

Background:

- Eureka! Math and Science Museum wants to add an new exhibit
- Current exhibit contains model river of geographic features in the Grand Junction area and science concepts
- Museum wanted to use weirs in the current exhibit
- Sign on exhibit talks about water wheels being used to produce energy in the past

Design Criteria:

- Durability
- Interactivity
- Fun
- Quiet
- Safety
- Maintainability
- Size Restriction

Evaluation:

- Obtain forces that children can output
- At least ⁴/₅ on comment cards for interactivity and fun
- Noise output below 60 decibels
- No sharp corners
- No maintenance for 6 months
- Wheels less than 9 inches tall

Conclusions and Next Steps:

- Installation by team was not possible due to unforeseen circumstances
- According to the finite element analysis results and team member testing, project is durable enough for use in the museum
- After installation, comment cards should be implemented and receive a ⁴/₅ rating for fun and interactivity
- Confirmed noise output was below 60 decibels recorded by a decibel meter application on a cell phone
- Bevel implemented on all corners
- After installation, maintenance should be recorded and monitored
- Wheels measure 8 inches tall

HYDROTURBINE EXHIBIT ADDITION

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Evaluation:





Circuit Schematic:



an new exhibit concepts exhibit used to produce energy in the past

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 Durability Interactivity • Fun Quiet Safety Maintainability Size Restriction

Design Criteria



Overturn Water Wheel Placement

Underturn Water Wheel Placement





Evaluation Obtain forces that children can output 4 out of 5 on comment cards for interactivity and fun Noise output below 60 decibels No sharp corners No maintenance for 6 months • Wheels less than 9 inches tall



Conclusions and Next Steps

 Installation by team was not possible due to unforeseen circumstances •According to the finite element analysis results and team member testing, project is durable enough for use in the museum After installation, comment cards should be implemented and receive a ⁴/₅ rating for fun and interactivity Confirmed noise output was below 60 decibels recorded by a decibel meter application on a cell phone • Bevel implemented on all corners After installation, maintenance should be recorded and monitored Wheels measure 8 inches tall