Final Design

Project Background

• Conventional concrete usually needs maintenance within first two years
• This will eventually lead to higher costs for replacement in the long term
• UHPRFC to replace conventional concrete
• Superior compressive and tensile strengths and lasts significantly longer
• UHPRFC is composed of aggregate and steel fiber segments
• Fiber is currently not sold in segments but on spools and needs to be cut

Objectives

• Create a design for a wire chopper that lowers the overall cost of operation
• Is easily scalable to produce higher volumes of chopped wire
• Increase the mean time between the replacement of parts
• Cut wire into 0.5” segments

Innovation

• Sponsor previously used carbide blades that needed daily replacement
• Novel cutting surfaces on both wheels to reduce wear
• CPM 10V used for both wheels
  • High Impact Toughness
  • High Wear Resistance
• Both wheels machined using Wire EDM
• Gage block created for aligning cutting wheels

Conclusions

• Our goal for this project is to design a wire chopper that is:
  • Maintainable
  • Easily scalable
  • Produces a higher volume of wire than the previous designs
• We have anticipated and mitigated risks associated with our machine design

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