Indo Universal Collaboration for Engineering Education
IUCEE FOUNDATION

IUCEE Student Competition

Oxygen Enriched Air from Plants
(For COVID patients experiencing Pulmonary Distress and for Post Covid convalescence)

Background
The ongoing pandemic has made us all acutely aware of the need for oxygen in medical treatment.

Problem Statement
The challenge is to design a process for producing oxygen using the process of photosynthesis and make it available to patients, particularly those convalescing. Some research has shown that photosynthesis can be optimized and could be looked at as a chemical plant subject to the same chemical processes as any other. Even if the device can produce limited amounts it may be useful for providing temporary relief in emergency cases

Some of the factors which need to be considered are:

- Plants selection – based on rates of photosynthesis
- Photosynthesis optimization including light types and wavelengths
- Oxygen enriched air collection and testing
- Designing equipment which is easily built to be able keep the flow of O2
- Supply to the patient either through air pump as in an nebulizer
- Evaluation of design for feasibility

Some of the challenges inherent in the problem statement:

1. Continuous supply; plants need a dark period and a light period for the cycle to complete
2. Concentration, flow and biomass needed; (we are aiming at 4 to 5 Lpm at 40 to 50% O2)
3. Maintenance and indoor care / lighting.

There could be diverse models, of course, depending on the need and local resources
Interested students need to pre-register in teams of three, before Thursday June 10 with one faculty guide using link: https://www.surveymonkey.com/r/TWMK2RP.

These teams will be Invited to attend an Orientation Webinar on Friday June 11 at 6:30 pm, to explain next steps.

The final design concept needs to be submitted as a 5 minute video. The orientation webinar will provide assistance in preparing videos and submitting them.
Deadline for submission of videos: July 10, 2021

Cash Prizes will be awarded to best submissions
Papers could be published as UG research
Possibility of IP rights and patents
All reasonable submissions will be given certificates.

PS: This competition is an excellent example of how engineering students can obtain a holistic and multidisciplinary education as required by NEP 2020 Guidelines