IEEE Std 1368

"Guide for Aeolian Vibration Field Measurements of Overhead Conductors "

– An Overview

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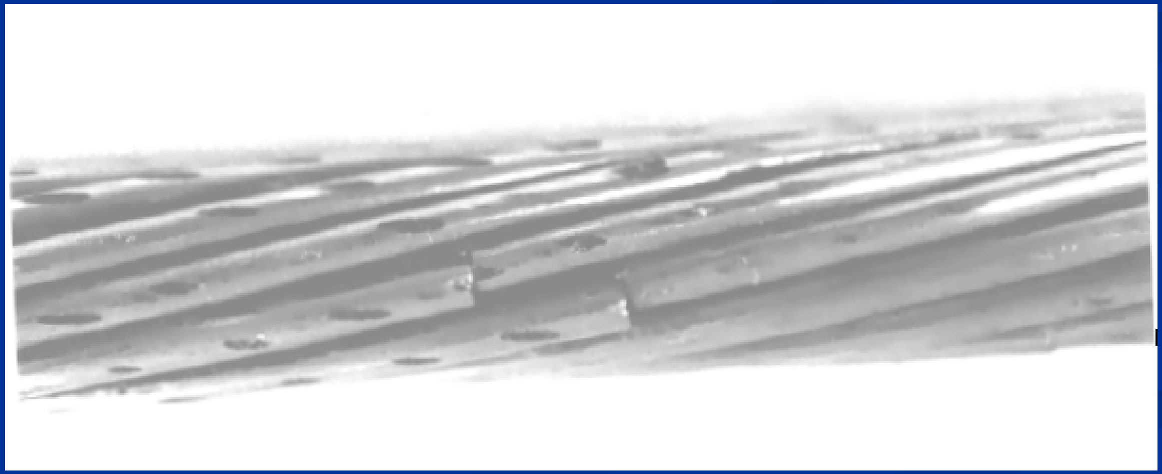
Background

- Aeolian vibration can cause damage to conductors due to fretting-fatigue depending on severity
- There is a "threshold" level of severity at which vibration will start to become a problem
- Need to know, in quantifiable terms, vibration severity in order to make reliable and accurate interpretations and decisions about any required actions



Need for Standard

- Need a standardized methodology to take measurements of conductor vibration in the field
- Methodology encompasses
    - Key measured parameter
    - Recording Devices
    - Location
    - Presentation of Data
    - Interpretation of Data
    - Criteria
    - Reporting

Purpose of Standard

- to provide the industry a document to improve the understanding of why, when and how to make conductor vibration measurements in the field and how to make interpretations of the data.

IEEE Std 1368 - Outline

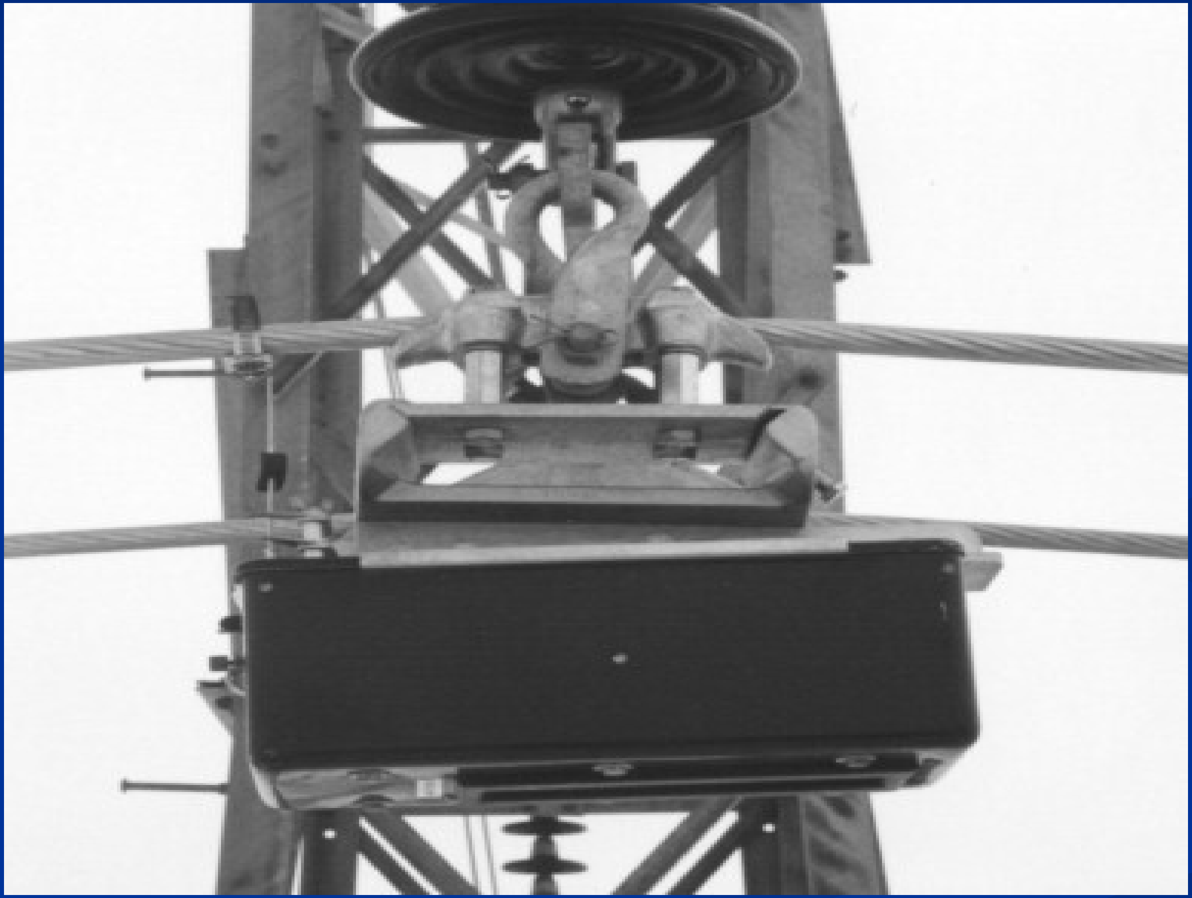
- When are field measurements recommended
- Key measured parameter “Bending Amplitude”
- Arranging the test in the field
- Interpretation of the data
- Perils and Pitfalls of taking measurements

Reasons for taking Field Measurements

Field vibration measurements gathered for overhead transmission lines can be useful for the following reasons:

i) to determine the cause of visible conductor fatigue damage
ii) to identify existing vibration levels
iii) to assess the likelihood of future conductor fatigue damage
iv) to evaluate the damping performance of conductors and any attached vibration damping systems

Typical Clamp and Recorder Arrangement



Bending Amplitude Endurance Limits for ACSR Conductors

			Tension in Percent of Rated Strength*					
	Conductor		15%		25%		35%	
	Size		Y_b		Y_b		Y_b	
Name	(kcmils)	Stranding	mm	mils	mm	mils	mm	mils
Ruddy	900	45 / 7	0.3	12	0.26	10	0.23	9
Canary	900	54 / 7	0.31	12	0.27	10	0.24	9
Catbird	954	36 / 1	0.29	11	0.26	10	0.24	9
Rail	954	45 / 7	0.29	12	0.26	10	0.23	9
Cardinal	954	54 / 7	0.3	12	0.26	10	0.24	9
Ortolan	1033.5	45 / 7	0.29	11	0.25	10	0.23	9
Curlew	1033.5	54 / 7	0.3	12	0.26	10	0.23	9
Bluejay	1113	45 / 7	0.28	11	0.25	10	0.22	9
Finch	1113	54 / 19	0.28	11	0.24	9	0.22	9
Bunting	1192.5	45 / 7	0.28	11	0.24	10	0.22	9
Grackle	1192.5	54 / 19	0.27	11	0.24	9	0.21	8
Bittern	1272	45 / 7	0.27	11	0.24	9	0.22	9
Pheasant	1272	54 / 19	0.27	11	0.24	9	0.21	8
Dipper	1351.5	45 / 7	0.27	11	0.24	9	0.22	9

IEEE Std 1368 - Status (Summer 2009)

- was first approved in 2006
- due for maintenance in 2011

Questions??