

## Case Study: EXLCanada Lubricants **GFD** TopOff, Wire Rope Machine, ROI and One Year Electricity Savings for One Machine.

EXLCanada Lubricants **GFD** (**G**ear and **F**inal **D**rives) **Top Off**, enhanced by billions of spherical tungsten disulphide nanoparticles. These energy reducing, anti-wear, anti-friction and extreme pressure particles serve as submicron-sized shock absorbers, preventing exposure to hydraulic/shear pressures, and also function as tiny ball-bearings that roll on impact, exfoliate and attached to surfaces, improving anti-friction and anti-wear properties of host oil. **EXLCanada Lubricants GFD TopOff** has shown consistent energy reduction rates, extends gear life and service intervals, improves power and torque performance. Compatible with mineral and synthetic oils. *Please note, this same spherical tungsten disulfide nanoparticle is used in EXLCanada Lubricants **GAS** (gasoline engines) and **DNG** (diesel and natural gas engines) TopOff's and the benefits shown are possible with these TopOffs when used as recommended in equipment/components for their intended use.*

**Tested in equipment used for manufacturing of industrial cable Units TS6 and CM5. All data and calculations shown as provided by owner**



**Normal run cycle with data collection TS6 data shown.**



EXLCanada Lubricants **GFD** (Gear and Final Drives) **TopOff** addition.



Normal run cycle after TopOff addition, data collected (black ink). **Please note:** Step 6 value Machine Start Up Current (Amps)End before change of stage shown below was actually 64 not 70 shown below for unit TS6



### Data and Reduction Calculations

TS6	Machine Start Up Current (AMPS) Initial start of stage				Machine Start Up Current (Amps)End before change of stage			
	Prior to Additive	GFD Added	AMPS Reduced	Percentage Reduction	Prior to Additive	GFD Added	AMPS reduce d	Percentage Reduction
Start Up	215	213	2	0.930	117	108	9	7.692
Step 1	180	175	5	2.778	115	92	23	20.000
Step 2	140	121	19	13.571	86	78	8	9.302
Step 3	122	108	14	11.475	77	73	4	5.195
Step 4	98	101	-3	-3.061	80	76	4	5.000
Step 5	105	99	6	5.714	71	73	-2	-2.817
Running Amps	105	104	1	0.952	70	64	6	8.571
Sums	<b>965</b>	<b>921</b>	<b>44</b>	<b>32.360</b>	<b>616</b>	<b>564</b>	<b>52</b>	<b>52.944</b>
					<b>Total AMPS Reduced</b>		<b>96</b>	
					<b>Total Reduced Kilowatts</b>		<b>66.93</b>	
CM5	Machine Start Up Current (AMPS) Initial start of gear				Machine Start Up Current (Amps)End before change of gear			
	Prior to Additive	GFD Added	AMPS Reduced	Percentage Reduction	Prior to Additive	GFD Added	AMPS reduce d	Percentage Reduction
Start Up	191	185	6	3.141	149	147	2	1.342
Step 1	281	227	54	19.217	160	157	3	1.875
Step 2	228	227	1	0.439	147	146	1	0.680
Step 3	210	208	2	0.952	145	143	2	1.379
Step 4	230	216	14	6.087	125	125	0	0.000
Step 5	227	180	47	20.705	120	120	0	0.000
Running Amps	250	160	90	36.000	115	115	0	0.000
Sums	<b>1617</b>	<b>1403</b>	<b>214</b>	<b>86.541</b>	<b>961</b>	<b>953</b>	<b>8</b>	<b>5.277</b>
					<b>Total AMPS Reduced</b>		<b>222</b>	
					<b>Total Reduced Kilowatts</b>		<b>154.78</b>	
					<b>Combined Total Reduced AMPS</b>		<b>318</b>	
					<b>Combined total Reduced Kilowatts</b>		<b>221.72</b>	

CM5 data presented Pre and Post GFD addition in separate tables

Machine Start Up Current (Amps) PRE <b>GFD</b> Concentrate							Machine Start Up Current (Amps) Post <b>GFD</b> Concentrate					
	Top of Phase	Bottom of Phase	time (s)	AMP Consumption	Power (kW)	Consumption (kWh)	Top of Phase	Bottom of Phase	time (s)	AMP Reduction	Power (kW)	Consumption (kWh)
Start Up	191	149	30	42	17.4	0.14525	185	147	30	8	3.3	0.02767
Step 1	281	160	30	121	50.2	0.41846	227	157	30	57	23.7	0.19713
Step 2	228	147	30	81	33.6	0.28013	227	146	30	2	0.8	0.00692
Step 3	210	145	30	65	27.0	0.22479	208	143	30	4	1.7	0.01383
Step 4	230	125	30	105	43.6	0.36313	216	125	30	14	5.8	0.04842
Step 5	227	120	30	107	44.4	0.37004	180	120	30	47	19.5	0.16254
Running Amps Reached	250	115	30	135	56.0	0.46688	160	115	30	90	37.4	0.31125
<b>TOTALS</b>	<b>1617</b>	<b>961</b>		<b>656</b>	<b>272.2</b>	<b>2.26867</b>	<b>1403</b>	<b>953</b>		<b>222</b>	<b>92.1</b>	<b>0.76775</b>
										<b>TOTAL Reduction (kWh)</b>		<b>0.75046</b>
							50% reduction added to ratify lack of calculus equation on start up sequence			<b>TOTAL Reduction (%)</b>		<b>16.5%</b>

ROI and Savings Calculation

Start Up Sequence Calculation								
<i>Actual time per day</i>		<i>Refer to your Electricity Bill</i>		<i>Assumed @48 Weeks per Year</i>	<i>@ 5% of Oil Volume</i>	<i>Generally Zero \$ as it will be captured below</i>		
<b>Start ups per 24 hours</b>	<b>KWH Saved</b>	<b>CHARGE PER KWH</b>	<b>SAVINGS per 24 hours</b>	<b>SAVINGS PER YEAR</b>	<b>LITRES REQUIRED</b>	<b>PRODUCT COST</b>	<b>ANNUAL ROI</b>	<b>DAYS FOR 100% ROI</b>
<b>27</b>	<b>0.75</b>	<b>0.15</b>	<b>\$ 3.04</b>	<b>\$1,021.22</b>	<b>29.00</b>		<b>\$ 1,021.22</b>	<b>0</b>
<i>Please enter Manually</i>		<i>Please enter Manually</i>			<i>Please enter Manually</i>			
Machine Runtime Calculation								
<i>Actual time per day</i>		<i>Refer to your Electricity Bill</i>		<i>Assumed @48 Weeks per Year</i>	<i>@ 5% of Oil Volume</i>			
<b>RUN TIME HOURS</b>	<b>KWH</b>	<b>CHARGE PER KWH</b>	<b>SAVINGS per 24 hours</b>	<b>SAVINGS PER YEAR</b>	<b>LITRES REQUIRED</b>	<b>PRODUCT COST</b>	<b>ANNUAL ROI</b>	<b>DAYS FOR 100% ROI</b>
<b>24</b>	41.500 00	<b>0.15</b>	<b>149.4</b>	<b>\$50,198.40</b>	<b>29.00</b>	<b>\$3,480.00</b>	<b>\$ 46,718.40</b>	<b>23</b>
<i>Please enter Manually</i>		<i>Please enter Manually</i>			<i>Please enter Manually May be same as 'K5'</i>	<i>DO NOT capture in both calculations</i>		

EXLCanada Lubricants **GFD** (Gear and Final Drives) **Top Off**, for this one machine saved in electricity \$47,739.62/year. Other savings/benefits may be seen from the energy reducing, anti-wear, anti-friction and extreme pressure particles, such as longer component/oil/in-service life, less consumables/noise/vibration/heat/wear.