Assessment of Safran's contribution options to the technological and industrial effort in the fight against COVID19

At this stage, we have identified 4 possible operational measures for Safran

1. **Supply of aeronautical first aid respirators (« type 5500 »)**

   These devices, produced by SAO in the United States, are designed for the provision of oxygen for passengers and crew, in the event of depressurisation when the central system in not available. They are made up of a portable oxygen cylinder, a regulator and two outlet ports for masks.

   This equipment was suggested to the Health and Defence Ministries last week. Their production (US) can reach over a hundred units per week.

   Description:

   Portable oxygen cylinder and regulator assembly designed for efficient delivery of aviation First-Aid Oxygen for post decompression use. This unit has 2 outlet ports for use with 2 masks. The flow is not adjustable. One outlet can be calibrated to 2 LPM and the other can be adjusted for 4 LPM. Or, both can be the same.
   Flow 2 and 4 LPM. The standard cylinder size is 11 cu ft (311 Liters) steel cylinder.
   Length = 22.9 in and Dia. = 3.6 in
   Weight < 10 lbs

2. **The use of equipment already supplied by Safran**

- Among the most promising options, assessed with IRBA, is the use of **NRBC MISTRAL** equipment, of which we have supplied several thousand to the French armed forces. **Over the last few days, Safran has supported IRBA in validating the use of these masks** and their ventilation, as needed by health professionals (including in intensive care). It is now up to the army to rule on the provision of the tens of thousands of systems. Decontamination after use of all parts remains a challenge to overcome. Systems under assessment :

MISTRAL combat mask

Developed for FELIN, it is equipped with its own filter cartridge, connected to a central ventilation station, delivering a very significant volume of air.

- **The use of EROS masks**, equipped with a filter cartridge, is under review both for health professionals as well as the patients.

EROS Mask, 3 modes

1. Normal: partially O2 enriched breathing mixture
2. 100% O2
3. Emergency: 100% O2 + positive pressure breathing (3-5 mbar, needed for non-invasive ventilation)

3. The design and manufacturing of an improved mask

On the basis of Open Source mask designs, for which it is possible to improve our systems, by including eye protection (skills in facial ergonomics) and miscellaneous adjustments, Safran could consider manufacturing and assembling all parts (EROS mask filter cartridge, Safran 3D printing) for a mask which would be better adapted to the specific requirements of COVID19.

4. The rallying of part of our manufacturing base for the benefit of other industries

Exchanges with Air Liquide have already highlighted their interest for support in the manufacturing of parts for their respirators, but we will only be able to evaluate plans for possible subcontracting on the basis of a consultation from the starting point of definition dossiers.