

Hong Kong Student Science Project Competition 2023

Template of Extended Abstract (Invention)

(Word Limit: 1,600 words, Pages: 3 pages only)

Team Number: SABC237

Project Title: Breathing Easy on the Go

Project Type: Invention

*To our best knowledge, there ~~are~~ are no * similar works in the market; (if there are,) related product links are as below:*

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The enhancement our project made / the difference with related products are:

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**Please delete if not applicable. The competition values the originality of works. Students must do enough literature research to ensure that their works are unique and list relevant reference materials before starting research or invention.*

I. Background

Oxygen concentrators are typically prescribed for individuals who require supplemental oxygen to manage their health condition.

As someone who has struggled with mobility challenges, I know all too well the difficulties that come with needing to use oxygen therapy. Traditional oxygen concentrators can be heavy, cumbersome, and extremely limiting when it comes to mobility.

Portable oxygen concentrators are small, lightweight devices that filter and purify air. One of the main benefits of using a portable oxygen concentrator is the freedom and mobility it provides.

II. Objectives

➤ State the **aim(s)** of project

We want to build a “Temporary Oxygen Concentrator” for underprivileged people relying on a stationary oxygen concentrator at their home.

III. Methodology

We aim to make the system fast-charging, so they need to wait for about 15 mins for the next 10-minute move.

IV. Design of Invention

- Put ##### (nitrogen absorber granules. masked due to confidentiality concern.) into adsorption chamber.
- Connect the air compressor to the container for pumping air through the #####.
- The ##### will adsorb the nitrogen molecules, allowing the concentrated oxygen to exit the device through a valve and tubing.
- Build a fast charging power system to stably control the flow rate of oxygen during the detached

time.

V. Application / Market Need

For people with breathing challenges, to live freely can be a challenge. Traditional oxygen concentrator can be heavy and difficult to transport, limiting mobility and making it difficult to enjoy daily activities. Temporary portable oxygen concentrators with fast charging, on the other hand, provide freedom and mobility, allowing users to move around freely and enjoy their daily activities without worry.

VI. If your team will compete the Sustainable Development Award, please indicate the specific sustainable development goal the project is related to, and provide justification for competing for this award. (Word limit: 300 words)

VII. If your team will compete the Social Innovation Award, please list the target group or social issue the project focuses on, and provide justification for competing for this award. (Word limit: 300 words)

VIII. Conclusion

By using this temporary system, they can have about 10 minutes detached free time to perform their daily tasks like preparing food, going to the toilet, getting dressed.

Our project is developed based on previous project and the enhancement is below: