

OLDENBURG GROUP
I N C O R P O R A T E D



EMI Issues for LSM Elevators

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EMI

- Variable Frequency Drive *Output* is radiated from motor windings
 - Rotary motors encase the noise
 - Linear motor stator is a BIG antenna



VFD Output - Unfiltered

17-May-05
10:01:30

2
20 ms
40.0 V

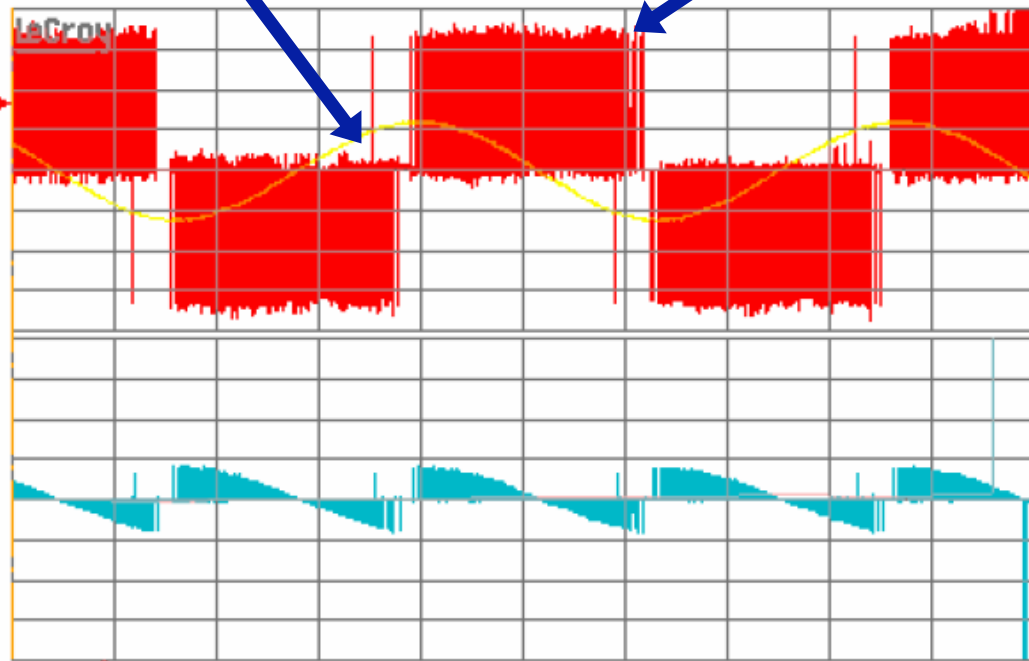
1
20 ms
10.0 A

A: 2*1
20 ms
2.00 kW

VFD Output Current
through windings

VFD Output Voltage
~3kHz PWM

LINE POWER

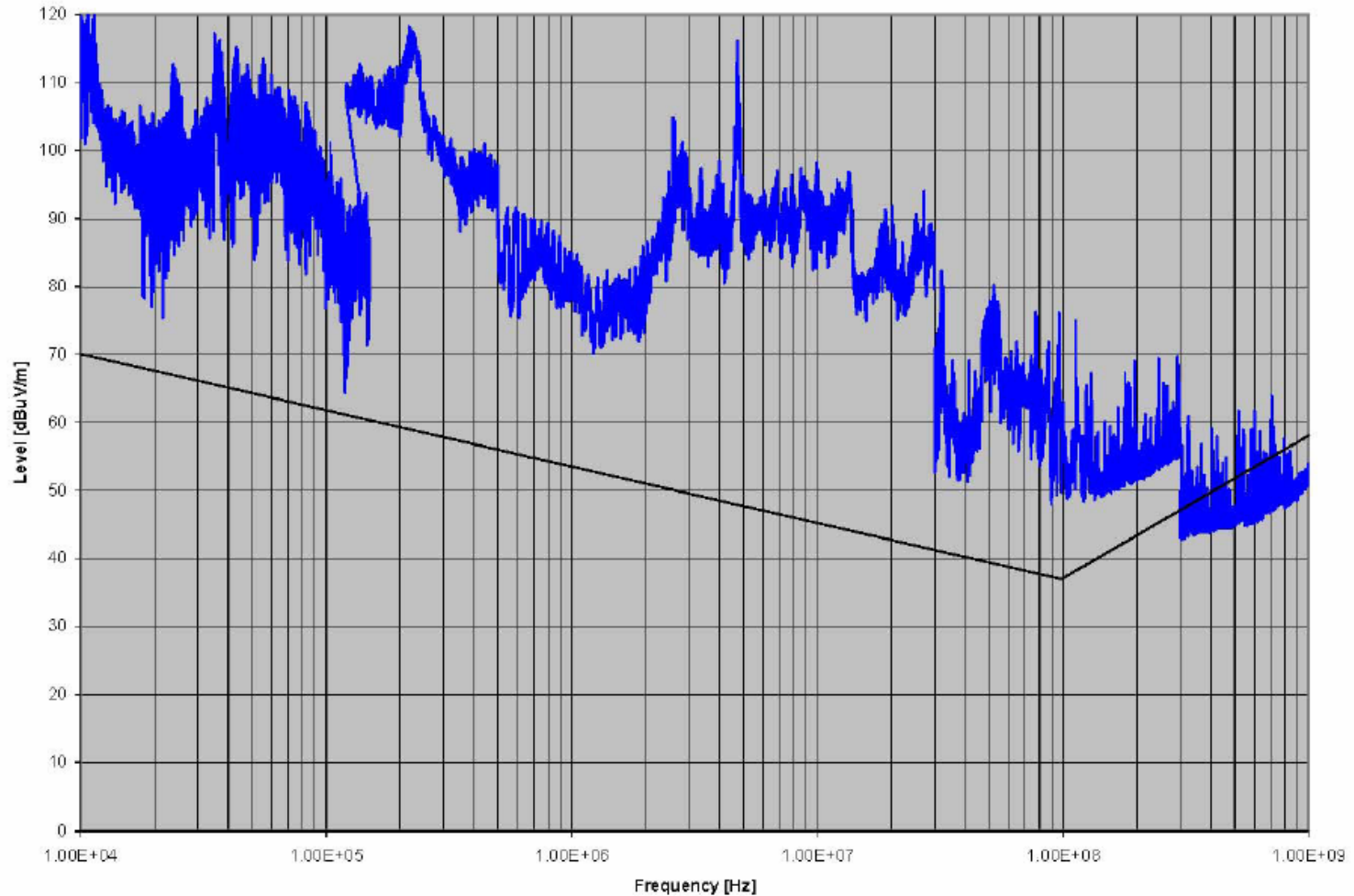


Setup
Inputs

Measure
Harmonics

Class
A B C D

MIL-STD-461 RE102 Test Results - Unfiltered



VFD Output – COTS Drive Output Filter

17-May-05
9:52:10

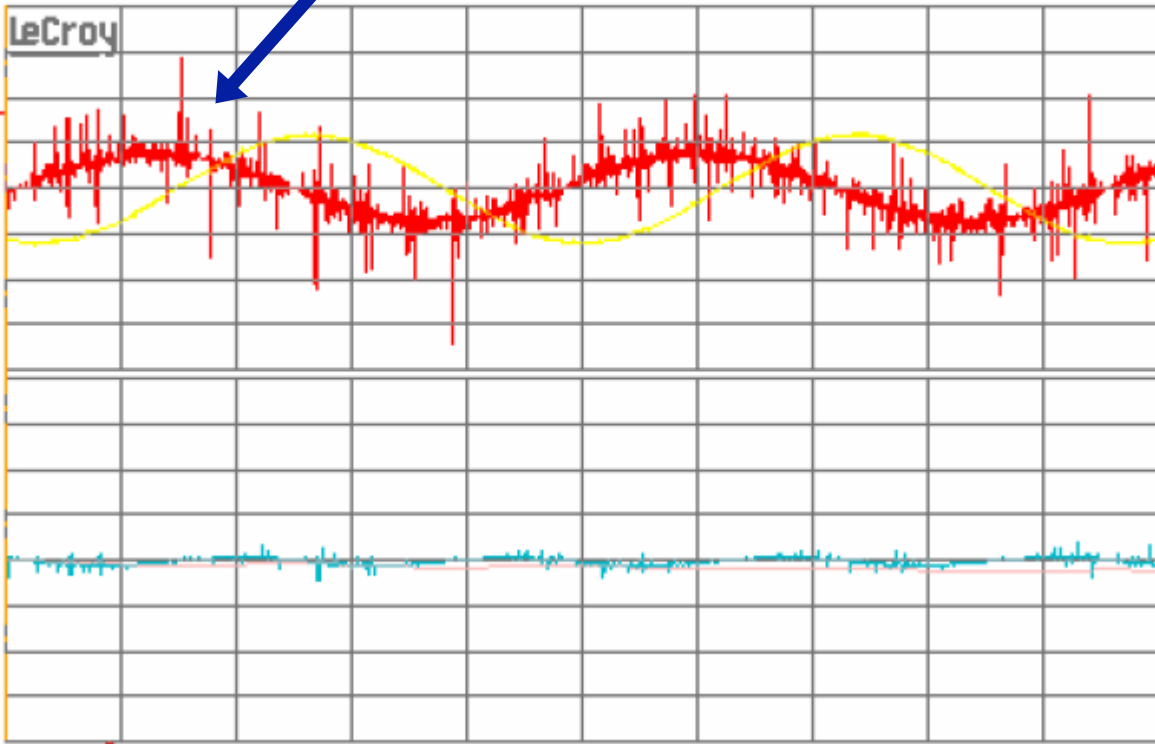
Drive Voltage Much More Sinusoidal

LINE POWER

2
20 ms
10.0 V

1
20 ms
10.0 A

A: 2*1
20 ms
0.50 kW

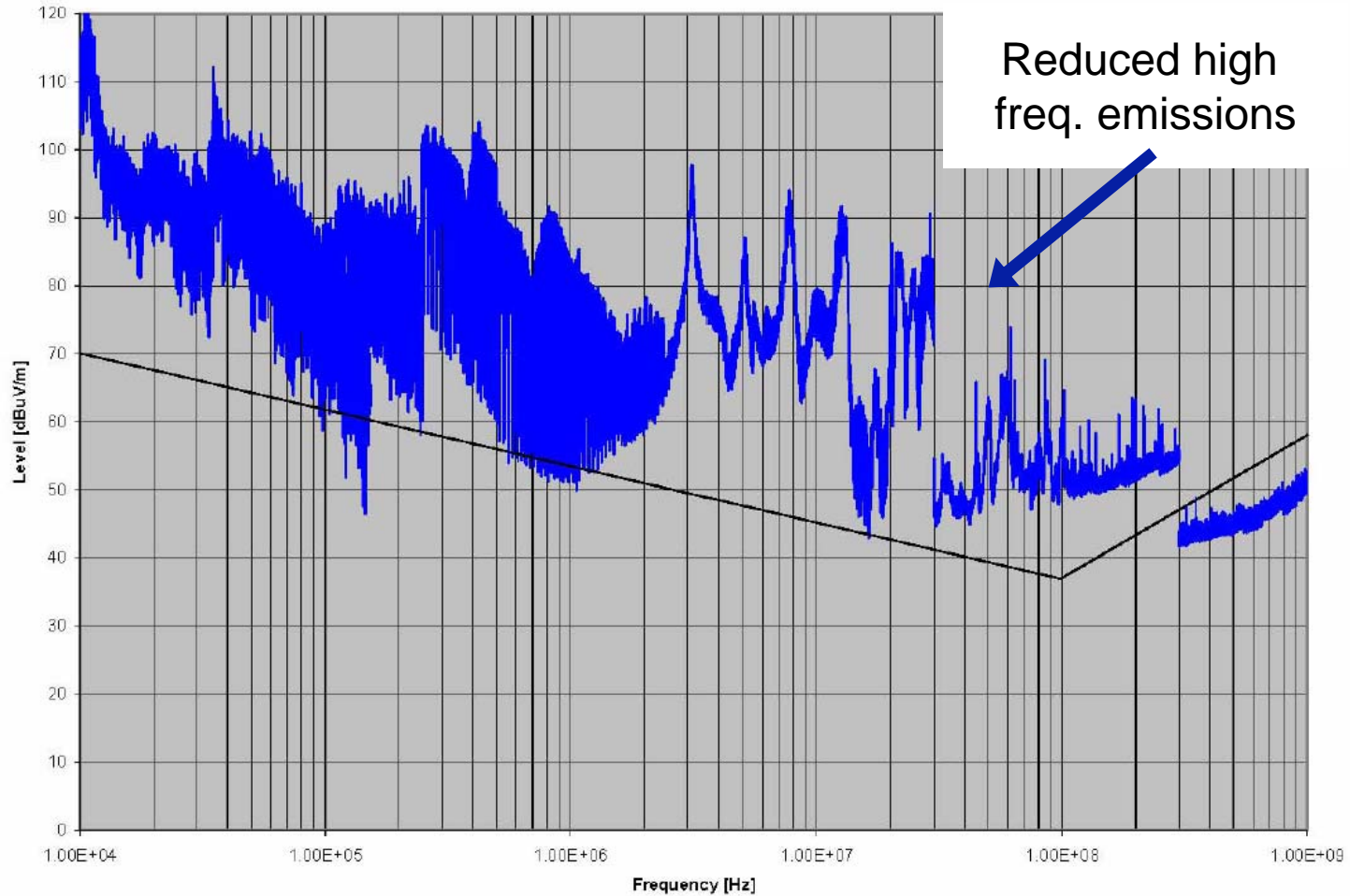


Setup
Inputs

Measure
Harmonics

Class
 A B C D

RE102 Results – COTS Drive Output Filter



EMI Mitigation Alternative

- AC-Link™ Drive
 - Significantly “cleaner” output voltage
 - No PWM
 - Princeton Power

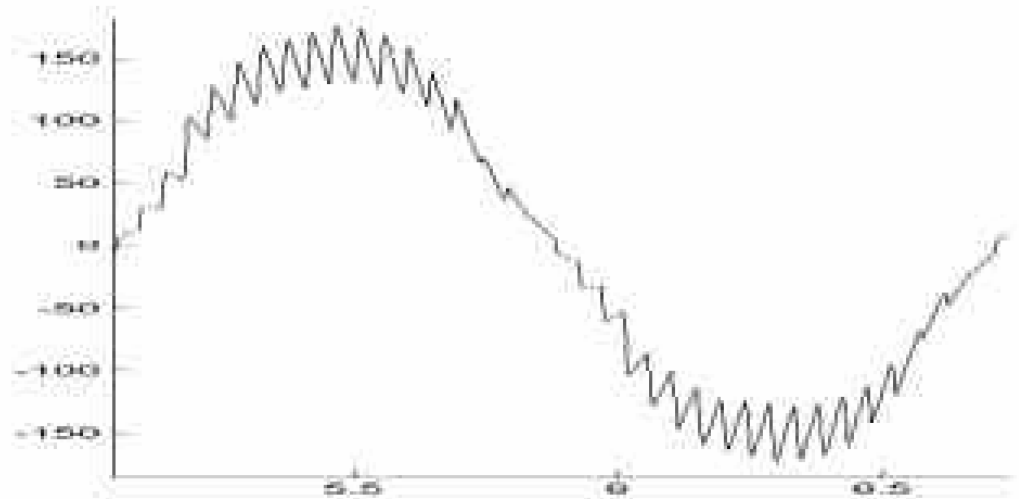


Figure 9: Output voltage of the AC-link™ Converter.