

Dura-Bilt5i MV Power System Performance Calculations			
REV 10-18-02			
Project	Project ID: Example		
Customer	Final User Customer ID: ABC Industries		
Given	Total Connected Drive HP	2500	
	Base MVA=	2.125	= drive MVA @ 0.85 MVA / 1000 HP
Source Data All the way to drive feed bus			
			Zpu Bus 1 [Inf]
Given	Given MVASC	200	MVA
	Z _{sc} pu on drive MVA base	0.01063	0.010625
			Zsc
			Drive Bus / PCC
	Total System per unit Z to PCC on Drive MvA Base		0.010625
			DB5i M

Limitations / Disclaimer

1. All data is represented as typical, and not guaranteed.
2. Calculations are based on a radial power system, with the drive connected to a single bus and resource impedance represented by one or two elements.
3. Data is typical of 24 diode rectified voltage source inverters - Injected harmonic current does not change appreciably with power system source.

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Based on Values above, Dura-Bilt5 MV drive will produce the following power				
Harmonic Order	% amps from test	Calculated % Amps ²	Calculated % volts	Calculated % Volts ²
1	Fund.	-----		
2	0.02	0.000400	0.00043	0.0000018
3	0.02	0.000400	0.00064	0.0000041
4	0.01	0.000100	0.00043	0.0000018
5	1.25	1.562500	0.06641	0.00440979
6	0.05	0.0025	0.00319	0.00001016
7	0.44	0.193600	0.03273	0.00107093
8	0.01	0.000100	0.00085	0.00000072
9	0.36	0.129600	0.03443	0.00118508
10	0.01	0.000100	0.00106	0.00000113
11	0.44	0.1936	0.05143	0.00264453
12	0.02	0.000400	0.00255	0.00000650
13	0.12	0.014400	0.01658	0.00027473
14	0.01	0.000100	0.00149	0.00000221
15	0.21	0.044100	0.03347	0.00112016
16	0.03	0.0009	0.00510	0.00002601
17	0.13	0.016900	0.02348	0.00055137
18	0.01	0.000100	0.00191	0.00000366
19	0.08	0.006400	0.01615	0.00026082
20	0.02	0.000400	0.00425	0.00001806
21	0.07	0.0049	0.01562	0.00024395
22	0.02	0.000400	0.00468	0.00002186
23	0.34	0.115600	0.08309	0.00690353
24	0.02	0.000400	0.00510	0.00002601
25	0.15	0.022500	0.03984	0.00158752
26	0.02	0.0004	0.00553	0.00003053
27	0.15	0.022500	0.04303	0.00185169
28	0.01	0.000100	0.00298	0.00000885
29	0.1	0.010000	0.03081	0.00094941
30	0.01	0.000100	0.00319	0.00001016
31	0.06	0.0036	0.01976	0.00039056
32	0.01	0.000100	0.00340	0.00001156
33	0.03	0.000900	0.01052	0.00011064
34	0.01	0.000100	0.00361	0.00001305
35	0.1	0.010000	0.03719	0.00138291
36	0.01	0.0001	0.00383	0.00001463
37	0.02	0.000400	0.00786	0.00006182
38	0.01	0.000100	0.00404	0.00001630
39	0.07	0.004900	0.02901	0.00084136
40	0.01	0.000100	0.00425	0.00001806
41	0.02	0.0004	0.00871	0.00007591
42	0	0.000000	0.00000	0.00000000
43	0.05	0.002500	0.02284	0.00052184
44	0.01	0.000100	0.00468	0.00002186
45	0.05	0.002500	0.02391	0.00057151
46	0.01	0.0001	0.00489	0.00002389
47	0.03	0.000900	0.01498	0.00022444
48	0.01	0.000100	0.00510	0.00002601
49	0.03	0.000900	0.01562	0.00024395
50	0.01	0.000100	0.00531	0.00002822
	Sqrt(sum I ⁿ) = THD current % on Drive Fund. Base	1.540	Sqrt(sum I ⁿ) = THD volts Percent on Drive Bus =	0.167