

Air Quality Monitoring and Control System for Indoor Environments.



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TESTING AND VALIDATION

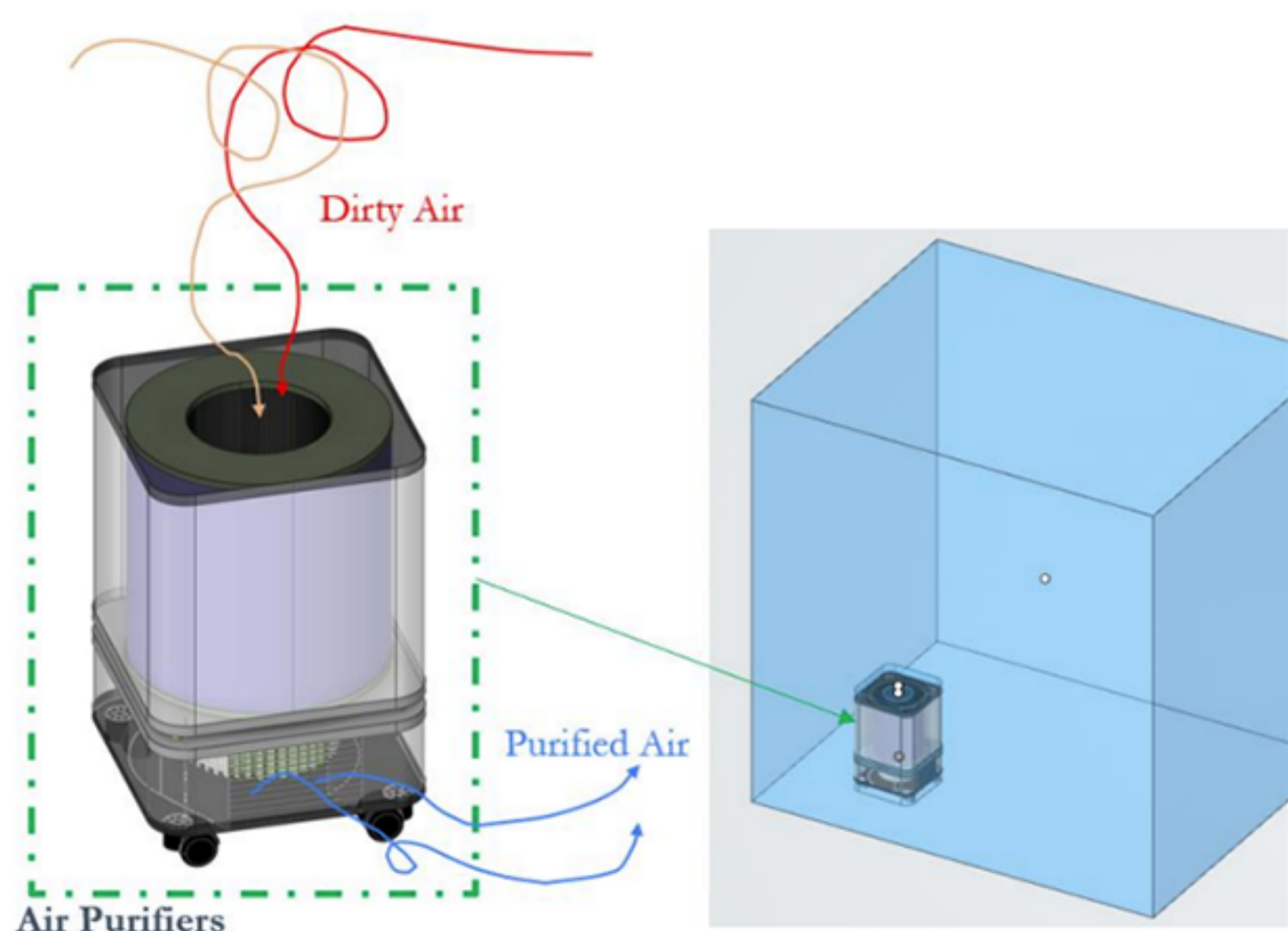
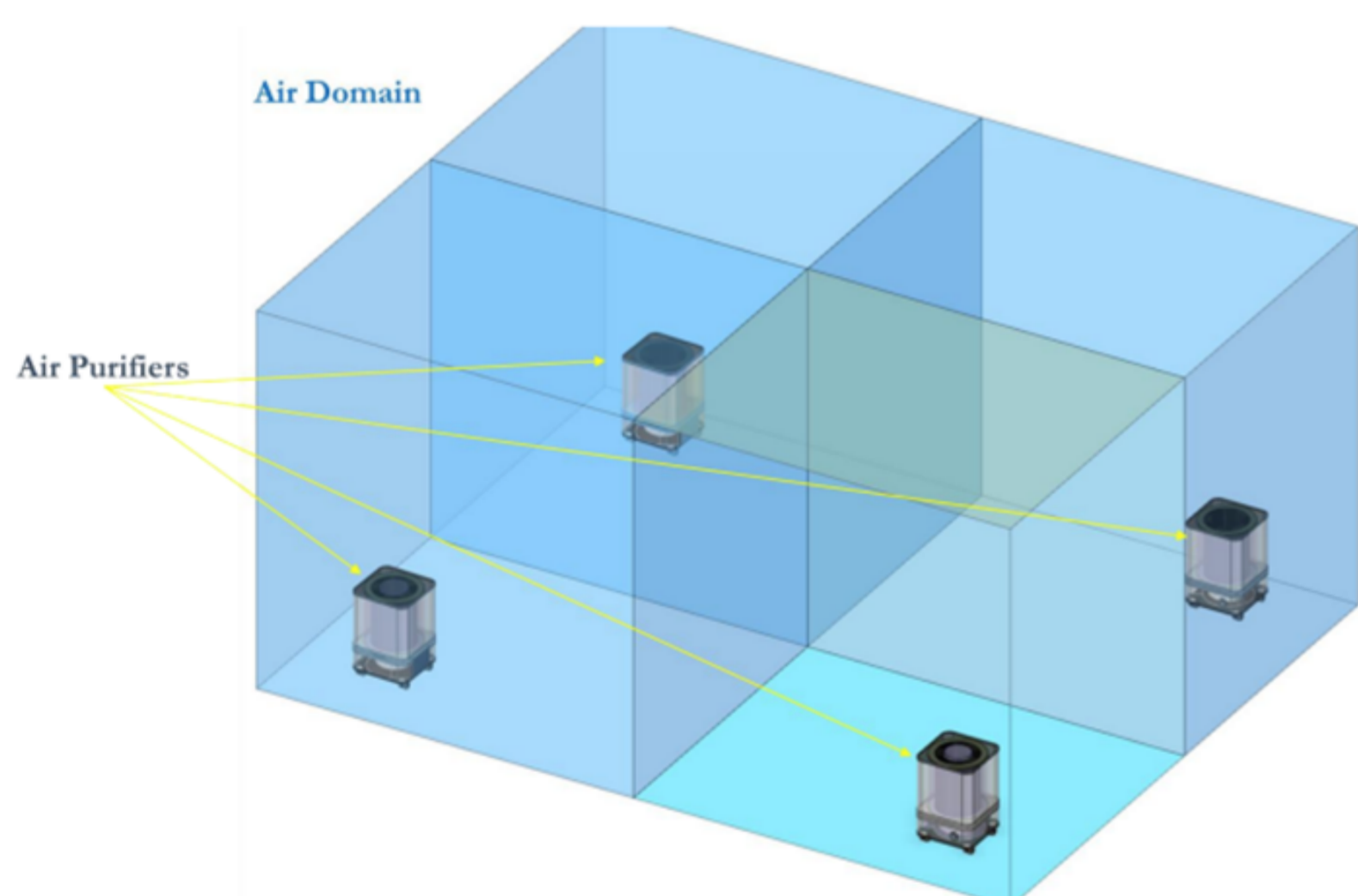
INTRODUCTION

Problem Statement: Addressing the Challenge of Indoor Air Quality with Innovative Solutions.

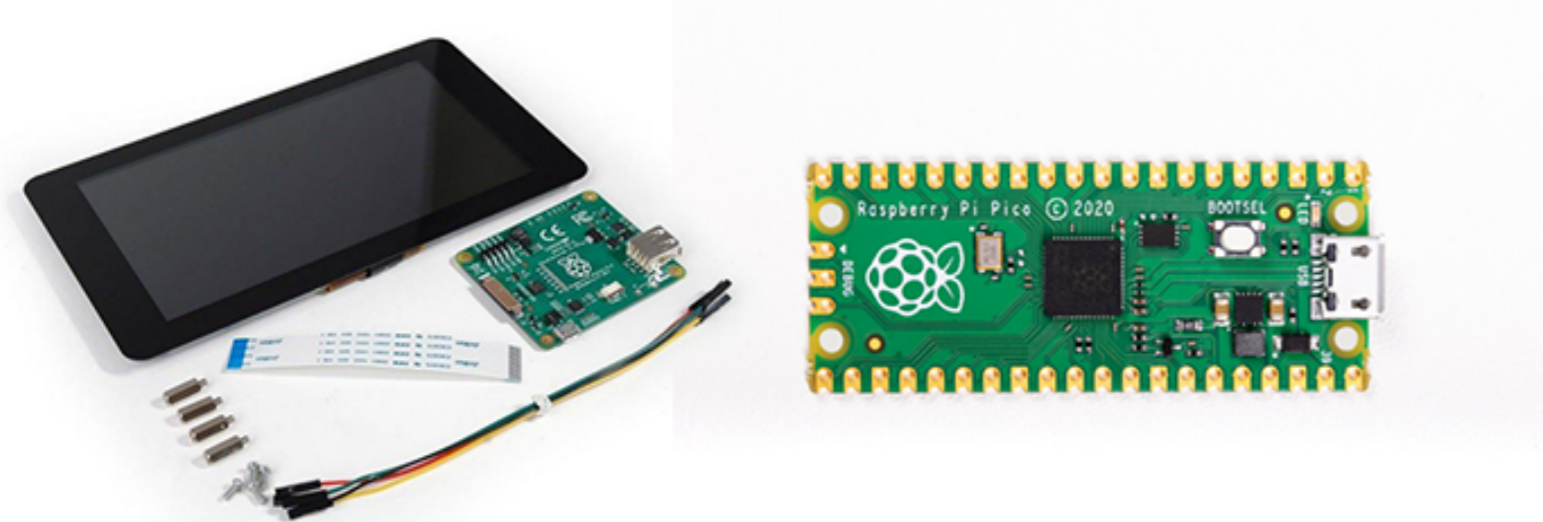
Constraints: Budget limitations, technical feasibilities, and time constraints.

Target Specifications: Sensor accuracy: %90, Purification volume: 500 m³/h, Cost: ≤ 4000 SAR, Interface: user-friendly, Noise: < 40 dB, Energy: < 50W, VOC and PM_{2.5} removal: %90.

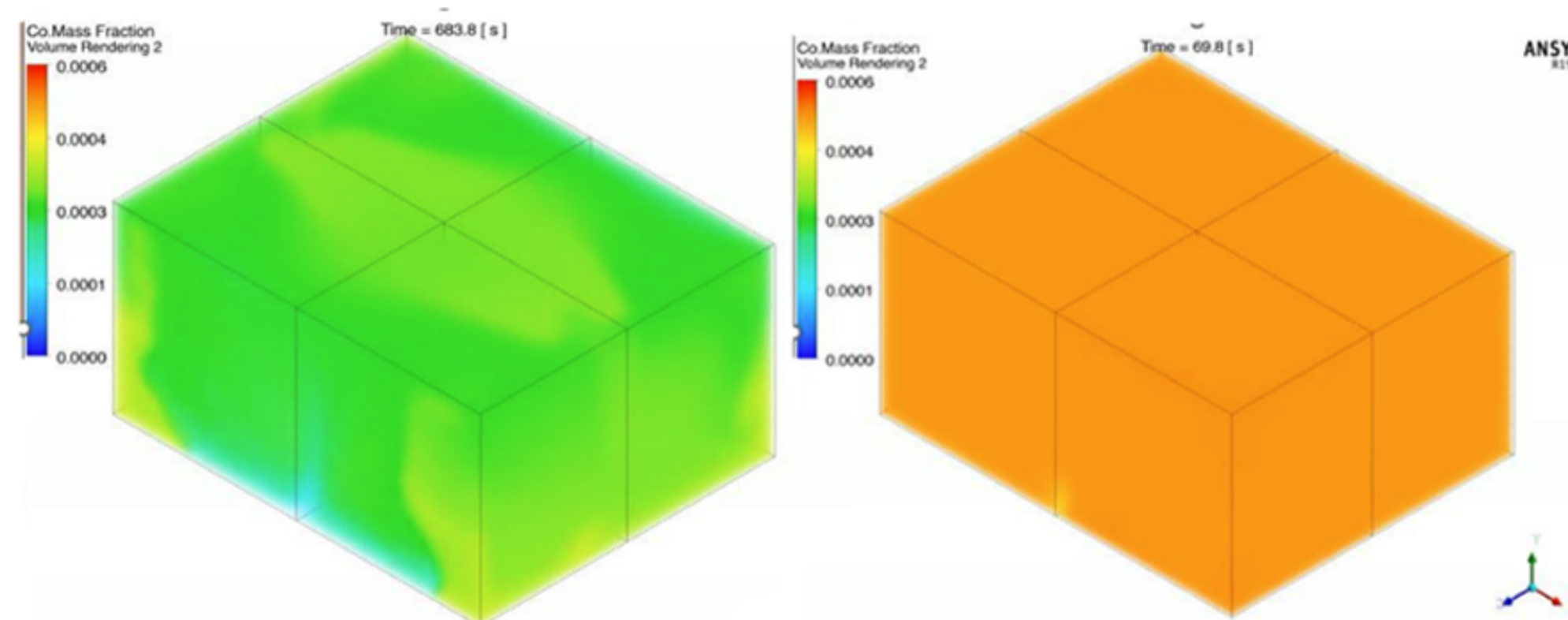
DESIGN PROTOTYPE



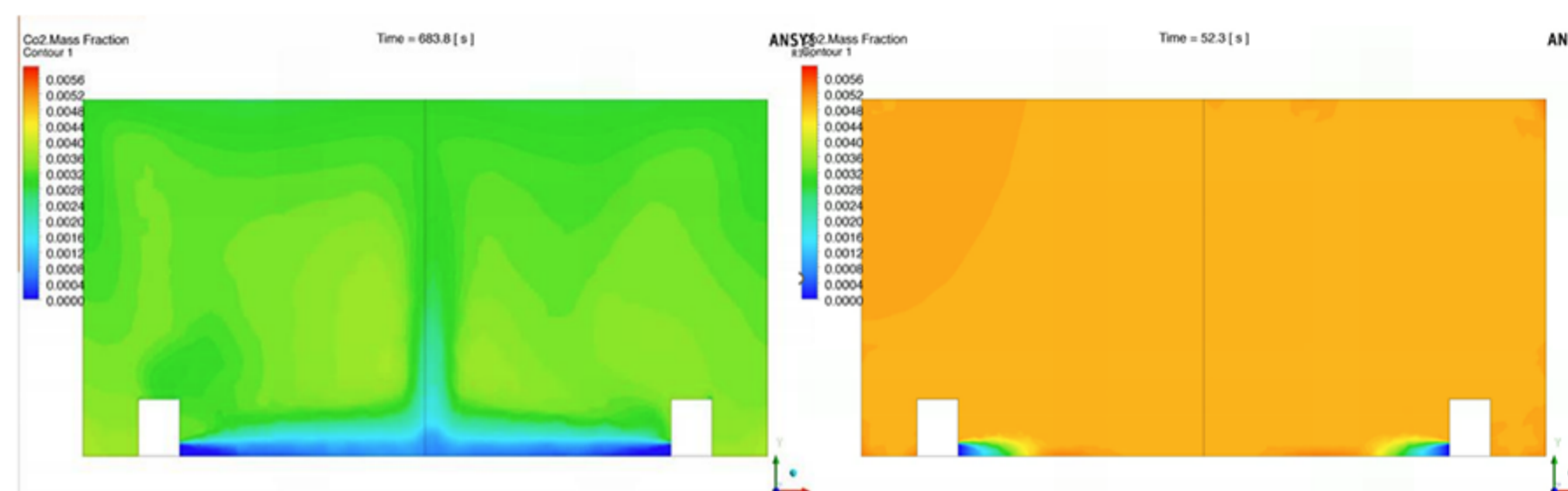
Raspberry Pi 7-inch Touch Screen Display



CO Results: %63.83



CO₂ Results: %67.27



Remaining result of VOCs

H ₂ S	80.34%
HCN	80.21%
NH ₃	50.63%
SO ₂	81.52%
NO ₂	66.67%

CONCLUSION

Project Summary: We've made great progress in combining advanced air quality monitoring with effective cleaning. This shows how teamwork and new ideas can help solve indoor air pollution.

Target Achievement: Our system works well in reducing some harmful gases, but not as well for others. It's really good at removing H₂S, HCN, and SO₂, but not so much for CO, CO₂, NH₃, and NO₂.

Reflection on Efficiency Goals: We didn't quite hit our goal of %90 effectiveness for all gases because air cleaning is complicated and each gas is different. Still, we've made the air much safer, which is a big step in improving indoor air cleaning tech.

Future Prospects: Our results are a starting point for more research and development. We're committed to making our system even better at cleaning a wider range of indoor air pollutants.