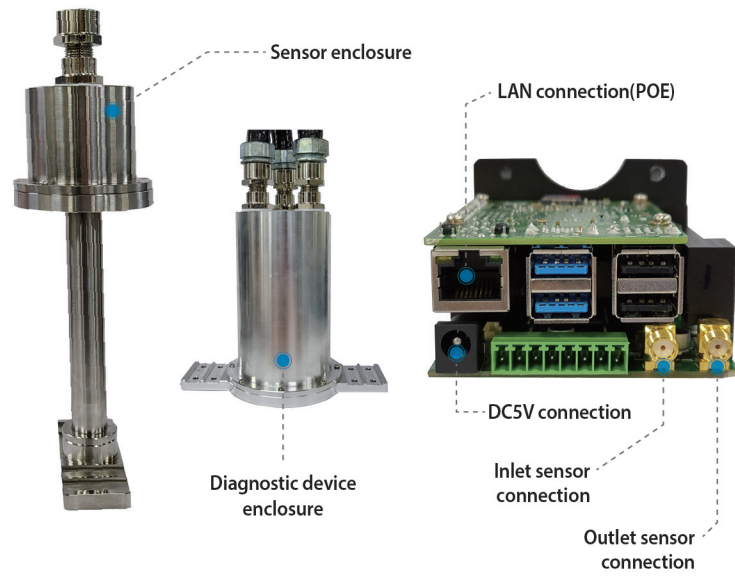


# Product Details

## Hardware (AE-VDC : Built-in diagnosis and analysis logic)



Item	Specification
Number of channels	2
Sample Rate	Max 500K Sample/second
Resolution	16 bits
Sampling length (Waveform)	8k (Variable)
Signal input bandwidth	1kHz ~ 500KHz
Data Storage	128G Micro SD card
Pre-amplifier	Internal (20, 40, 60dB)
Device Communication	LAN, Wifi, 4G LTE(Optional)
Power	POE, DC5V, 3A
Dimension	150*100*35mm
Operating temperature	-20°C ~ 60°C
Applied valves	Globe, Gate, Ball, Butterfly valve
Valve size	Applies to valves over 2 inches
Valve pressure	7 BAR or more
Special Feature	Embedded Based Valve Leak Diagnosis Dedicated analysis logic built in

## Software

Function	Specification
Diagnostic	· Built-in leak diagnosis function by dedicated algorithm
Analysis	· Leakage analysis by real time waveform and FFT transformation · View Past Waveform and FFT Transforms
Monitoring	· Display Acoustic Signal Size and Leakage Rate by Valve Tag · Display Valve status and Leak Rate on P&ID screen
Alarm	· Provide real time System Alarm and Leak Alarm & inquiry function of Historical Alarm
Trend	· Provide TREND of AE Sound signal and Leakage and statistics (hour, daily) TREND
Report	· DB inquiry and Report Analysis

## Patent Technology Application Items

- Business Cooperation MOU with Korea Hydro & Nuclear Power Co., Ltd. "Diagnosis and Monitoring of Valve Internal Leakage Using Acoustic Emission Measurement" Normal license contract(5 Years)
- Industrial Property application(Patent Technology) :
  - 1) Valve internal leakage diagnosis device and method (Domestic Patent 10-0888320)
  - 2) Valve leakage diagnosis apparatus and method for removing ambient noise (Domestic Patent 10-0836043)

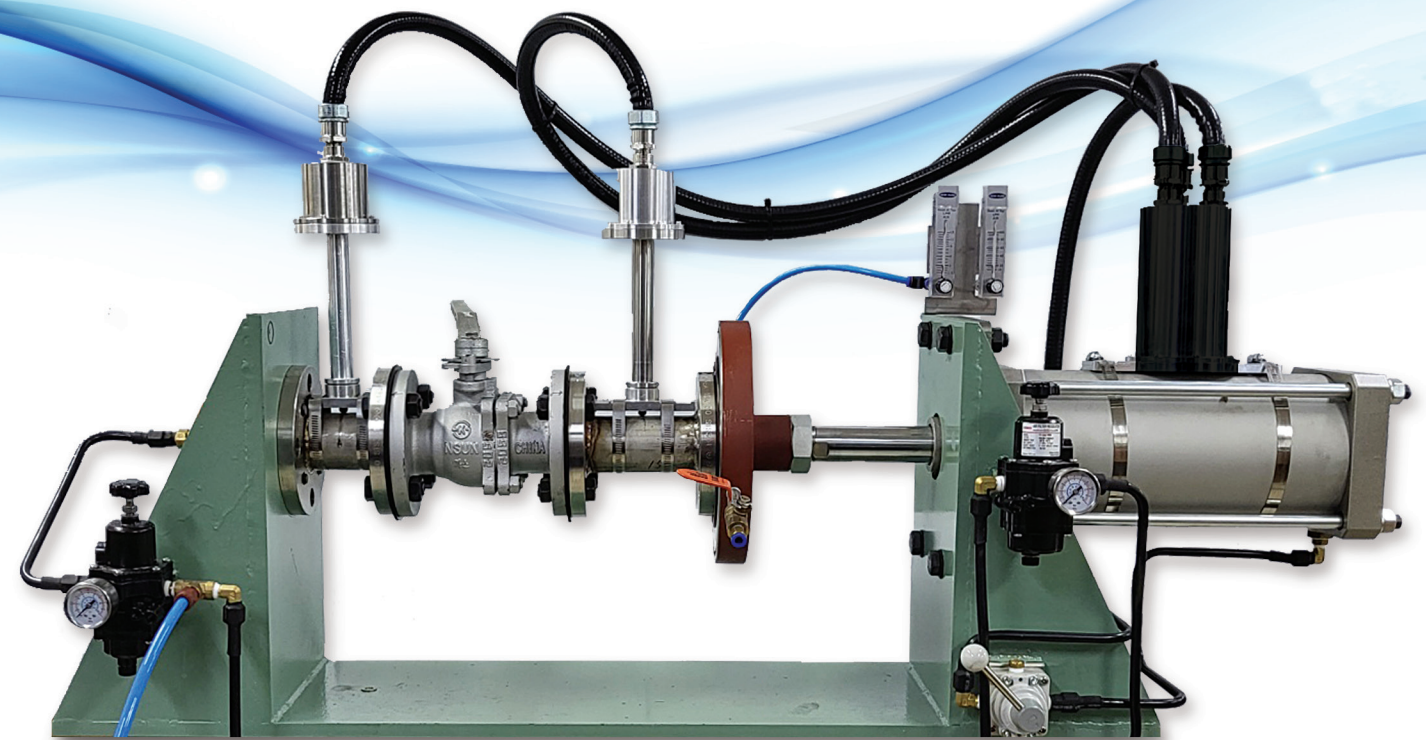
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High performance & Low cost  
Valve Internal Leakage Diagnosis System

# AE-VDS



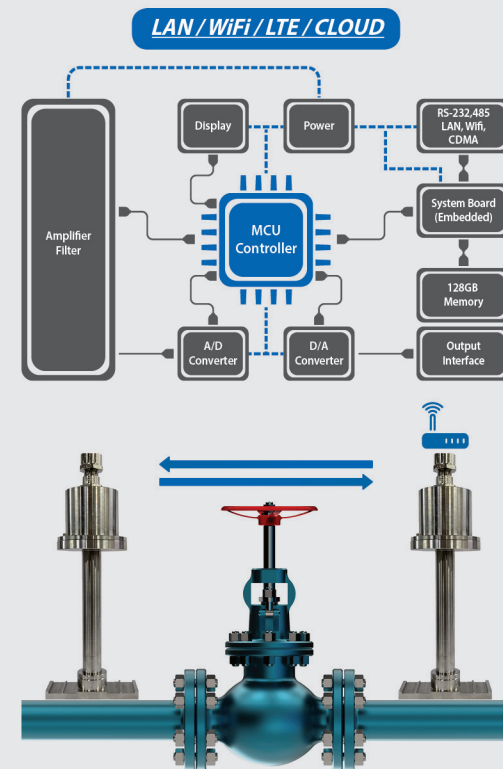
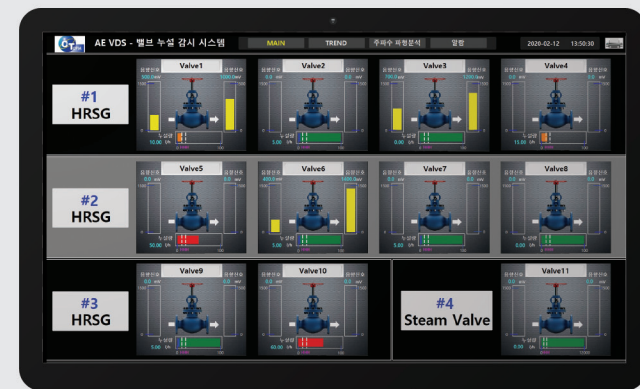
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# AE-VDS

## (Acoustic Emission - Valve Diagnostic System)

- 1) Technology to Predictive Diagnosis of internal micro leakage and abnormal condition for various important valves used in industrial sites
- 2) High functional and low cost localization with improved diagnostic reliability and precision  
Support Pre-diagnosis function for effective predictive maintenance



### Necessity

- Valve Leakage : Occurs frequently in most industrial sites
- Long Term Leakage : Huge increase in economic losses
- Closed Condition maintenance valve : Very susceptible to leakage under high temperature and high pressure conditions
- Hazardous Gas Leakage: Serious harm to human and material resources
- Preventing major accidents : increasing customer demand for early detection of internal leakage

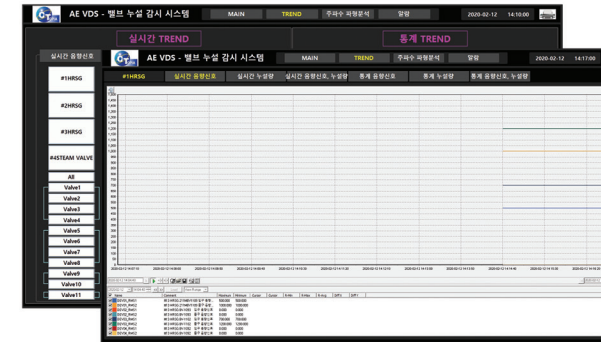
### Effects

- Prevent damage expansion by detecting damage of valve packing and seat
- Prevent unexpected Accidents caused by Valve Internal Leakage Diagnosis
- Improved Equipment efficiency and reduce Heat Loss due to decrease Leakage Rate
- Possible to Predictive maintenance by analyzing the condition of valve and Reduce Maintenance Cost
- Fully automated analysis ensures facility reliability and improves working conditions

### Features

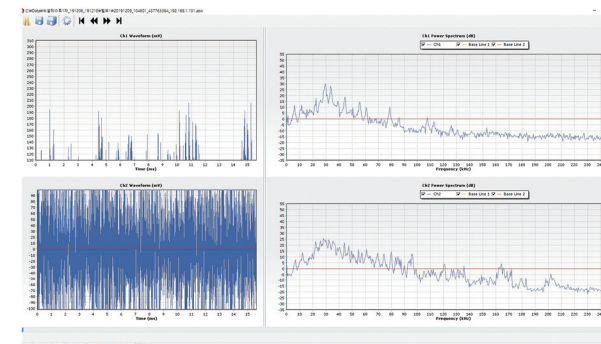
- Improvement of measuring method using acoustic emission technology
- Simultaneous measurement of various valves and multiple valves
- Real time Leak measurement and Valve status visualization
- Integrated diagnostic and measuring device Built in Preamplifier
- Easy on-site installation and communication configuration (provide tool for site support and various communication configurations)
- Ambient noise filtering algorithm such as noise and vibration
- Possible to measure fine leakage due to noise attenuation
- Possible Precise diagnosis through Sound Level Analysis and Pattern Analysis
- Improved reliability and accuracy of measurement results
- Support Big data based platform service
- Auxiliary sensor input can be used to improve measurement accuracy by correlating measured data

## Embedded system Built-in Support AI Platform based Machin Learning



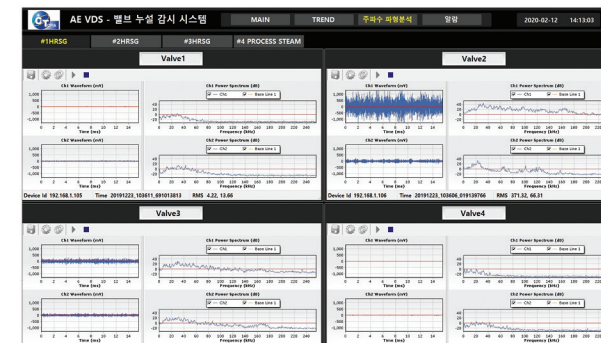
### Average Voltage (RMS) Analysis

- Acoustic signal analysis by operating pattern



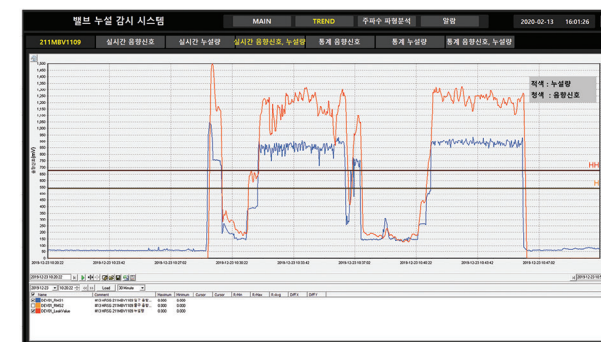
### Wave form Analysis

- Interval Analysis of Waveforms by Valve
- Amplitude Comparative Analysis of Normal Valves



### Frequency Analysis

- Analysis of Valve Leakage according to the cause of AE
- Comparative Spectrum analysis of the normal valve and the leakage valve



### Pattern Analysis

- Used Valve Leak Sound Classification and Pattern recognition algorithm based on Machine Learning Technology