrigeration sector this barrier is low, but is growing. We have seen talks about the areas like the Ultra Low Emission Zone in London where they want to increase the equipment covered by emission control. I have seen various UK Governments reports published and unpublished on the emissions from the diesel engines used in transport refrigeration units and we are all watching the Californian Air Resource Board (CARB) as they start the phase out of diesel truck transport refrigeration units from 2023 with trailers to follow.

Economic –

The simple cost of fuel of all types, diesel – LNG – electric etc.

Bring on the Innovators.

This one barrier spawned out to be multiply barriers all that have come under some focus of the innovators eyes.

Like how best to stop emissions from transport refrigeration units?

Run them on electric using a combination of battery and solar or utilizing a power source from a Euro6 engine or LNG etc. (We also have to remember that emissions should also include the loss of refrigerant gases).

How can I control the use of the electric standby /shore power requirement in a distribution yard or shop etc. to monitor and stop running diesel engines in the yards. Some very clever inventors have created software and hardware solutions to give central engineering teams remote access to control operations from afar. Some of these great innovations can have lasting effects.

Step Forward the Pioneers - (Definition below and again thank you to the Romans)

French pionnier, from Old French peonier, foot soldier, from peon, from Medieval Latin pedō, pedōn-, from Late Latin, ***one who has broad feet.***

The only way we can beat these barriers is by working together to spot the future barriers and make changes to the way we live and work now and to recognise that we must improve the transport refrigeration industry.

But for that we need companies and CEOs with the broad feet (Not calling you Hobbits) to be the Pioneers to take on these innovations and to actively engage with the innovators in the industry.

Don’t wait for someone to put up the Regulation Barriers as by that point you will have lost the initiative and competitive advantage, defiantly do not wait for the natural barrier as

these will become a permeant feature as this will force more regulations and force the economic barrier to raise.

Sometimes the first step is the hardest to take, but the footprint will last forever.

About Norman Highnam MinstR

A leadership awarding winning and published transport refrigeration consultant having spent over 35 years in the industry at all levels from engineering to senior board level appointments.
I look to help people understand the industry and I actively lobby for engineer safety including the removal and control of emissions in the transport refrigeration sector.
About (highnamassist.co.uk)