

Stainless steel in ventilator design

As the current strain of coronavirus, or COVID-19, continues to strain healthcare systems worldwide, the insufficient supply of intensive care unit (ICU) beds, ventilators, and personal protective equipment (PPE) for medical staff has become a major hurdle in the healthcare industry. Ventilators in particular are in short supply, as the virus targets the respiratory system. Somewhere between 10% and 25% of patients sick with COVID-19 eventually require assistance to breathe. Due to its excellent properties, stainless steel has become the preferred material of construction in the fight against the coronavirus.

By Mr. Pratik Sanghvi, Director - Operations, Venus Wire

In terms of their core function, ventilators are not extraordinarily complicated machines. Basically, they are sophisticated pumps – they control the oxygen and airflow from the patient's lungs, supporting them while they cannot do their work. If they fail, the patient is very likely to die. This is what makes them so challenging to build.

As intensive care units become overcrowded, doctors must care for more patients, and the reliability of ventilators cannot be in question. Material of construction is a key consideration in the design of reliable ventilators. Ventilators should be able to endure extensive wear and tear, resist contamination, and should hold up under different cleaning methods, such as chemical washes or UV. These requirements complicate engineering choices.



~ *The stem top and plunger of the most successful ventilators are built from stainless steel. Photo: Kokilaben Dhirubhai Ambani Hospital.*

top and plunger of the most successful ventilators are built from stainless steel. But as we focus on the critical need for ventilators, there is a disheartening situation of demand and supply gap related to the raw materials to build ventilators.

Amidst the COVID crisis, the demand for stainless steel ventilators has skyrocketed. We still have the supply, but the demand is so great that the supply can't keep up with it.

we see in Italy, in which frontline clinicians are making difficult decisions about who will and who won't receive care. The human and economic costs of this scenario should not be underestimated.

Just as pharmaceutical companies and researchers are working together to produce a vaccine, the world's top supply chains can pool resources and expertise to make sure the support system making companies get what they need. In this case, that means stainless steel. Fortunately, meeting this challenge is not impossible, but only difficult. Coordinated efforts by all can help in overcoming this pandemic.

Ventilator material selection

Keeping in mind these characteristics of metal which has to be used in the production, stainless steel for ventilators is the most preferred material of construction. Stainless steel has many unique properties, such as corrosion resistance, heat and fire resistance, and high levels of hygiene. Further, the stem

What can be done?

Overcoming this obstacle will require a concerted approach from all sectors, from the local and national government to the private sector and health care providers themselves. Failure to act in a coordinated manner would keep many patients from getting the care they need and would lead to the situation

About Venus Wire

Venus Wire is a stainless steel wire and bright bar manufacturing company.

Venus is an important supplier for many medical and pharmaceutical companies. In the current scenario of global pandemic, Venus is helping in the design and supply of material for making important components for ventilators. In this way, Venus is contributing to fight the battle against COVID-19.