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C1Po3B-04: Development of the Cool Fuel School: a comprehensive hands-on cryogenic hydrogen design and safety program

Monday 19 May 2025 14:00 (2 hours)

Investments in the hydrogen economy, including the 7-billion USD Hydrogen Hub initiative, are poised to greatly expand employment in the hydrogen sector. Training and education at all levels will be essential for ensuring hydrogen fuel maintains an excellent safety record amid expanding use. However, few cryogenic hydrogen safety programs are available and little to no data on program effectiveness are available in the open literature. To address this need, the HYPER Center aggregated existing hands-on trainings into a week-long program called the “Cool Fuel School.” Participants in the week-long program experience workshops on 1: Introductory cryogenic and hydrogen safety, 2: Elements of design and safety plans, 3: Fluid control, including manual valving and automatic pressure relief, 4: Cryogenic-compatible instrumentation, 5: Cryogenic fittings and sealing surfaces, 6: Thermal contraction and material selection, 7: Insulation and vacuum, 8: Leak checking and purging, 9: Procedural and operational safety analysis, and 10: Liquid hydrogen operation and safe system shutdown. Participants in the first session of this course held in May of 2025 completed pre- and post-activity knowledge assessments and surveyed on general improvements to the course. Recommendations for future versions of the course are made, and the implementation of these recommendations is discussed.

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