Capstone Design Project
Hydraulic Regenerative Pedicab
University of Minnesota
Sponsored by Parker Hannifin

Objectives:

1. Develop an accurate simulation model of a chosen pedicab including vehicle geometry, drivetrain ratios, variable passenger load, wheel traction, vehicle gradeability and braking dynamics.
2. Modify the model to include fluid power based assist and regeneration using real world product characteristics. Utilize the model to identify and select products for an optimized solution.
3. Design and implement a safe and intuitive operator interface and vehicle control architecture.
4. Develop additional models, such as finite element stress analysis and heat transfer, necessary to validate the final design.
5. Implement the above system into a working prototype.
6. Design and install an eye catching advertising scheme that highlights the UMN, CCEFP, corporate sponsors and environmental consciousness.

Results:

1. Fully operational, prototype pedicab
2. Computer simulation model for optimizing the design.
3. Comprehensive report

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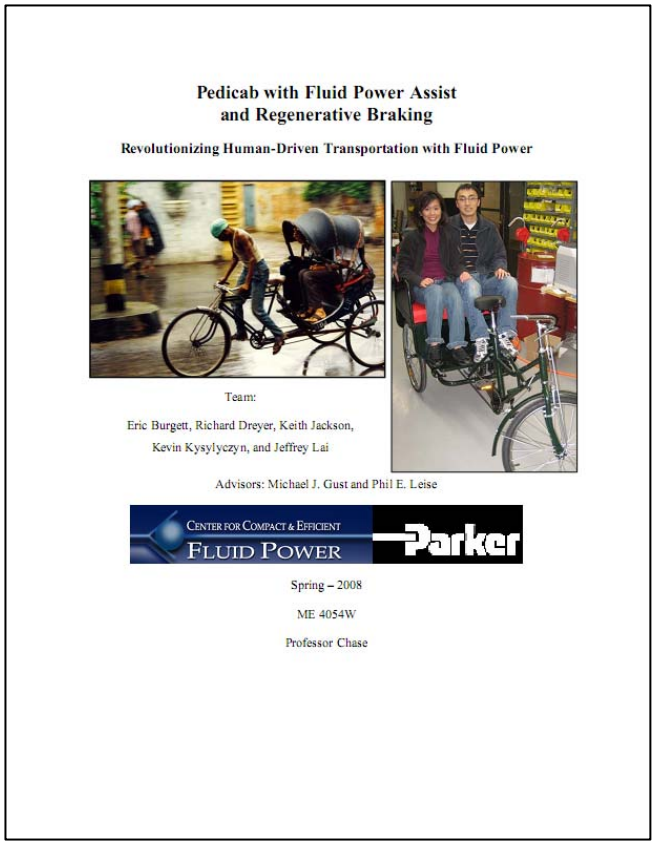


Pedicab with Fluid Power Assist and Regenerative Braking

Revolutionizing Human-Driven Transportation with Fluid Power

Team:

Eric Burgett, Richard Dreyer, Keith Jackson, Kevin Kysylyczyn, and Jeffrey Lai

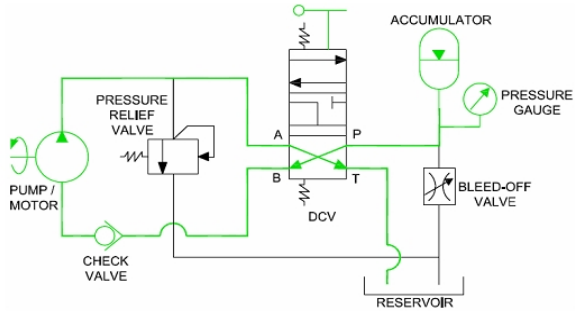
Advisors: Michael J. Gust and Phil E. Leise

Center for Compact & Efficient Fluid Power — Parker

Spring – 2008

ME 4054W

Professor Chase



Note: Except for image of report, photos and videos are the result of a follow-on project by a team of high school teachers working at the CCEFP for the summer.

Videos
http://www.youtube.com/watch?v=b4NbeNpHIzY
http://www.youtube.com/watch?v=tH-rL2eZqBA&NR=1
http://www.youtube.com/watch?v=sHL6HWSzIXM&feature=related