

INTRODUCTION

Venturi valves are used for Venturi Oxygen masks. These are low-flow masks that use the Bernoulli principle to entrain room air when pure oxygen is delivered through a small orifice, resulting in a large total flow at predictable FIO₂.

Objective: To help the patient to breath correctly. Venturi mask utilizes a flow meter to deliver a precise amount of oxygen. This MD needs only an oxygen source.

DESCRIPTION

The Venturi mask comports 5 parts:

- A mask for the patient
- A tube
- A Venturi Valve
- A protection to always keep the holes open
- Oxygen line to connect the mask at the oxygen source



The valve is the only part with real technicality



In general, flow rate varies with colour. The correct flow rate to use with each colour it is shown on mask, along with the percentage of oxygen delivered. But it can easily adapt with another visual system.

The valve is the only technical part of the system. That is why Spentys concentrates all its effort on this part. The rest can be printed or produced normally.

Why is it useful during this crisis?

Coronavirus attacks the lungs and causes breathing diseases. Venturi masks are used a lot to save people without big breathing devices.

Today, hospitals don't have enough disposables. 3D Printing can replicate and produce those venturi valves. It is possible to overcome the shortage.

Risks:

- Misuses (wrong valve, bad connexion with oxygen line and/or with the mask)
- Blocked air exit
- Mistake during the conception/modelling
- Mistake during production
- Wrong connectivity
- Contamination, at all levels

Challenges:

- Regulatory (MD of class 2a)
- Logistics
- Sterilization (in-hospitals)
- Materials
- Distribution across hospitals
- Production (ISO13485 mandatory)

