Simple Maths for Power Saving

Consider a 3-Phase, 55kw (75 HP) 415V motor running at 98A load, with the resistance of the cable per phase = 0.3Ω

STAR DELTA STARTER			
PARAMETERS	**FORMULA**	**CALCULATIONS**	**TOTAL**
Phase Current	Line Current/1.732	98/1.732	56.6 Amp
Power consumtion in 1 core of single cable	I^2R	$(56.6 \text{ Amps})^2 \times 0.3\Omega$	961.1 Watt
Power consumption of cores (for 2 cables)		961 x 6	5766 Watt
TOTAL POWER CONSUMED			**5766 Watt**

SYEMCO MAKE VOLTAGE AUTO – TRANSFORMER BASED STARTER			
PARAMETERS	**FORMULA**	**CALCULATIONS**	**TOTAL**
Line current	-	-	98 Amp
Reduced cable resistance	-	0.3 / 2	0.15 Ω
Power consumption for Single core duly paralleled	I^2R	$(98 \text{ Amp})^2 \times 0.15\ \Omega$	1440.6 Watt
Power consumption for 3 cores	-	1440 x 3	4322 Watt
TOTAL POWER CONSUMED	-	-	**4322 Watt**

POWER SAVINGS !

- **Net Power** Savings = 5766 – 4322 = 1444 Watts = 1.4 KW
- % Power Savings = 1.4x100/55 = 2.63%
- Assume the cost of 1 KW of Power Rs. 6
- Savings per hour = 1.4x6 = Rs. 8.40/-
- Savings for 20 hours/day and 330 days/year = 8.40x20x330 = Rs.55,440/-

The above calculations are based on assumptions and are to the best of our knowledge. They are for information purpose only. We do not undertake or guarantee any trade on behalf of the accuracy of the above figures.