

2014 Komatsu PC210-LC10



Power: 158 HP
Operating Weight: 21 ton
Dig Depth: 21' 9"
EPA Tier: Interim Tier 4

Ownership Costs	
Depreciation:	\$5.42/hr
Cost of Capital:	\$4.41/hr
Insurance:	\$0.88/hr
Total:	\$10.71/hr
Operating Costs	
Repairs:	\$2.10/hr
Fuel:	\$14.43/hr
Lubricant:	\$0.76/hr
Track Repairs:	\$0.23/hr
Track Deprecation:	\$1.23/hr
Total:	\$ 18.75/hr
Total Ownership & Operating Cost: \$29.46/hr	

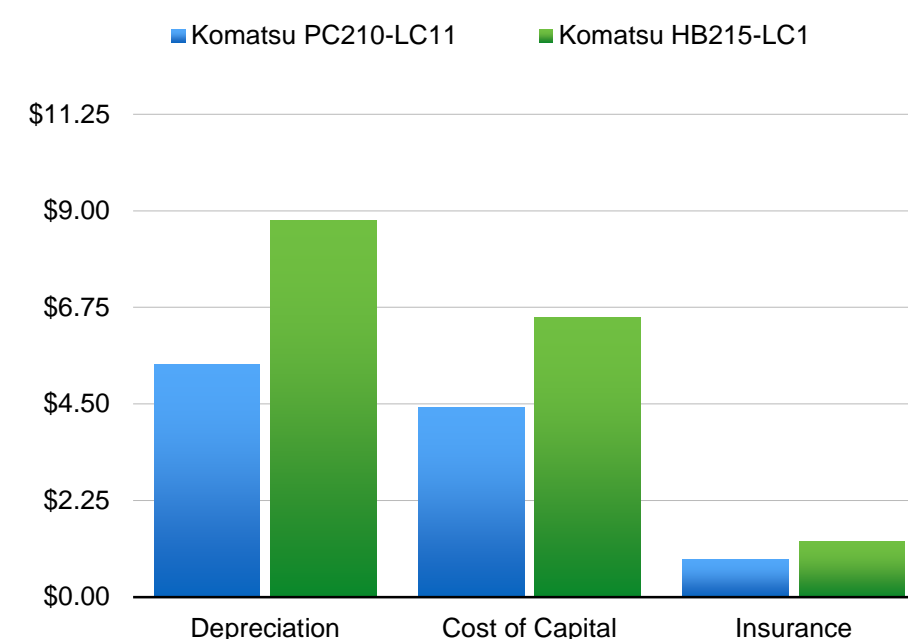
Case Study: Cost and Efficiency of Conventional Diesel Excavators compared to Hybrid Excavators

Abstract: The construction industry is constantly evolving and developing equipment that is more efficient, materials that promote sustainability and practices that emphasize lean construction principles to enhance productivity on projects. Modern day construction projects have become highly reliant on these ideals due to the highly competitive nature of the industry. In regards to heavy civil construction, specifically the underground utilities market, equipment costs count for a large percentage of overall project costs. Reducing these costs allows a contractor to be more competitive. As the focus on infrastructure construction continues to grow and expand, many heavy civil contractors are turning to alternative fuel option for heavy equipment to reduce operating costs and emissions. As a result, many heavy equipment manufacturers have invested into the production of hybrid heavy equipment for these purposes. Conversions from conventional diesel equipment to hybrid equipment have proven savings in operating costs, but for some contractors, the more expensive ownership costs do not result in a more cost efficient machine.

Keywords: Hybrid Excavators, Fuel Alternatives, Underground Construction

Life Cycle Cost Comparison: Operating Costs and Ownership Costs

Controlled Variables: Operator Factor, Usage, Fuel Prices, Repair Costs, Taxes, Insurance Rates, Salvage Value, Cost of Capital



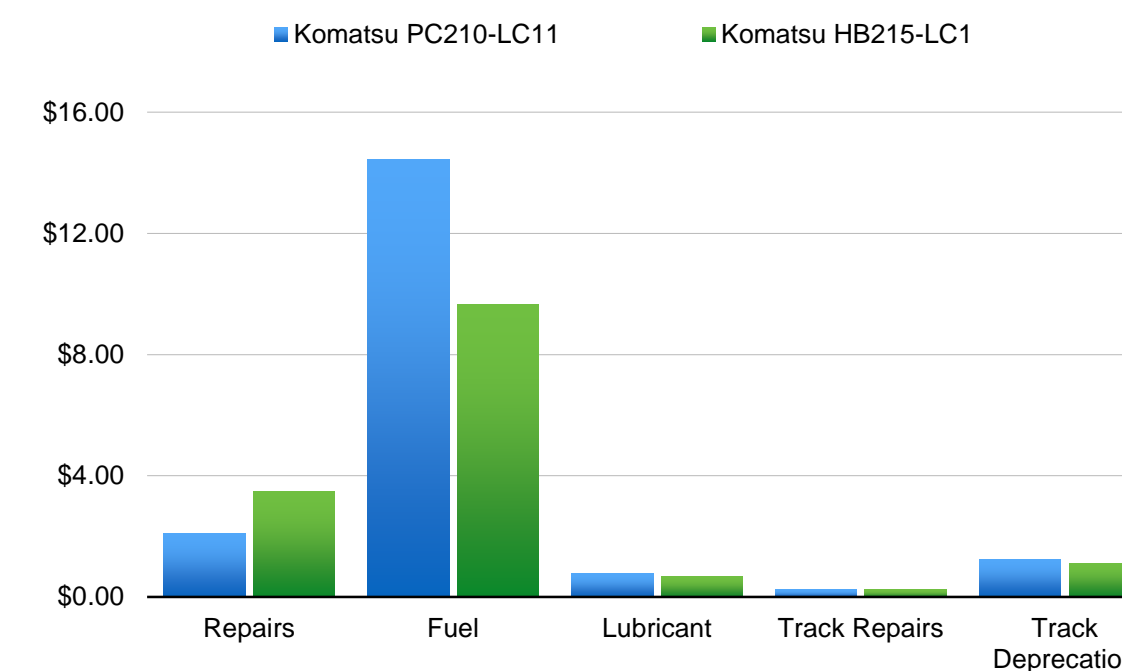
Independent Variables: Fuel Consumption, Efficiency, Purchase Value, Lifetime, Transportation,

Payback Period: 5966 hrs or 3.31 years

Rate of Return: 172%

Return on Investment: \$818,748

VS.



Payback Period: 7137 hrs or 3.965 years

Rate of Return: 152%

Return on Investment: \$869,040



2014 Komatsu HB215-LC1



Power: 148 HP
Operating Weight: 24 tons
Dig Depth: 21'0"
EPA Tier: Tier 3

Ownership Costs	
Depreciation:	\$8.78/hr
Cost of Capital:	\$6.52/hr
Insurance:	\$1.30/hr
Total:	\$16.60/hr
Operating Costs	
Repairs:	\$3.48/hr
Fuel:	\$9.65/hr
Lubricant:	\$0.67/hr
Track Repairs:	\$0.23/hr
Track Deprecation:	\$1.11/hr
Total:	\$ 15.12/hr
Total Ownership & Operating Cost: \$31.72/hr	

Corey McGrillen Fall 2017