This page was exported from - Shelburne Free Press
Export date: Sun Nov 1 1:51:54 2026 / +0000 GMT

Musk?s Starship: If it sounds too good to be true?

by GWYNNE DYER

Elon Musk promised to build a spaceship that would put people and cargo into Earth orbit at one-hundredth of the current cost per kilo and even enable human beings to create a colony on Mars. A great many people were seduced by the idea, including me.

His project is running well behind schedule, however, and now British freelance journalist Will Lockett, writing on the website Medium, has called Musk out (in slightly less brutal language) as a failure and a fraud.

Basically, Lockett is saying that ?Starship,' the heavy-lift two-stage rocket that was alleged (by Musk) to be a revolutionary advance in space flight, is a badly engineered, over-hyped machine that can never work well.

His latest article on that theme, entitled ?SpaceX Keeps Proving My Little Starship Theory Right,' is about the remarkable accident at Musk's Starbase last weekend that destroyed Super Heavy Booster 18. It was meant to lift the first ?Version 3' Starship off the pad next month, but they are now removing the wreckage of that booster and replacing it with another one.

And here's the thing. The reports said Booster 18 had ?exploded', but it was a very soft explosion because the vehicle had no fuel in it. It was just a pressure test of the Composite Overwrapped Pressure Vessels that store various gases or liquids in the rocket (not fuel for the main engines). But the pressure they put on the tanks ruptured them.

You would obviously test the tanks with a somewhat higher pressure than they normally run at ? but NOT with pressure that bursts them like a popped balloon. You would do it at maybe 1.5 times the designed maximum pressure, just to be sure the tanks are strong enough to withstand any modest over-pressure they might encounter. But this time ? bang!

Actually, there have been a lot of bangs. Musk's original pitch said Starship could lift 100 tonnes to Low Earth Orbit (LEO), but five of the 11 launches so far have ended in explosions and none have yet gone into orbit. In fact, SpaceX has already blown through an unplanned Version 2 of the rocket and January will see the first flight of Version 3.

Each version is lighter and more powerful than its predecessor, which suggests that someone got the original calculations wrong. As Lockett put it, ?Musk ignorantly overstated how much thrust their rockets could generate (to comical levels) and grossly underestimated how much a rocket this giant would need to weigh.?

The standard excuse for all those explosions is Musk's preference for the ?iterative testing method,' in which you test your best guess of a design, learn why it failed, test a modified design, learn again, and so on until finally you arrive at a version that doesn't fail. But he's not there yet, and all his ?fixes' involve making the rocket both lighter and more powerful.

The suspicion, therefore, is that Musk arrogantly assumed that throwing enough money and engineering talent at the project could somehow overcome the constraints of Russian scientist Konstantin Tsiolkovsky's classic ?rocket equation' of 1903. That's the one that says around 90 per cent of a rocket's launch weight has to be fuel if you want to put it into Earth orbit.

The rocket equation means that the vehicle's body, its engines, its cargo and its people all have to amount to no more than 10% of the rocket's launch weight. That, in turn, explains why nobody else has managed to radically lower the cost of per kilo of getting things into orbit ? and the equation applies to Musk's rockets too.

It's not impossible that Starship could be made to work more or less as intended, although the promise of 100 tonnes of cargo seems far out of reach. But the only way Musk can try to fix things is to make the ship even lighter and the engines even more powerful. Those, alas, are two remedies that work against each other.

More and bigger engines use more fuel and add more weight, so there's not much room for improvement there. They also cause more stress and vibration, while the ship's hull, tanks and pipes are getting more fragile and accident-prone with every kilo he cuts.

Starship has never yet even reached orbit and the doubts about SpaceX's basic engineering competence are accumulating. NASA gave the job of building the Artemis III lunar lander to SpaceX in 2021, but in October it reopened the contract to rival companies as well.

We will probably still see human beings back on the Moon by the end of this decade one way or another (Americans or Chinese), but if the promise of $10 a kilo to orbit turns out to be false there won't be a great deal happening beyond lunar orbit in the next decade.