24 Ton Class
Hydraulic Excavator

Productivity and
Fuel Consumption Comparison

Link-Belt / Komatsu

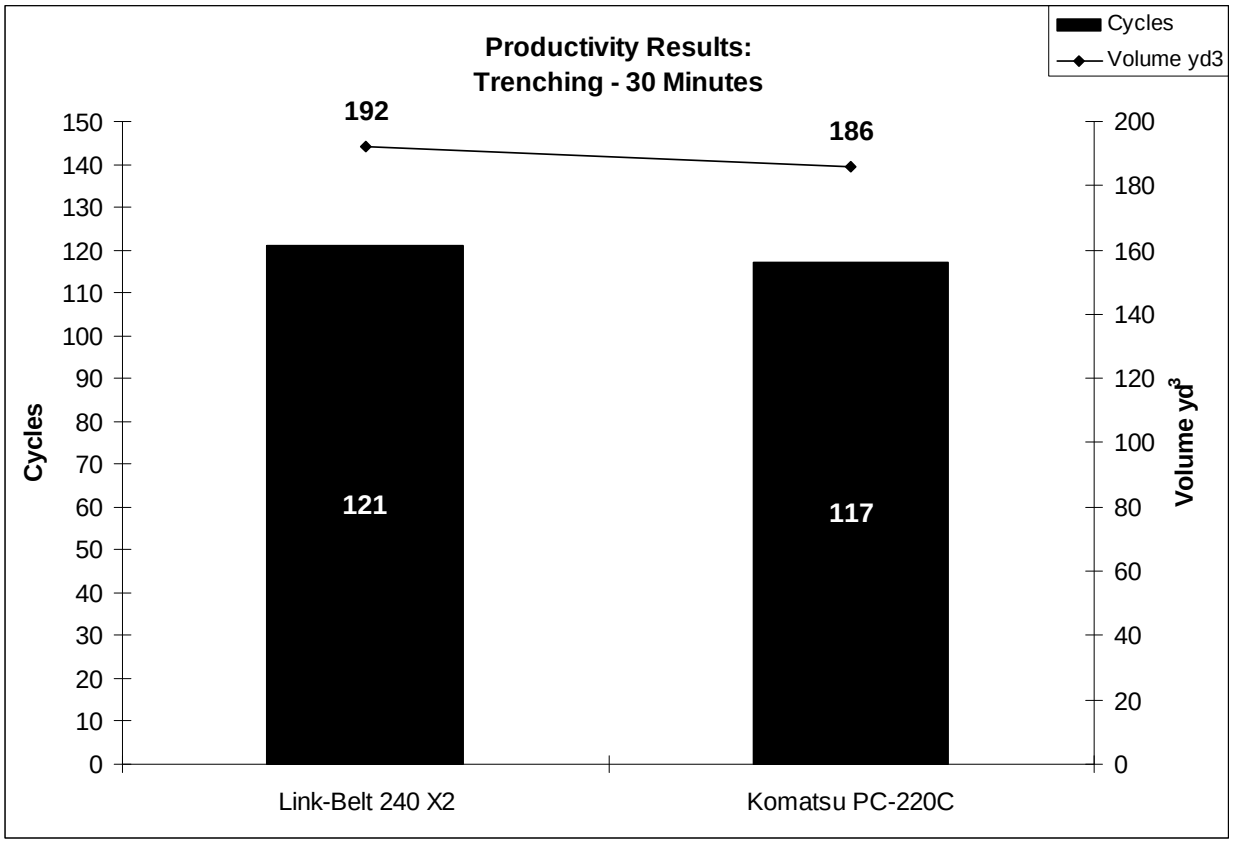
Updated March 16, 2009

Link-Belt 240 X2 / Komatsu PC220-8
Hydraulic Excavator Test
Trenching Application & Truck Loading Simulation

Trenching Application Test Design:

A trenching application was used to evaluate the performance of the Link-Belt 240 X2 vs. the Komatsu PC220-8 hydraulic excavator. Two independent operators were contracted to evaluate and operate the excavators during the test. The operators were instructed to operate each machine for maximum production in a 10 ft. depth trenching application using the highest work mode setting. The excavator arms were marked with tape at 10 ft. to assist the operators with estimated depth measurement, and the operators were instructed to dig to a 10 ft. semi-level bottom. The excavators were equipped with buckets of similar width and cubic yard capacity. Each operator dug with each machine for 15 minutes at which time the operators switched machines. Total digging time for each machine was 30 minutes. Time was kept using a hand-held stopwatch.

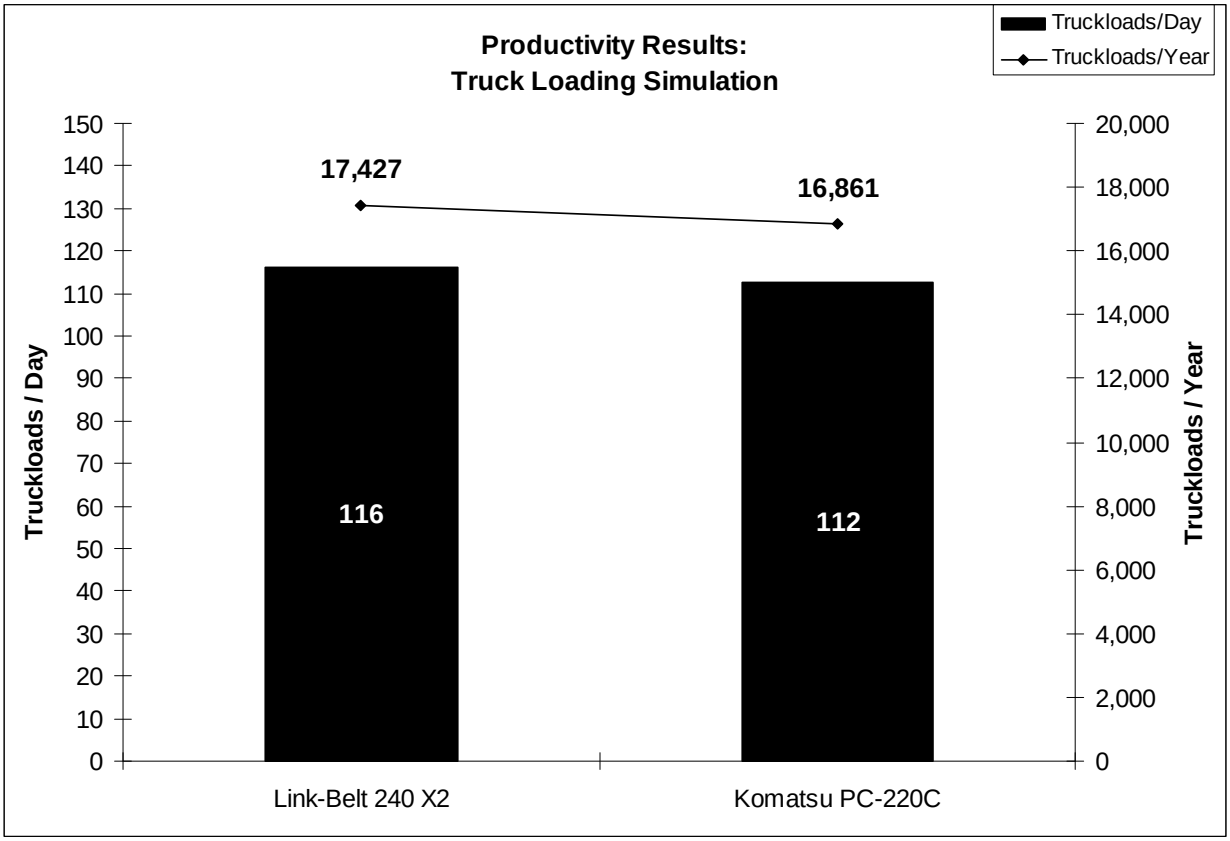
The cycle times for the machines were calculated by adding the total number of cycles for each operator, then dividing that total by 30 minutes in order to reduce variances resulting from different operating techniques. Total estimated volume of dirt moved (production) was calculated using a 1.59 yd^3 bucket. Fuel consumption was measured utilizing a calibrated fuel meter previously installed on each machine. Soil condition at the test site was semi-frozen (to 3") dirt and clay. Weather condition was overcast with an average temperature of 15 degrees Fahrenheit.



121 cycles were counted for the Link-Belt 240 X2 vs. 117 cycles for the Komatsu PC220-8 over the 30 minute test, resulting in average cycle times of 14.9seconds for the Link-Belt and 15.4 seconds for the Komatsu. Total estimated volume of dirt moved was calculated by multiplying the number of cycles counted by a standard, heaped 1.59 yd^3 bucket.

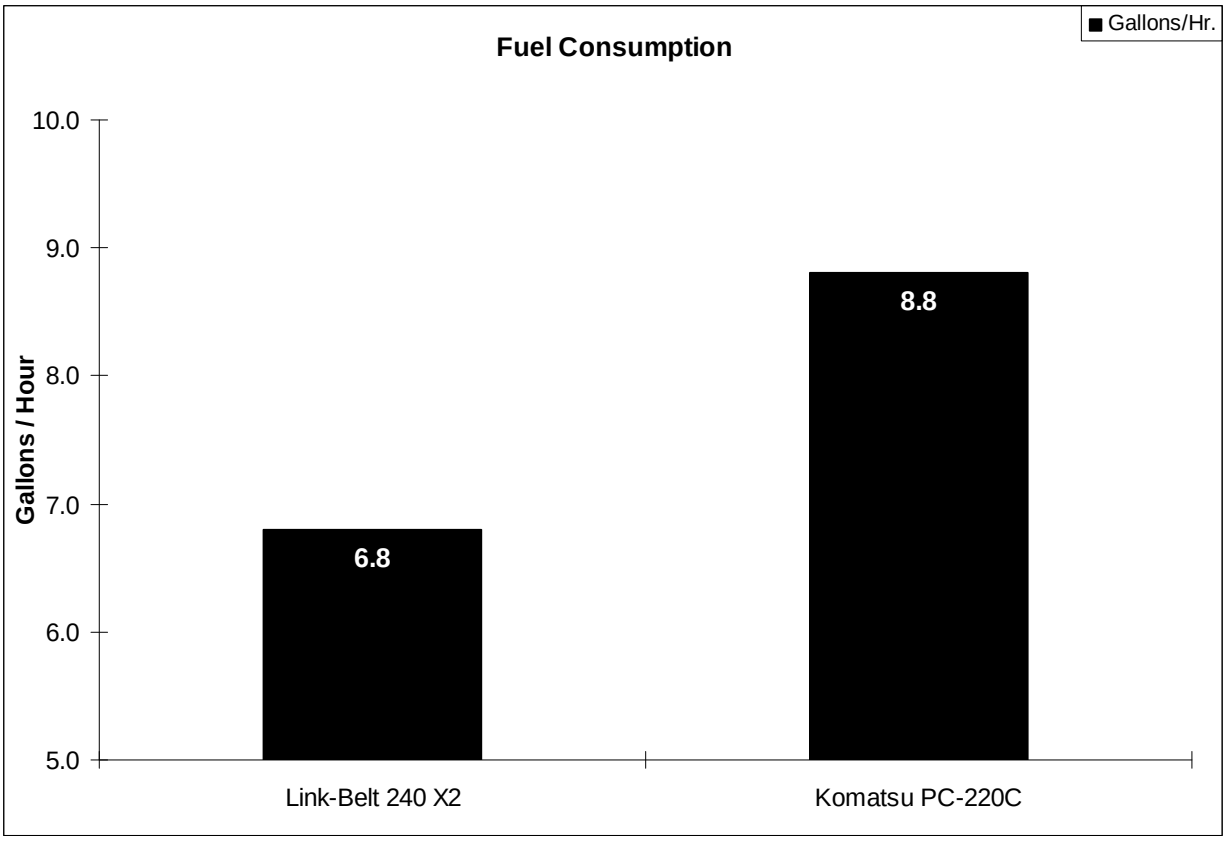
Truck Loading Simulation Design:

In addition to the trenching comparison test, a truck loading simulation was conducted to determine the average difference in cycle speed per model between a trenching application and a truck loading application. The truck loading scenario for this simulation was configured so that the excavator was digging below grade and filling a truck to a heaped capacity of 21.6 yd^3 (typical 30-ton dump truck capacity). The truck was positioned to the right of the excavator with a dump angle of approximately 90 degrees. The same operator was used for a comparative trenching test and truck loading simulation to account for potential operator variance. The average difference for each model resulted in approximately 28% slower cycle speed for a static truck loading application versus a dynamic trenching application. This percentage was used to determine the estimated trucks loaded for each machine test by multiplying the average percent reduction for cycle speed by the trenching performance data.

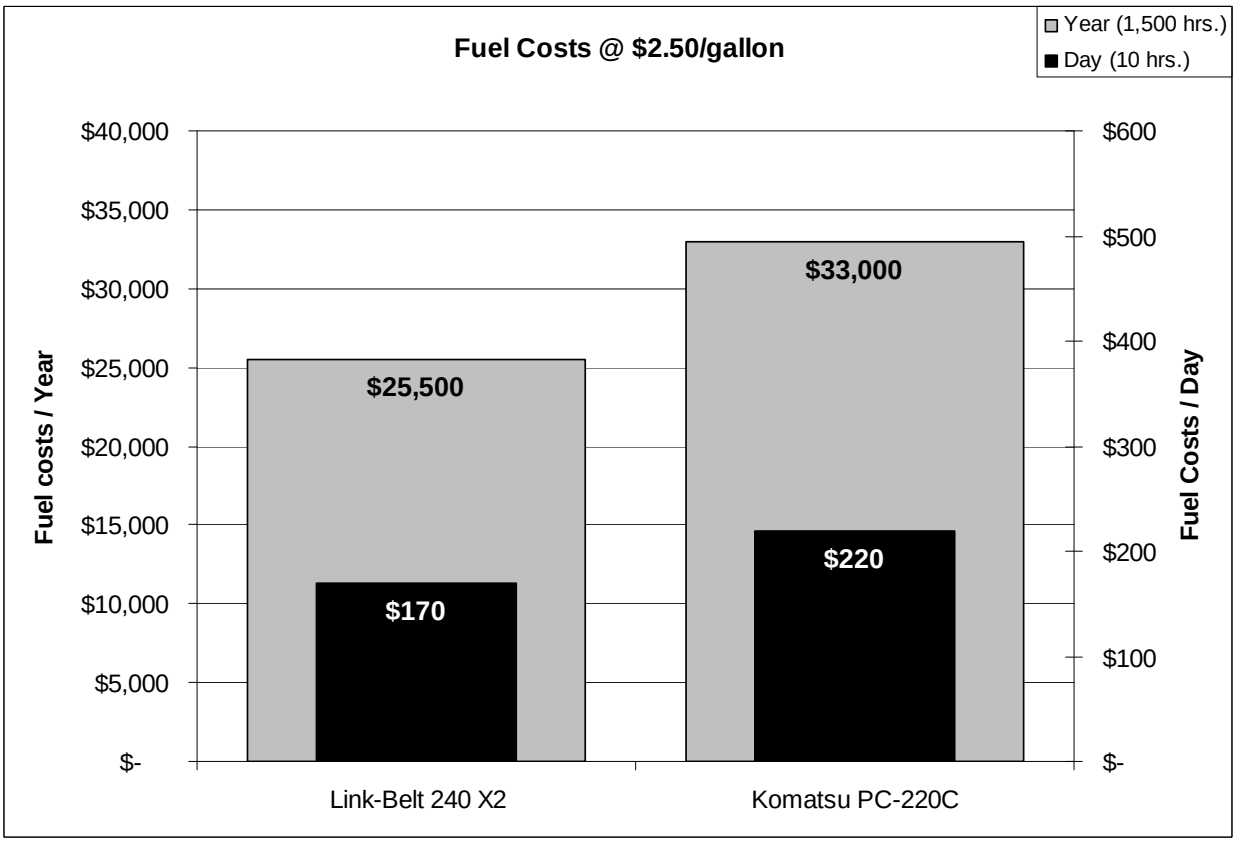


Productivity was based on a fully-loaded 30-ton size truck with a heaped capacity of 21.6 yd^3. The number of truckloads per day was calculated by multiplying the number of estimated cycles per hour by 10 hours per day for each machine by a standard, heaped 1.59 yd^3 bucket. The number of truckloads per year was calculated by multiplying the estimated number of truckloads per hour by 1,500 hours.*

**The estimated cycles per hour was determined using trenching application cycle times multiplied by a 28% reduction factor, which represents the average difference in cycle speed for a static truck loading application versus a dynamic trenching application.*



Fuel consumption was measured utilizing a calibrated fuel meter installed on each machine. Machines were operated in the highest work mode setting, running at the highest engine RPM, with 100% utilization.



Fuel cost per day was calculated by multiplying the fuel consumption per hour by 10 hours by $2.50 per gallon of diesel. Fuel cost per year was calculated by multiplying the fuel consumption per hour by 1,500 hours by $2.50 per gallon of diesel.