Opportunity and Significance
This device was designed with the intent to assist in breathing for patients suffering from emphysema. Although, it is made applicable to other conditions in which an individual is having difficulty obtaining the proper amount of oxygen per breath. Our device functions as a portable oxygen concentrator, which converts atmospheric air to a highly oxygen concentrated air output. Emphysema and Chronic Obstructive Pulmonary Disease (COPD) affect a reported 11 million people, providing a large population which could benefit from the medical assistance provided by this device.¹

Technical Objectives
- Lightweight, 800 grams at most
- Provide up to 94% concentrated oxygen
- Portable and easy to carry: 6.4” H x 4.8” W x 2.5” D
- Battery life of 3 hours
- Operates in varying conditions: 42-95°F, 10,000 ft. altitude, 85% humidity.

Technical Approach, Accomplishments and Results

Main Components/Material List
• Polyethylene body
• Polystyrene screen
• Polyurethane buttons
• Compressor
• Pressure regulator/switch valve
• Circuit board components
• Zeolite sieve

Ergonomic Survey Results
Scored from 1-10
• Comfortability: 6.70
• Easy to learn: 9.17
• Handheld: 6.40
• Convenience: 7.35

Next Steps for Development and Test

Durability Testing
• Device maintains 94% Oxygen output for 1200 battery cycles
• Powering device on/off, allowing battery to discharge completely. Recharge device and repeat process 1200 times

Environment Extremes Testing
• Device retains optimal function from 42-95°F
• Device maintains 94% Oxygen at 85% humidity
• Device maintains 94% Oxygen at 10,000 ft.

Efficiency of Rescaled Components
Contact Bauer Compressor Manufacturer

Commercialization Plan & Partners
• Potential Partners: WSU TCO, Airsep, Inogen, Medtronic
• 510(k) Submission
  o Electromagnetic Compatibility Testing
  o Electrical & Mechanical Safety Testing
  o VOC & Particulate Testing
  o Performance Testing
  o Predicate Device Comparison/Equivalence

• Develop Quality Assurance Program that Meets GMP Requirements
• Establish Proper Labels

References