ID				
Use case name	Solution to detect signs of failures in wind power generation system			
Context	Manufacturing			
Application domain	On-premise systems			
Status	PoB			
Contributor	Name	Affiliation	Contact	
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Scope	Detect signs of malfunction (failure) in wind power generators			
Objective(s)	Detect signs of failure in wind power generation, earlier than human specialists			
Narrative	Short description (not more than 150 words)	A system is currently in development that uses ***machne learning*** (188) to detect signs of equipment failure that would be difficult to detect from visual inspection. Currently, sensor data is being collected from 43 actual domestic large wind turbines, and large-scale verification testing is being conducted. The goal is for a paradigm shift from responding after the		
	Complete description	We present a method for detecting anomalies in vibration signals of wind turbine components. The predominant characteristics of wind turbine vibration signals are extracted by applying a time-frequency feature extraction method based on Fourier local autocorrelation (FLAC) features. For anomaly detection, one-class classification based on an unsupervised clustering approach is applied in consideration of the wind turbine's dynamic operating conditions and environment. To validate the proposed system, we conducted experiments using the vibration data of actual 2 MW wind turbines. The results showed the effectiveness of using the FLAC features, particularly in the case of the low-speed main bearing where the conventional method with traditional features cannot detect the anomalies.		
Key performance indicators (KPIs)	ID	Name	Description	Reference to mentioned use case objectives
	1	Time from alert to failure		
	2	***Precision*** (none)		
	3	***Recall*** (none)		
AI features	Taks(s)	Recognition		
	Method(s)	Anomaly detection based on machine learning techniques, Accurate feature extraction from vibration signals		
	Hardware			
	Terms and concepts used	Fourier Local AutoCorrelation (FLAC) features, ***Unsupervised learning*** (255)		
Challenges and issues				