



# Space Engine Systems

An ISO 9001 & AS9100 Aerospace Certified Company



[www.spaceenginesystems.com](http://www.spaceenginesystems.com)

# Subjects

- Who we are (*not* a ventilator manufacturer nor a medical equipment supplier)
- Pathways to helping fight COVID-19
  - Rapid Ventilator Development and Production
  - Manifolded Oxygen-augmented CPAP Modifications
- Key shareholders in Oil and Gas equipment [www.can-k.com](http://www.can-k.com)
- SES Proposal



**Space Engine Systems**

## Who we are

Established in 2012, Space Engine Systems is a Canadian aerospace company that is pioneering the next generation of propulsion technologies for aerospace and space.

Our goal is to power a reusable, single-stage-to-orbit vehicle for space applications.

The Dass GNX engine is a combined-cycle engine utilizing various modes and fuels to optimise specific impulse (Isp) .



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## Who we are

Established in 2012, Space Engine Systems is a Canadian aerospace company that is pioneering the next generation of propulsion technologies for aerospace and space. Spun off from the Oil & Gas equipment company CAN-K. [www.can-k.com](http://www.can-k.com) established in 1991. Totally familiar with CE & ATEX certifications.

Our goal is to power a reusable, single-stage-to-orbit vehicle for space applications.

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# Pathways to help fight COVID-19

- We began exploring the problem of COVID-19 treatment at the beginning of March, from an engineering point of view.
- Designs are simple, after 3-4 weeks of studying the problem
- One concept is to produce more ventilators
  - Have explored a new design
  - Plenty happening in this space, but results are uncertain
- Our more unique concept is to leverage existing, medically-certified CPAP machines with modifications to augment them with oxygen both within the hospital and in the field.



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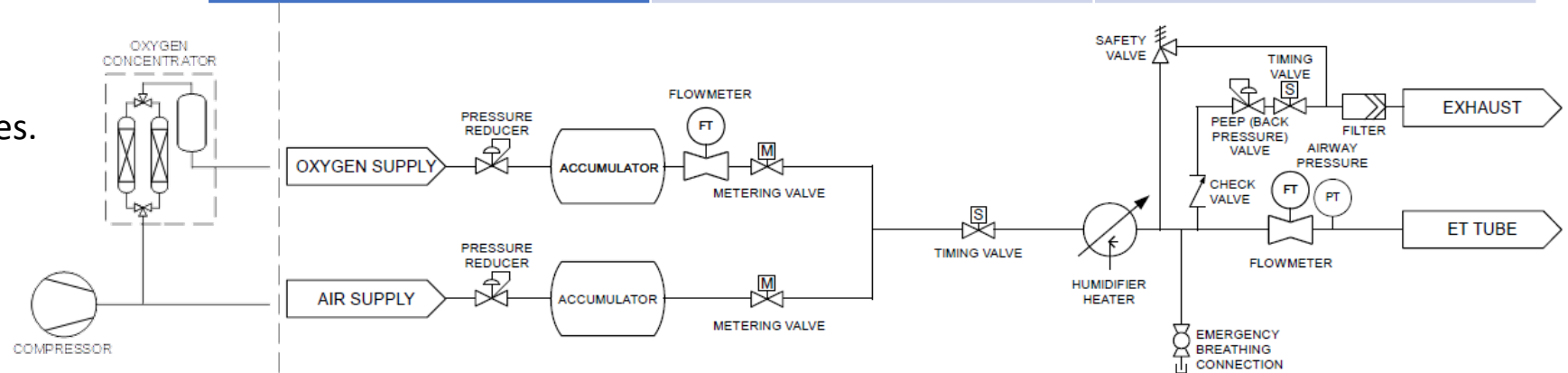
# SES Ventilator Design

Reasonably simple mechanical ventilator.

CMV, Assist, and CPAP modes can be programmed. Firmware can be upgraded to add features as development continues.

Field-operable compressor and oxygen concentrator can supply multiple (20+) ventilator modules.

Specification	Metric	Imperial
Inspiratory Pressure	Up to 40cmH2O	Up to 0.57psi
Expiratory Pressure	Up to 25cmH2O	Up to 0.36psi
Tidal Volume Range	100mL to 1000mL	6 – 60 cubic inches
Respiratory Rate	6-40 breaths/minute	N/A
Respiratory Minute Volume	0.6-40 L/min	0.02-1.4 CFM



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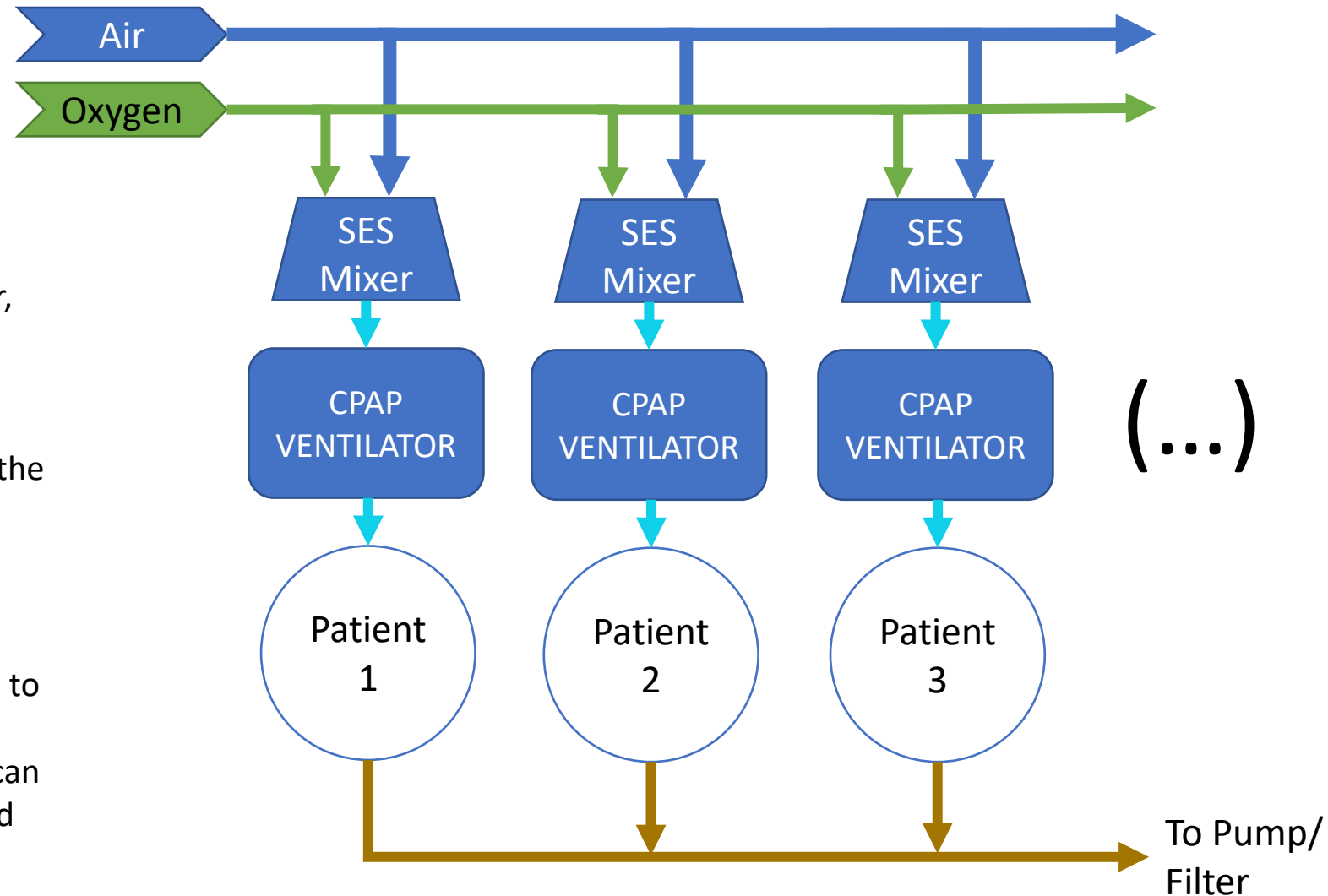
# SES Bulk Treatment Concept (20+ Patients)

Can be used with full ventilators (no mixer) or,  
Can Leverage existing CPAP machines

- Certified
- Well-understood by clinicians
- Can displace sophisticated ventilators for the more demanding cases

Blend oxygen using a manifold

- SES can prototype a blending valve in <1 week
- Can possibly tie into a bulk oxygen system to reduce load on hospital O<sub>2</sub>
- Can modify masks to filter exhalation, or can provide an extraction manifold, pump, and sanitizer/filter
- Modular Design
- Delivery: 6 to 12 weeks



# SES Proposal

Prototype will be ready within 24 business days from April 6<sup>th</sup> 2020 for simulation trials

Seeking Immediate partners in the USA & UK for mass manufacturing and certification:

- Full marketing net work in the US & UK and firm contracts specific to the US government.
- Certification in the USA and UK.
- Firm Purchase Orders with Force Majeure Condition should something drastic happen due to logistic failure
- Access to the US and UK medical community to convince them “immediately” the advantages of our systems and proceed expeditiously with contracts or funding or both.
- Protection against any class action or other law suit and insurance to back up in the US and UK
- Capability to move swiftly is critical



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