

ISO 29821:2018-01 (E)

Condition monitoring and diagnostics of machines - Ultrasound - General guidelines, procedures and validation

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle of the airborne and structure-borne method	2
4.1	General	2
4.2	Application of airborne and structure-borne ultrasound within condition monitoring programmes	2
4.3	Correlation with other technologies	2
5	Ultrasound equipment	3
5.1	General	3
5.2	Kinds of sensors	5
5.3	Airborne sensor choice	5
5.4	Structure-borne sensor choice	6
5.5	Instrument characteristics	6
5.5.1	General	6
5.5.2	Frequency response	6
6	Data collection guidelines	7
6.1	General	7
6.2	Comparative ultrasound	7
6.3	Baseline method -- Quantitative ultrasound	7
7	Training requirements	9
8	Assessment criteria	9
8.1	General	9
8.2	Error sources, accuracy and repeatability	11
9	Interpretation guidelines	12
10	Diagnosing ultrasonic problems	12
10.1	Principles of diagnostics using ultrasound	12
10.2	Generation of ultrasound	13
10.2.1	Surface friction	13
10.2.2	Fluid flow	13
10.2.3	Ionization	13
10.2.4	Impacting	13
11	Sensitivity validation guidelines	13
12	Monitoring interval	13
13	Data interpretations	13

14	Reporting	14
Annex A (informative)	Example of a compressed air leak survey	15
Annex B (informative)	Typical examples of ultrasound test reports	18
Annex C (informative)	Example of a generic sensitivity validation procedure -- Ultrasonic tone generator method	22
Bibliography		24