

USER MANUAL

DynaDetect

Vibrating Screen 03



Motor 01

Asset Type: **Vibrating Screen**

Asset Name: **Vibrating Screen 03**

Location: **Sector 1**

Emergency

 **Unbalance** 7 days ago

2 spots >

 Saturated Spectrum

 Unresolved reports

 **Stiffness loss** 48 days ago

1 spot >

 **Lack of lubricant** 8 hours ago

1 spot >

 Unresolved reports

Manageable

 **Bearing wear** 32 minutes ago

1 spot >

 Saturated Spectrum

 Unresolved reports



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1 Introduction to DynaDetect

DynaDetect is a specialized continuous monitoring solution that uses IoT sensors connected to industrial equipment to detect abnormal patterns that precede failures. It stands out in the market for its ability to detect specific faults in critical equipment – not just anomalies, as seen in generic solutions. This empowers operators to perform **smarter, more digital, efficient, and resilient maintenance**. To achieve this, it processes data collected from equipment using a set of specialized artificial intelligence agents. In addition to an intuitive interface, it notifies maintenance teams of potential issues before they cause disruptions.

More than a generic fault detection solution, DynaDetect is a true ally of Industry 4.0/5.0 in preventing unwanted downtime. It offers a robust and consistent toolkit that enhances customer productivity and efficiency, supports informed decision-making, reduces costs, avoids downtime, and promotes more reliable and productive operations.

2 Installing and Activating

The product is available as an option on the Platform's main menu, becoming visible after activation, which must be requested from the sales team via email at contato@dynamox.net.

Once activated, it's necessary to ensure that certain machine information is correctly configured in the following areas:

- **Asset Tree**
- **Machine Center**
- **Spot Center**

The complete list of required information can be obtained through our support channel.

3 Working

3.1 Monitoring machines with detected faults

The **Monitoring Dashboard** displays all machines activated in DynaDetect – whether they have faults, are fault-free, or have not yet been evaluated. It includes the following features:

3.1.1 Quick search

The quick search is an efficient tool for quickly locating a machine by name. For best results, use short and specific names or terms that you already know.

 Search by asset name

3.1.2 Advanced filter

It offers maximum control over the search, allowing you to combine multiple pieces of information to find a group of machines or a specific asset. Perfect for situations where you need to find machines based on their characteristics (e.g., all machines in a sector that are on alert), or when you do not know the exact name of the equipment.

 0 FILTERS

Filter

Location

Subarea



Active



Asset type



Asset severity



Defect detected



Class



☒ Business risk

CLOSE

CLEAR

FILTER

3.1.3 Automatic page refresh

A **visual message** indicates the time remaining until the next automatic page refresh, which occurs every **5 minutes**. This automatic refresh ensures that machines display updated diagnostics from new data collections.

Search by asset name

0

FILTERS

Updating in 04:37



This automatic refresh at regular intervals is **not related to the spectral collections scheduled on the DynaGateway**.
In other words, even if the page is refreshed, **it does not necessarily mean** that new collections have been performed or processed.

3.1.4 Full-screen mode

Activates full-screen mode, hiding menus and expanding the page view.

Search by asset name

Updating in 04:37

Open (76)				Read (11)	
Vibrating Screen 14	Sector 03	A	RN	10 types of defects detected	
Motor 01				4 defects detected	
Bearing 01				2 defects detected	
Motor 02				3 defects detected	
Motor 03				3 defects detected	
Ball Mill 08	Sector 02	B	RN	9 defects detected	
Vibrating Screen 11	Sector 07	C	RN	5 defects detected	
Bucket Elevator 03	Sector 01	A	RN	2 defects detected	
Cooling Tower 01	Sector 01	A	RN	10 types of defects detected	
Conveyor Belt 04	Sector 09	B	RN	2 defects detected	
Blower 18	Sector 02	C			
Blower 11	Sector 01	B			
Fan 12	Sector 08	B	RN		
Vibrating Screen 05	Sector 07	A			
Ball Mill 01	Sector 02	C			



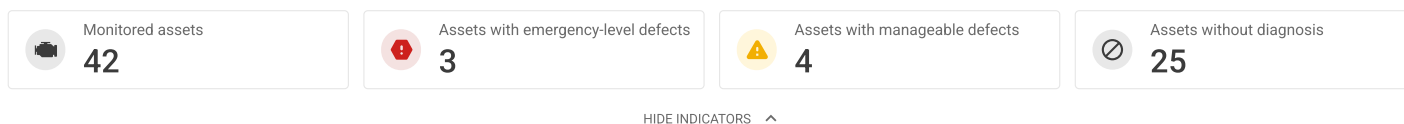
Recommended for use on **large monitors**, especially in presentation environments or control rooms.

3.1.5 Tactical Indicators Panel

The Indicators Panel displays four tactical indicators related to defect monitoring.

- **Monitored assets**
 - Sum of all activated machines. This count includes both configured and unconfigured machines.

- **Assets with emergency-level defects**
 - Sum of all machines with emergency severity (Open or Read).
- **Assets with manageable defects**
 - Sum of all machines with manageable severity (Open or Read).
- **Assets without diagnosis**
 - Sum of all machines that are not generating diagnostics. Machines in this condition are either not configured to diagnose any defect or the spectral data is not reaching the Dynamox Platform.



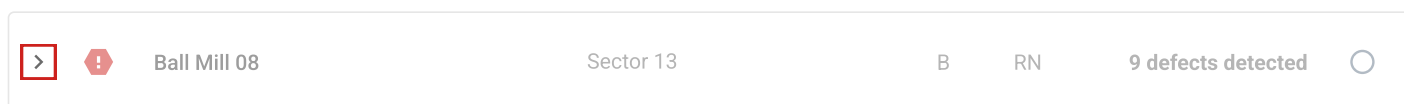
3.1.6 Tab with list of “Open Machines”

The “**Open**” tab displays all machines activated for diagnostics in DynaDetect and available for review. This list may include:

- Machines with all fault types configured
- Machines with only some fault types configured
- Machines activated but with no fault types configured

Each machine listed in this tab displays the following features and information visually in the interface:

- **Machine expander**
 - When selected, the previously defined subassemblies and components in the **Asset Tree** will be shown or hidden.



- **Machine severity indicator**
 - A visual symbol represents the current severity of the machine based on the latest diagnosis. It shows the highest severity level identified, the machine’s normal status, or the fact that it is not yet configured for diagnostics.

The symbol meanings are:



Indicates an **emergency fault**. By definition, an emergency fault represents a problem that requires immediate attention from the analyst.



Indicates the machine is **normal**, with no faults identified in the latest diagnosis.



Indicates a **manageable fault**. By definition, a manageable fault represents a point of attention for ongoing monitoring by the analyst.



Indicates the machine is activated but has **no fault types** configured for diagnostics.

Fault sorting criteria

The machine list is sorted based on a combination of criteria that reflect the severity and number of diagnosed faults per asset. The sorting follows this logic:

1. Sum of fault severities (emergency or manageable)

Machines with the highest severity are prioritized.

2. Number of unique diagnosed faults

Among machines with the same severity level, those with a greater number of distinct faults appear first.

3. Business risk

In case of a tie, the business risk associated with the machine is evaluated.

Machines with greater potential impact on operations are prioritized.

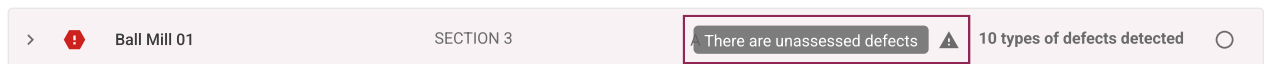
4. Selected machine class

If a tie still persists, the machine class is considered. Machines in more critical classes (A, B, or C) are prioritized.

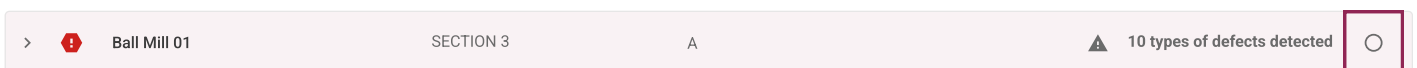
Tip: This sorting is especially useful when viewing machines within the same area, as it highlights those requiring the most attention.

- **Machine identification**
 - Displays the machine name as previously defined in the **Machine Center**.
 - If the name is too long, it will be automatically adjusted to fit the available screen space.
 - This same identification also appears at the subassembly and component levels of the machine.
- **Area identification**
 - Displays the area name as previously defined in the **Asset Tree**.
 - If the name is too long, it will be automatically adjusted to fit the available screen space.
- **Asset class identification**
 - Displays the machine class as previously defined in the **Machine Center**.
 - This information will not be shown if no class has been configured.
- **Business risk identification**
 - Displays the business risk symbol, if previously selected in the **Machine Center**.
 - This information will not be shown if no risk has been defined.
- **Number of detected faults**
 - Displays the total number of emergency and manageable faults identified in the machine's current diagnosis.
 - Partial counts are also shown at the subassembly and component levels.
- **Configuration warning indicator**
 - Displays a visual symbol whenever the machine has faults that are not yet configured and therefore cannot be identified in diagnostics.

 The indicator remains hidden as long as all faults are properly configured. Otherwise, it will remain visible until all configuration issues are resolved.



- **Read confirmation**
 - When this option is selected, the machine is moved to the **"Read"** list, indicating that it has already been reviewed by a user.



3.1.7 Tab with list of "Read" machines

This tab displays machines that have already been analyzed and marked as **"Read"**. Its functionality is similar to the **"Open"** tab, with the difference that machines are organized chronologically based on the date and time they were marked as read.

A machine marked as read will not automatically return to the “Open” tab, except in two cases:

- When a new diagnosis identifies new faults; or
- **After 72 hours from the time it was marked as read.**

The image below illustrates all the features and information described above.

Search by asset name

0 FILTERS

Updating in 04:37

Open (113)					Read (11)	
▼	Vibrating Screen 14	Sector 03	A	RN	10 types of defects detected	○
▼	Motor 01				10 defects detected	
	Bearing 01				2 defects detected	
	Motor 02				3 defects detected	
	Motor 03				3 defects detected	
>	Ball Mill 08	Sector 02	B	RN	9 defects detected	○
>	Vibrating Screen 11	Sector 07	C	RN	5 defects detected	○
>	Bucket Elevator 03	Sector 01	A	RN	2 defects detected	○
>	Cooling Tower 01	Sector 01	A	RN	10 types of defects detected	○
>	Belt Conveyor 04	Sector 09	B	RN	2 defects detected	○

3.1.8 Identifying the list of diagnosed faults in a machine

When selecting a subassembly or component – either in the “Open” or “Read” tab – the following options are visually displayed in the interface.

Upon selection, the right-hand panel will show the **List of Identified Faults** in the machine’s current diagnosis. This panel includes the following features and information:

- **Subassembly or component identification**
 - Displays the name of the machine’s subassembly or component as previously defined in the **Machine Center**.
- **Subassembly or component information**
 - Displays machine-related information, including:
 - The type of subassembly or component, as defined in the **Machine Center**.
 - The machine’s asset type, as defined in the **Machine Center**.
 - The asset name, as defined in the **Machine Center**.
 - The location within the company’s structure, as defined in the **Asset Tree**.
- **Saturated signal identification**
 - When a diagnosis detects issues with the dynamic range used in the spectral data, a visual message will appear to warn about this problem.

i If the latest waveform collected is saturated, it is necessary to adjust the value in the Spot Center for the affected Spot. After adjusting the dynamic range, a new data collection must be performed for DynaDetect to generate a new diagnosis.

- **List of identified emergency faults**

- Displays all configured fault types identified in the current diagnosis and classified as **Emergency**.
- By definition, an emergency fault represents a problem that requires immediate attention from the analyst.
- The list includes blocks with the following features or information (also applicable to the list of manageable faults):
 - Fault type name, highlighted in red.
 - Number of days since the fault was first identified.
 - Alert tags with additional information:
 - Saturated Spectral: Indicates that one or more Spots related to this fault could not identify issues due to a saturated signal.
 - Unresolved Reports: Indicates that there are open reports related to this fault.

- Displays the number of Spots that detected the selected fault.
- Access to **Quick Analysis Panel**: Allows you to view the list of Spots with detailed information about the selected fault.

- **List of identified manageable faults**

- Displays all configured fault types identified in the current diagnosis and classified as **Manageable**.
- By definition, a manageable fault represents a **point of attention** that should be monitored by the analyst.
- The information follows the same format as the emergency fault list described above, except that the fault type name is highlighted in yellow.

The image beside illustrates all the features and information described above.

Vibrating Screen 14



Motor 01
Asset type: Vibrating Screen
Asset name: Vibrating Screen 14
Location: Sector 03

 We identified collections with saturated signal. Check the sensor and adjust the Dynamic Range.

 **Emergency**

 **Unbalance** 70 days ago 2 Spots >

 Saturated Spectrum  Unresolved reports

 **Lack of stiffness** 48 days ago 1 Spot >

 **Lack of lubrication** 8 hours ago 1 Spot >

 Unresolved reports

 **Manageable**

 **Bearing wear** 32 minutes ago 1 Spot >

 Saturated Spectrum  Unresolved reports

CLOSE

3.1.9 Quickly analyzing fault Spots

i When selecting a subassembly or component – either in the “**Open**” or “**Read**” tab – the following options are visually displayed in the interface.

Upon selecting a fault type from the fault list, the **Quick Analysis** Panel appears on the right side, showing the list of Spots that identified the fault in the current machine diagnosis. This panel includes the following features and information:

- **Fault type identification**
 - Displays the name of the selected fault type.
- **Related Spot listing**
 - Shows a list of cards with the names of the Spots that identified the fault.
- **Spot name identification**
 - Displays the name of the Spot currently being analyzed.
- **Context Identification**
 - Displays various details about the Spot, including:
 - Subassembly name, as defined in the **Machine Center**.
 - Component name, as defined in the **Machine Center**.
 - Asset name, as defined in the **Machine Center**.
 - Asset class, as defined in the **Machine Center** (not shown if not configured).
 - Business risk symbol, if previously selected in the **Machine Center** (not shown if not defined).
 - Asset type, as defined in the **Machine Center**.
 - Location, according to the hierarchical structure defined in the **Asset Tree**.
 - Spot Fault Trend, graphically displays the fault trend in the Spot based on the last seven valid collections. Symbols indicate severity for each analysis:
 - **Red**: On a given date, the Spot showed an Emergency severity occurrence.
 - **Orange**: On a given date, the Spot showed a Manageable severity occurrence.
 - **Green**: On a given date, the Spot showed no occurrence and was therefore Normal.
- **Saturated signal identification**
 - When a Spot has issues with the dynamic range used in the spectral data, a visual warning message is displayed.
 - A shortcut option is available to adjust the value in the **Spot Center**, if needed.

i If the last waveform collected is clipped, the dynamic range must be adjusted in the affected Spot. After this adjustment, **a new collection is required** for DynaDetect to generate a new diagnosis.

Even if a spectral is **clipped**, DynaDetect can still perform diagnostics. However, the accuracy may be reduced, as certain frequency ranges may not have been fully captured.



If the quality of the clipped spectral is deemed **too low** by DynaDetect, it will be automatically discarded and **not used** for diagnosis.

- **Predictive Diagnosis Identification**

- Displays a summary of the diagnosis, including:
 - A brief explanation of the vibration analysis context used to identify the fault.
 - The **date** and **time** the fault was identified in the Spot.
 - A filtered spectral graph highlighting details of the identified defect, with the option to **download the image** to the computer.
 - This graph does not allow direct interaction.

- **Access Spectral Data**

- Allows you to view the spectral data used for fault diagnosis in the **Spectral Viewer**.
- Selecting this option opens a new browser window with the **Spectral Viewer** page.

- **Fault accuracy validation**

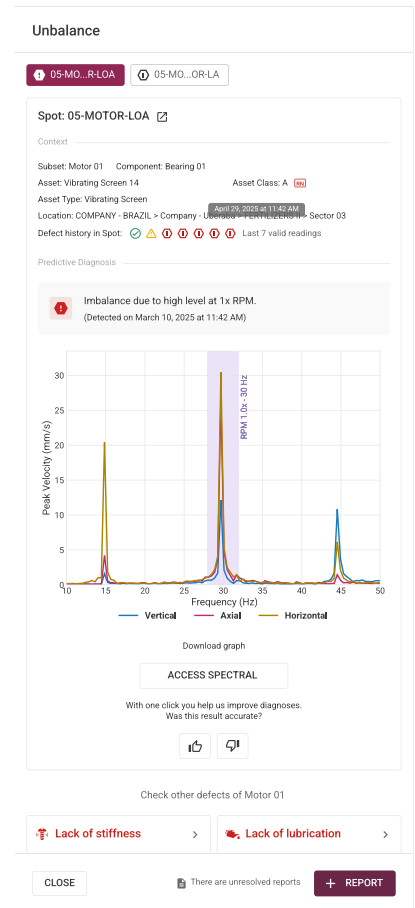
- Displays **thumbs-up** and **thumbs-down** icons that can be used to send feedback on the accuracy of the diagnostic model.
- If the feedback is **negative**, the user must select one of the predefined reasons from a list.



It's important to note that any model based on artificial intelligence approaches may produce results that differ from human evaluation. This happens because models use statistical and historical patterns to generate diagnoses, which may not reflect all the nuances of an expert's analysis.

- **Quick access to other identified defects**
 - Allows the user to directly access other listed defects.
- **List of unresolved reports**
 - When selected, it redirects to a page listing all open reports associated with that fault.
- **New report button (+ REPORT)**
 - This button allows the creation of a new report for the associated subassembly or component.
 - By selecting this button, the spectral graph shown in the diagnosis will be attached to the document.

The image beside illustrates all the features and information described above.



3.2 Viewing identified faults in the Spot Viewer

The **Spot Viewer** page also displays information about defects identified in a specific Spot. On this page, you can interact with DynaDetect in two ways:

- **Defect detection status**

- Above the telemetry graph tabs, the panel shows a list of **defects identified** in the machine's current diagnosis. This panel includes the following information:
 - List of identified defects.
 - View details of each identified defect (equivalent to selecting the **Detect** button, described below).

- **Identifying the list of diagnosed defects in a Spot**

By selecting the **Detect** button, the right-hand panel will display the **list of defects identified** in the current Spot diagnosis. This panel includes the following features or information:

- **Subassembly or component identification**

- Displays the name of the machine's subassembly or component as previously defined in the **Machine Center**.

- **Subassembly or component information**

- Displays machine-related information, including:
 - The type of subassembly or component, as defined in the **Machine Center**.
 - The machine's asset type, as defined in the **Machine Center**.
 - The asset name, as defined in the **Machine Center**.
 - The location within the company's structure, as defined in the **Asset Tree**.

- **Saturated signal identification**

- When a diagnosis detects issues with the dynamic range used in the spectral data, a visual message will appear to warn about this problem.



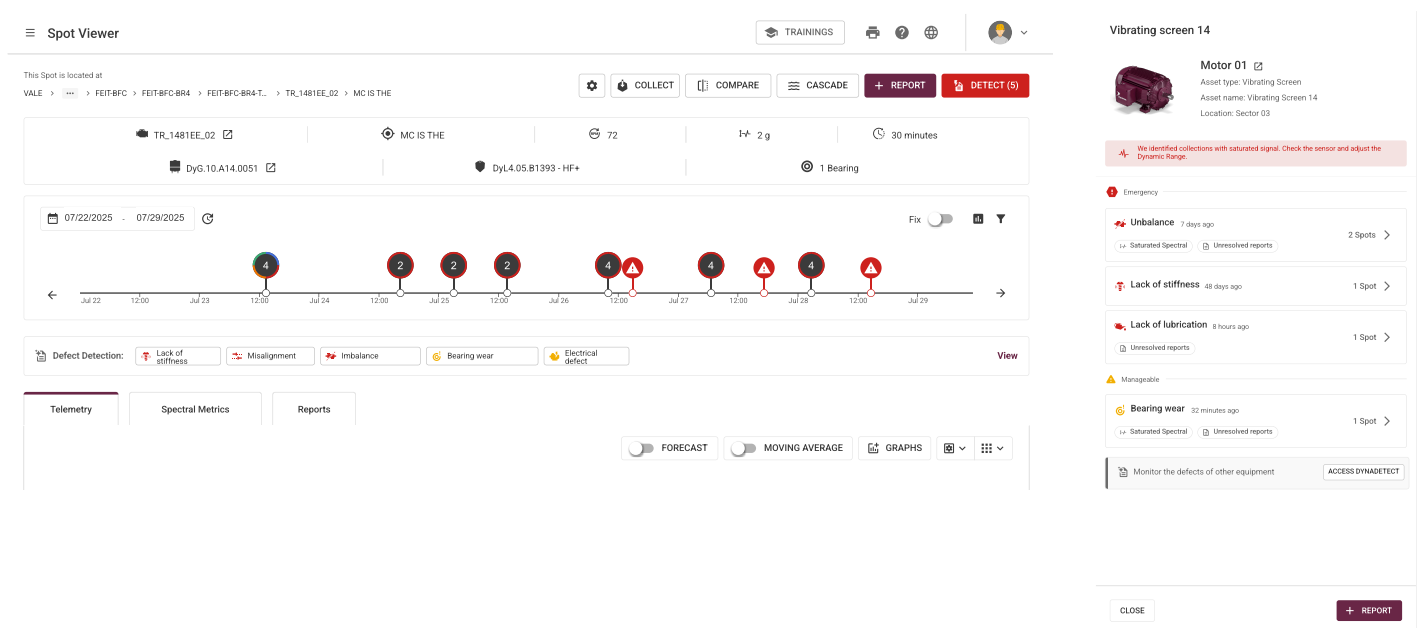
If the latest waveform collected is saturated, it is necessary to adjust the value in the Spot Center for the affected Spot. After adjusting the dynamic range, a new data collection must be performed for DynaDetect to generate a new diagnosis.

- **List of identified emergency faults**

- Displays all configured fault types identified in the current diagnosis and classified as **Emergency**.
- By definition, an emergency fault represents a problem that requires **immediate attention** from the analyst.
- The list includes blocks with the following features or information (also applicable to the list of manageable faults):
 - Fault type name, highlighted in red
 - Number of days since the fault was first identified

- Alert tags with additional information:
- Saturated Spectral: Indicates that one or more Spots related to this fault could not identify issues due to a saturated signal.
- Unresolved Reports: Indicates that there are open reports related to this fault.
- Access to **Quick Analysis** Panel: Allows you to view the list of Spots with detailed information about the selected fault.
- **List of identified manageable faults**
 - Displays all configured fault types identified in the current diagnosis and classified as **Manageable**.
 - By definition, a manageable fault represents a **point of attention** that should be monitored by the analyst.
 - The information follows the same format as the emergency fault list described above, except that the fault type name is highlighted in yellow.
- **Quick access to DynaDetect**
 - Allows the user to directly access the defect monitoring panel for a broader analysis of monitored machines.

The image below illustrates all the features and information described above.



Quickly analyzing fault Spots

Upon selecting a fault type from the fault list, the Quick Analysis Panel appears on the right side, showing the list of Spots that identified the fault in the current machine diagnosis. This panel includes the following features and information:

- **Fault type identification**
 - Displays the name of the selected fault type.
- **Spot name identification**
 - Displays the name of the Spot currently being analyzed.
- **Context Identification**
 - Displays various details about the Spot, including:
 - Subassembly name, as defined in the **Machine Center**.
 - Component name, as defined in the **Machine Center**.
 - Asset name, as defined in the **Machine Center**.
 - Asset class, as defined in the **Machine Center** (not shown if not configured).
 - Business risk symbol, if previously selected in the **Machine Center** (not shown if not defined).
 - Asset type, as defined in the **Machine Center**.
 - Location, according to the hierarchical structure defined in the **Asset Tree**.
 - Spot Fault Trend, graphically displays the fault trend in the Spot based on the last seven valid collections. Symbols indicate severity for each analysis:
 - Red: On a given date, the Spot showed an Emergency severity occurrence.
 - Orange: On a given date, the Spot showed a Manageable severity occurrence.
 - Green: On a given date, the Spot showed no occurrence and was therefore Normal.
- **Saturated signal identification**
 - When a Spot has issues with the dynamic range used in the spectral data, a visual warning message is displayed.
 - A shortcut option is available to adjust the value in the **Spot Center**.

 If the last waveform collected is clipped, the dynamic range must be adjusted in the affected Spot. After this adjustment, a new collection is required for DynaDetect to generate a new diagnosis.

Even if a spectral is **clipped**, DynaDetect can still perform diagnostics. However, the accuracy may be reduced, as certain frequency ranges may not have been fully captured.



If the quality of the clipped spectral is deemed **too low** by DynaDetect, it will be automatically discarded and **not used** for diagnosis.

- **Predictive Diagnosis Identification**

- Displays a summary of the diagnosis, including:
 - A brief explanation of the vibration analysis context used to identify the fault.
 - The **date** and **time** the fault was identified in the Spot.
 - A filtered spectral graph highlighting details of the identified defect, with the option to **download the image** to the computer.
 - This graph does not allow direct interaction.

- **Access Spectral Data**

- Allows you to view the spectral data used for fault diagnosis in the **Spectral Viewer**.
- Selecting this option opens a new browser window with the **Spectral Viewer** page.

- **Fault accuracy validation**

- Displays thumbs-up and thumbs-down icons that can be used to send feedback on the accuracy of the diagnostic model.
- If the feedback is negative, the user must select one of the predefined reasons from a list.

i It's important to note that any model based on artificial intelligence approaches may produce results that differ from human evaluation. This happens because models use statistical and historical patterns to generate diagnoses, which may not reflect all the nuances of an expert's analysis.

- **Quick access to other identified defects**

- Allows the user to directly access other listed defects.

- **Quick access to DynaDetect**

- Allows the user to directly access the defect monitoring panel for a broader analysis of monitored machines.

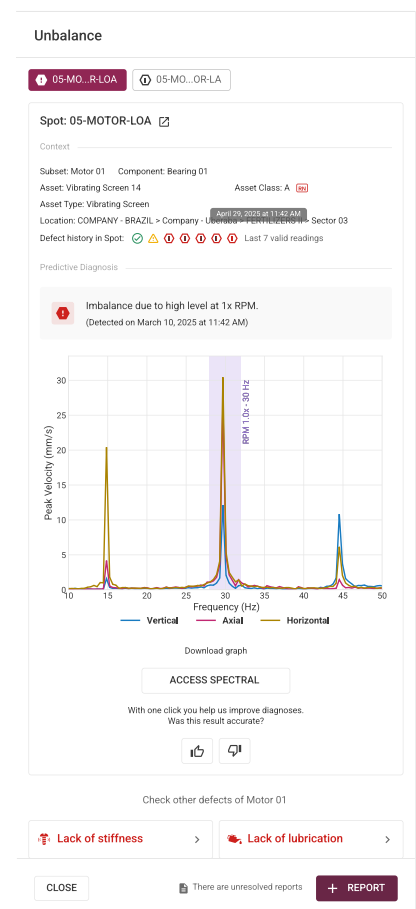
- **List of unresolved reports**

- When selected, it redirects to a page listing all open reports associated with that fault.

- **New report button (+ REPORT)**

- This button allows the creation of a new report for the associated subassembly or component.
 - By selecting this button, the spectral graph shown in the diagnosis will be attached to the document.

The image beside illustrates all the features and information described above.



3.3 Listing identified faults in the Machine Viewer

The **Machine Viewer** page also displays information about defects identified in the machine. To view this information, locate the **Defect detection - DynaDetect** section of the page, which will present a list of subsets or components with the following information. This list may include:

- Subassemblies or components with all configured defect types;
- Subassemblies or components with only some configured defects;
- Subassemblies or components with no configured defects.

Each machine listed in this section displays the following features and information visually in the interface:

- **Machine expander**
 - When selected, the previously defined subassemblies and components in the **Asset Tree** will be shown or hidden.



- **Machine severity indicator**
 - A visual symbol represents the current severity of the machine based on the latest diagnosis. It shows the highest severity level identified, the machine's normal status, or the fact that it is not yet configured for diagnostics.

The symbol meanings are:



Indicates an **emergency fault**. By definition, an emergency fault represents a problem that requires immediate attention from the analyst.



Indicates the machine is **normal**, with no faults identified in the latest diagnosis.



Indicates a **manageable fault**. By definition, a manageable fault represents a point of attention for ongoing monitoring by the analyst.



Indicates the machine is activated but has **no fault types**.

- **Subassembly identification**
 - Display each subassembly name as previously defined in the **Machine Center**.
 - If the name is too long, it will be automatically adjusted to fit the available screen space.
 - This same identification also appears at the component levels of the machine.
- **Number of detected faults**
 - Displays the total number of emergency and manageable faults identified in the machine’s current diagnosis.
 - Partial counts are also shown at the subassembly and component levels.

 Selecting a severity level directly in the table will display **the same information available via the “Detect” button in the Spot Viewer.**

The image below illustrates all the information described above.

Defect Detection - DynaDetect

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>●🔍Motor10 defects detected

●🎯Bearing10 defects detected

●🔍Gearbox10 defects detected

●🔍Pump10 defects detected

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