IoT based

Test Laboratory Integrated Management Solution
What is LABspider?
What is LABsider?

IoT (Internet of Things) based Real time Test Laboratory integrated management Solution

Management of Effective Resource
- Equipment
- Measuring instruments
- Sample
- Electric power

Integrated management of test information
- Management of TEST
  - Operation
  - Date of test
  - Report
  - Tracking date

Monitoring for malfunction detection
- Management of Monitoring
  - Fire Control
  - Abnormality
  - Equipment Breakdown
  - Sample Breakdown

Build for a systematic management of standard process
- Request
- Reservation
- Situation
- Analysis
- Report

Offer the DB from a long distance & Management
- Operation data of equipment DB
- Measurement of specimen data DB
- Analysis result DB / Test report DB

Notification when is abnormal & Failures Prevention
- Management of normal range
- User-defined range
- Analysis of real-time data

Handwork System
- Chief of research
  - Analysis
  - Test
- Receptionist
  - Request of test
  - Make a report

Out of main total Control Management System
- Test LAB manager
- A central control system
- Absence connection technology of data
- Test data of chamber
- Test LAB environmental monitoring
- Management of abnormal alarm

Having difficulty recognizing in real time case
- Active partner
- Difficult to identify immediately problems
- Difficult to realize immediately when it has a problem

Frontis Business Presentation
What is LABsider?

IoT (Internet of Things) based Real time Test Laboratory integrated management Solution

Any where, Any device : WEB(HTML5)
- HTML5 based WEB SYSTEM
  - Any Where, Monitoring
    - If you can have access to the internet, you can monitor wherever you want
  - Any Device available
    - PC, TABLET, NOTEBOOKS, SMART PHONE

Anytime Data Tracking : DATABASE
- Total DB Management System
  - Tracking of data & offer analysis
- Various data & It can make flexible DBMS SCHEMA formations
  - it will manage : equipment, all sensors, Samples
- Applications for in real-time monitoring and function of notifications
  - Analysis for operation rate in real-time -> prediction of failures
  - Analysis for normal range date, prediction for breakdown.
  - notification through checking the range of user by email.

Collected of various type devices
- Different type devices support various communication protocol (ANALOG, DIGITAL, RS-232, RS-422, RS-485, CAN, Ethernet, FILE, DB)
- OCR monitoring is available when you cannot use communication protocol
Functions
Request & Schedule Management

Real-time Monitoring

Data management & Tracking datas

Management of Reports

Variety of Devices

Management of Test Samples

Management of Test Equipment

Access administration

Fire Control

It is possible to manage more than efficient, economical
Advantages & Strengths
Operation rate through electronic power

**AS-IS (Not the system)**
- Difficulty controlling operation time

**TO-BE (LABspider)**
- Automatic Control (analysis of electricity)

<table>
<thead>
<tr>
<th>Equipment Name</th>
<th>Operation Status</th>
<th>The start time</th>
<th>The end time</th>
<th>The time required</th>
</tr>
</thead>
<tbody>
<tr>
<td>HALT(TC-2.5)</td>
<td>Non-operation</td>
<td>2016-06-24 12:14:16</td>
<td>Present</td>
<td>118.86</td>
</tr>
<tr>
<td>HALT(TC-2.5)</td>
<td>Non-operation</td>
<td>2016-06-23 03:45:16</td>
<td>Present</td>
<td>10.06</td>
</tr>
<tr>
<td>HALT(TC-2.5)</td>
<td>Operation</td>
<td>2016-06-23 03:45:16</td>
<td>2016/06/23 17:41:36</td>
<td>8.48</td>
</tr>
</tbody>
</table>

Accuracy, Reliability, Availability Down

Accuracy, Reliability, Availability Up
Failure Alarm

**AS-IS (Not the system)**
- Difficult to identify immediate problems

**EXCESSIVE COST**

Difficult to immediately recognize in case of malfunction of equipment

**TO-BE (LABspider)**
- Notification, Failures Prediction

**REDUCED COST**

It is available to identify problems in real time
Fire control system (Prevention to loss of life and property)

<table>
<thead>
<tr>
<th>AS-IS (Not the system)</th>
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</thead>
<tbody>
<tr>
<td>✓ No initial response in case of fire</td>
</tr>
</tbody>
</table>

**What if a fire breaks out when you leave laboratory**

**Tomorrow's News**
Small embers make a big fire, a fire due to loss of an enterprise.
Property loss: $x$ hundred million
$X$ deaths

difficult to Early detection and suppression of fire

**Loss of life and property caused by fire**

<table>
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<tr>
<th>TO-BE (LABSPIDER)</th>
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<tr>
<td>✓ Immediate alert transmission to the person in charge in case of fire</td>
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</table>

**Wireless Fire Detection**

**Real-time alarm** transmission by detecting sudden temperature change inside the laboratory (control room, mobile phone) anytime, anywhere

**Prevention** to loss of life and property in case fire

Rapid detection of temperature change, Send initial fire alarm via SMS, E-mail
Paperless, Built for Standard Process

AS-IS (Not the system)

✓ Out dated labor intensive system

Increased cost for information management (collection, analysis sharing) of Test LAB

Low efficiency / High Cost

TO-BE (LABspider)

✓ Streamlined, Standardized process

Plans management

Analysis management

Check management

Performance management

Standard management

Secure of Reliability by prompt work handling and objective test data

High efficiency / Low Cost
**AS-IS (Not the system)**

- **✓ No current long distance system**

**LOW Efficiency**

- Difficult to collect a data from long distance, to share & control

**TO-BE (LABspider)**

- **✓ Control of a data from long distance**

**HIGH Efficiency**

- It is possible to control in real-time and able to get data from long distance

- Test data of equipment
- Monitoring of Lab environmental
- Management of abnormal data by alarm

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**Quality management department**

- Test LAB 1
- Test LAB 2
Test sample management

**AS-IS (Not the system)**
- Control of Complications & Low efficiency

**I’m here!**
- Wasting Money

**TO-BE (LABspider)**
- QR code makes it easier to management

**Reduced Money**
Visual Condition Monitoring

**AS-IS (Not the system)**
- ✅ Difficult to check the sample in real-time in chamber

**TO-BE (LABspider)**
- ✅ The sample can be checked with a camera in the chamber

**Excess cost**

**Reduced Cost**

Environmental chamber

Office
Calibration Management

AS-IS (Not the system)

✓ Calibration Failed

- Increased cost of testing
- Mass production of defective products
- Quality reliability decline
- Customer claim / Increase recall
- Sales decline

TO-BE (LABspider)

✓ Perform stable calibration

Success

- Efficient quality control
- Ensure device stability
- Develop high quality new products
- Rising enterprise and product reliability
- Sales improvement

Fail

- Increased cost of testing
- Mass production of defective products
- Quality reliability decline
- Customer claim / Increase recall
- Sales decline

Improving the reliability of test equipment
• Test schedule management

• Test chamber condition management

• Laboratory condition management
UI / UX (Sample)

• Monitoring for the test sample visual condition

• Test result data management will meet customer needs
**ERP Interface**

**Test Information Interface**
- Operation plan
- Operation Performance
- Equipment Operation rate
- Test progress

**EFFECT**
- Smart test scheduling reduces direct/indirect testing costs
- Reduce design costs by detecting events and abnormal alarms through quality process improvement
- Real-Time information sharing ensures data transparency and rapid decision making
- Efficient resource management
  - Reduced cost of loss of equipment, manpower, samples, and power

**ERP Management Accounting Module**
1. Calculation test expenses
   - Automatic collection of operating time (hours)
2. Efficient management of test plans
   - Equipment operation plan information analysis
3. Data utilization based on replacing or adding equipment
   - Analyze the causes of low equipment operation rates
**Operation effects**

- Contribution to the prompt test and set up of assessment process
- Improvement of the clarity, economics and efficiency of reliability assessment

### Quantitative expected effect

After using this system at least 1 year over, you can check more efficient production.

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>Smart scheduling</th>
<th>Process improvement</th>
<th>Business efficiency improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25%</td>
<td>36%</td>
<td>34%</td>
</tr>
</tbody>
</table>

- **Operation rate**
- **Decrease of test Failure rate**
- **Prompt sharing information**
- **Paperless**

### Maximizing Efficiency

- **Quality assurance**
- **Charge decrease**
- **Productivity improvement**

**30%**

- **It will cost by using smart schedule.**
- **It will reduce budget by improving quality and notification.**
- **It is possible to provide support immediately to make decisions by sharing the data in real-time.**
- **It will prevent loss by managing sources such as machines, samples.**
Construction Case
Construction Case

Dynamo Test Facility Integrated Monitoring System

- Integrated monitoring of global plant engine/Transmission facilities
- Durability testing equipment manufacturer interface module development
- New facility addition project is underway

Real time monitoring and integrated management system of Durability & Performance

- Real time Monitoring of motor and for vehicle actuators and durability and performance
- Operation status and operation rate management by equipment

Real time monitoring and integrated management system of Environment & Reliability

- Real time Monitoring of vehicle control and electronics testing
- Managed of Operation rates by Equipment/Laboratory, Real time Data Monitoring, historical data tracking management
- Real time Monitoring of laboratory environment
- Alarm & event management, check / correction management

Real time monitoring and integrated management system of heavy equipment

- Integrated management of electrical and electronic test facilities within the quality reliability laboratory
- Operation rates by equipment / laboratory, real time data monitoring, historical data tracking management
- Real time monitoring of laboratory environment
Registration Status

(Total 5)

- Patent certificate
- Registration of Service Ticket
- Company affiliated research institute certificate
- Small Business Certification

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We are always thinking for you and will be your BEST PARTNER.