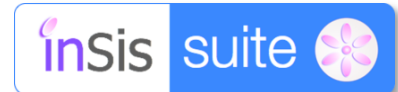




**Jaaji Technologies**  
Sophistication with Simplicity

# Laboratory Information Management System

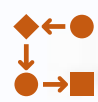



# Challenges in Traditional Laboratory Information Management:





# Overview of inSis LIMS




 **End-to-end Sample Management with Workflows**  
Offers detailed work-flows for sample life cycle management


 **Digital Laboratory**  
Enabled paper-less laboratory by providing digital tools for data entry and analytics


 **Enhanced Data Accessibility**  
Enables easy access to data across teams ,eliminating limitations imposed by manual data collection & reporting.

 **Auto-delivery of Lab Reports by email**  
The unit/section wise Lab results summary and reports are sent automatically (daily/weekly/monthly)

 **Compliance Support**  
Incorporates features ensuring adherence to regulatory standards, easing compliance challenges.

 **Streamlined Workflow**  
Automates manual workflows, boosting efficiency and reducing human errors.

 **Real-Time Analysis**  
Provides real - time reporting and analysis capabilities, enabling quick decision making and pro-active measures.

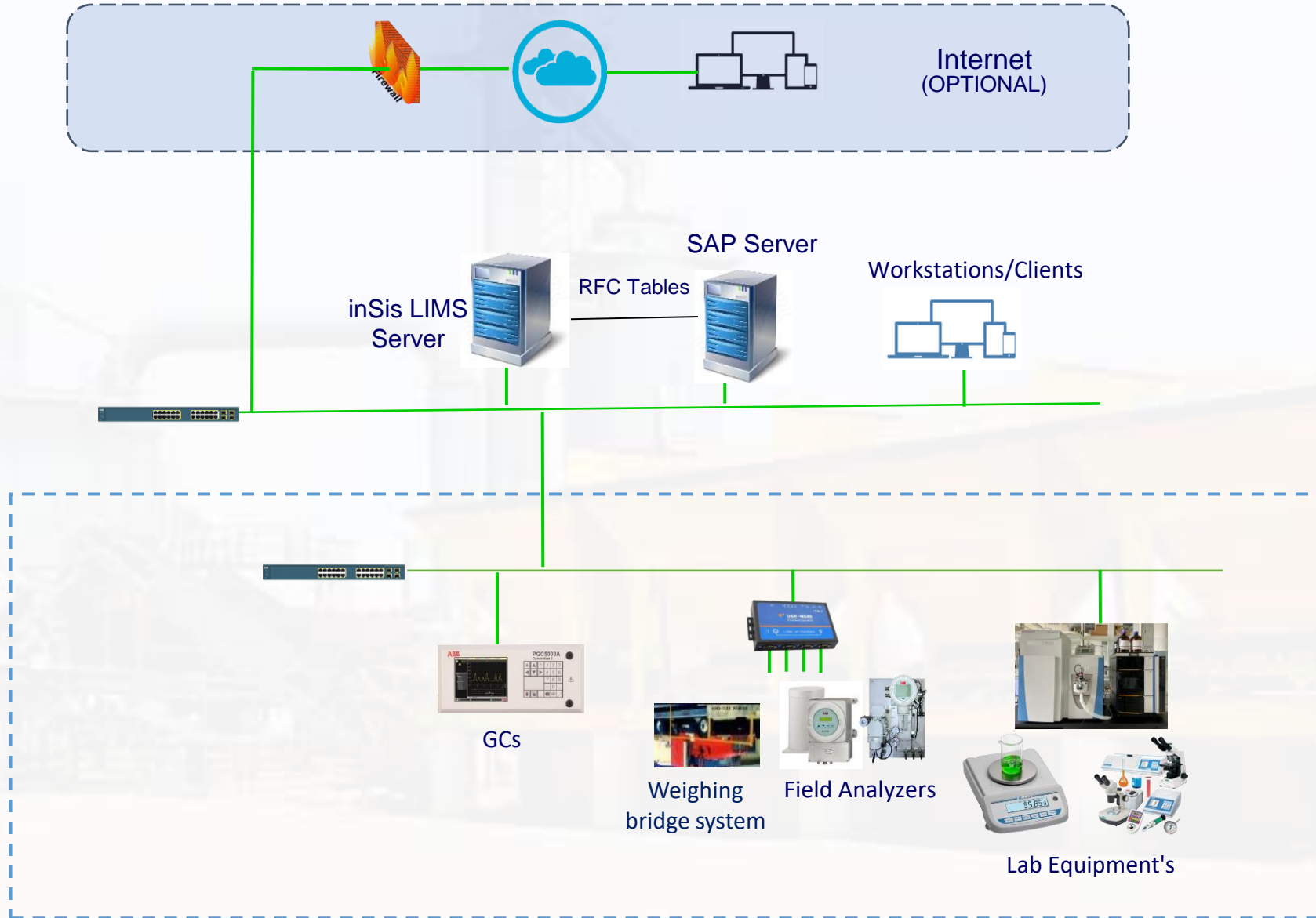
 **Maintain Data Integrity**  
Ensures data integrity by providing the data validation, review and approvals

## Powerful features in a single comprehensive platform

- **Sample master** – includes SOP, meta data etc...
- **Sample lifecycle** covering all steps and time taken at each step
- Optimized **workflows** to ensure uniform load for technicians
- **Self-configurable** reports and analytics
- **Statistical** control charts (out of box)
- **Integration with instruments** for auto-fetching data
- **Comprehensive dashboards** to integrate multiple data points
- **Instrument calibration** schedules and compliance can be tracked
- Management of **Special samples**
- Integration with **process parameters** for detailed analysis
- **Test certificates** can be generated; (CoA)
- **Built-in algorithms** to **predict** critical parameters
- **Role-based** access
- **Cyber Security** compliant



# Typical System Architecture



## Seamless Lab data Integration

01

Integrates with different instruments through industry standard protocols (Modbus TCP/IP, OPC U/A, D/A, web APIs etc....)

02

Reads data remotely from sensors through MQTT protocol or through gateways

03

Reads / Exports data from different data bases like SQL / Oracle / ERP

04

Exports data to 3<sup>rd</sup> party applications through web APIs

05

Supports calibration of equipment where feasible (e.g.: GCs)

06

Supports all types of reports

# Built-in Reports

Reports are user-configurable for maximum flexibility, with a toolbox of preconfigured elements via drag and drop. And you have the capability to schedule your distribution of these reports, be it to a printer or an email address. A list of typical reports follows.

- Analysis/test reports
- Quality reports
- Compliance reports
- Graphical presentations and charts
- SPC (Statistical Process Control)

The screenshot displays the InSis suite Quality Management interface for ABC Oil Company. The main section is titled "Sample Result Summary" and is divided into three panels: "SampleList", "SampleMeasures", and "Grades".

**SampleList:** Lists various samples including "Core Oil", "Sample test2 23030", "test1 30 13", "Sample test1 42829", "Sample result version1", and "SampleAdminCreated".

**SampleMeasures:** Shows selected measures: "measure 1", "measure2", and "measure3".

**Grades:** Includes checkboxes for "Grade A" and "Grade B".

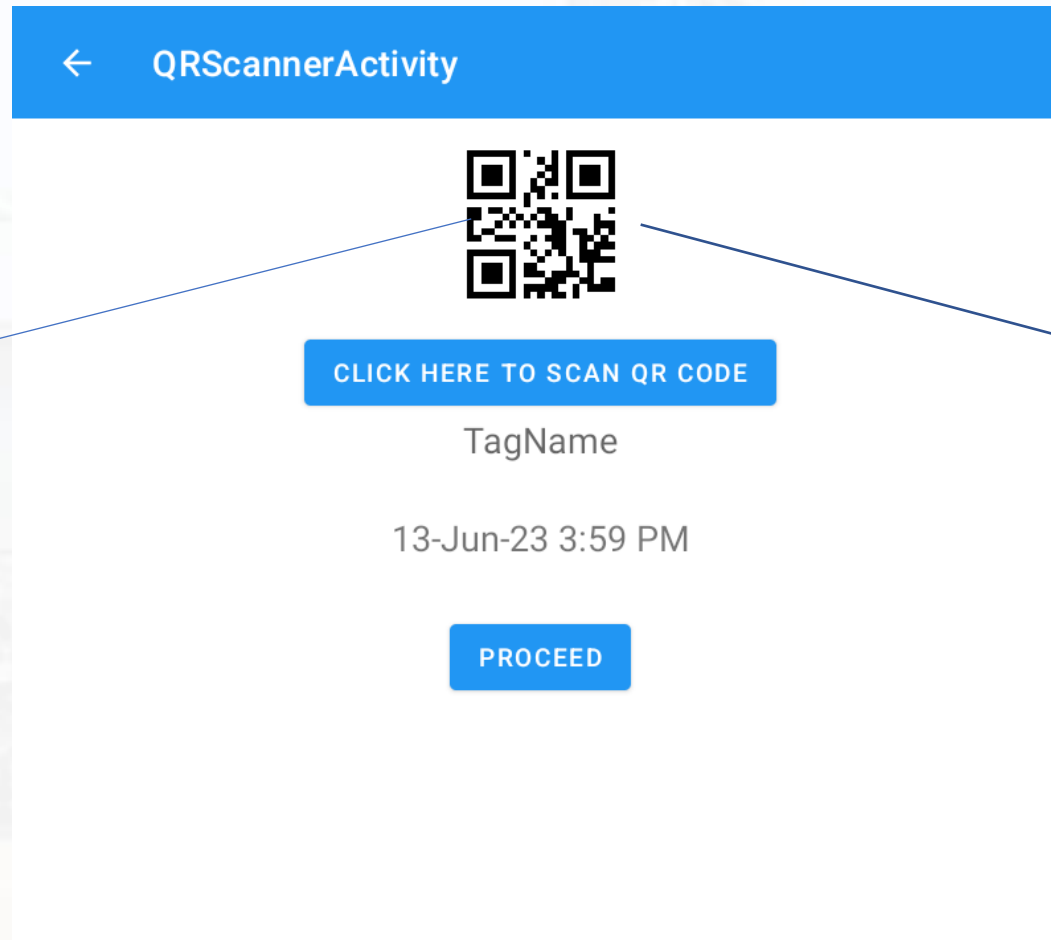
Below the panels, a filter for "Core Oil" is active. The "Transpose" checkbox is checked. The "Start Time" is "14-May-2024 14:30 PM" and the "End Time" is "14-May-2024 14:44 PM". The "None" dropdown is selected, and the "Go" button is visible.

Measure Name	Sample Location	Collectiontime	Status	SampleResults	Sample QualityStatus	Sample Grade
measure 1	tank1_phase1.1	14-05-2024 02:43:00 PM	Approved	1	Good	Grade A
measure2	tank1_phase1.1	14-05-2024 02:43:00 PM	Approved	test1		Grade A
measure3	tank1_phase1.1	14-05-2024 02:43:00 PM	Approved	05.58	Good	Grade A
measure 1	tank1_phase1.1	14-05-2024 02:44:00 PM	Measured	2583	AboveAlarmLimit	Grade A
measure2	tank1_phase1.1	14-05-2024 02:44:00 PM	Measured	454		Grade A
measure3	tank1_phase1.1	14-05-2024 02:44:00 PM	Measured	025.69	Good	Grade A

At the bottom, there is a pagination control showing "1" of 10 items per page, and a total of "1 - 6 of 6 items".

# QR Code Scanning

Operators can scan the Field equipment with help of QR Code. The respective sample details pops up on the handheld device so the operator can enter the relevant information



Sample details will open once we scan the QR Code successfully

# Sample Workflow | Asset Hierarchy

The screenshot displays the InSis suite Quality Management interface. The top navigation bar includes the InSis suite logo, 'Quality Management', and 'Quality' tabs. The main content area is split into two panes: 'Asset Browser' on the left and 'Reports' on the right. The 'Asset Browser' pane shows a hierarchical tree structure with the following levels:

- ABC oil Company
  - Mumbai Refinery
- ABC Chemical Company
  - Kakinada Plant
  - Vizag Plant
  - Chennai Plant
    - Sulphuric Acid Plant
    - Phosphoric Acid Plant
    - RO Plant
    - Asset2
    - Asset3
- ABC Power Company
- SIPCHEM

The 'Reports' pane displays two report titles: 'Sample Result Summary' and 'Sample Result Analytics'.

- Asset hierarchy can be built in the application
- It can also be synchronized with other ERP systems

# Sample Workflow | Asset Hierarchy

InSis suite

Quality Management
ABC Oil Company

Sample Result Analytics
Select Sample: ABC Chemical Company | Core Oil(16028) ✕

Measure Name	Method	Tag	DataType	Units	AlarmHigh	AlarmLow
measure 1	method1	LIMSSampletest142829.int	Int		8000.0	2000.0
measure2		LIMSSampletest142829.string	String		8000.0	2000.0
measure3		LIMSSampletest142829.ME	Double	-NA-	8000.0	2000.0

1 - 3 of 3 items

LIMSSampletest142829.int

Table
Trend
Spc
Stability

Start Time: 07-May-2024 00:00 ...
End Time: 14-May-2024 14:46 ...
Go

Time	LIMSSampletest142829.int   Value
08-May-24 16:35	0.00
10-May-24 12:40	33.00
10-May-24 12:41	3443.00
10-May-24 12:45	4343.00
10-May-24 12:46	44545.00
10-May-24 12:50	4343.00
10-May-24 12:51	445.00
10-May-24 12:55	43434.00
10-May-24 12:56	4554.00
10-May-24 13:00	44343.00
10-May-24 13:01	4554.00

# Sample Definition

inSis suite Quality Management Quality

Sample Definition

Name*	Refinery Chemicals
Description	Catalysts, desulfurization agents, and additives used in the refining process.
Asset*	ABC Chemical Company
Type	Processing Chemicals
Category	Fuel Additives
Group	Inorganic Compounds
Insis Object*	RefineryChemicals
Equipment	Gas Chromatography (GC)
Sample Collection Point	Crude Oil Reception
Sample Quantity	3
Sample collection SOP	Procedures for handling hazardous materials, emergency response pr...
Sample Measure Sop	Identify the Measurement Process
Schedule Type	<input checked="" type="radio"/> Permanent <input type="radio"/> Temporary
Schedule Time*	17-Nov-2023 05:18 PM
Is Recurring	<input type="checkbox"/>

- Various meta data like equipment, collection point can be defined as part of the sample master
- Scheduled time, frequency can help in generation of the schedule for the lab technicians

# Sample Workflow – Sample Register

The screenshot displays the InSis suite Quality Management interface. The top navigation bar includes the InSis suite logo, 'Quality Management', and 'Quality' tabs. The main header shows 'Sample Analysis WorkFlow'. A search bar contains 'Select SampleID / Name'. The breadcrumb trail indicates the current path: 'ABC Chemical Company > Default > SaturatorBrine > 17-Jan-2024 01:30 PM'. A table lists sample records, with one record highlighted: ID 309096, Sample Time 17-Jan-2024 13:30, Collected Time 17-Jan-2024 13:30, and Sample Status Approved. A 'Sample Registration' modal is open, showing details for SampleID 20062, including Collected Time, Received Time, and Register Time, all set to 17-Jan-24 01:30 PM. A 'Delete' button is visible at the bottom of the modal. A 'Show desktop' button is located in the bottom right corner.

Time stamps at each step of the workflow can be tracked to measure the time / delay

ID	Sample Time	Collected Time	Sample Status
309096	17-Jan-2024 13:30	17-Jan-2024 13:30	Approved

**Sample Registration**

Measure Status: Approved

SampleID: 20062

Collected Time \*: 17-Jan-24 01:30 PM

Collected By \*: Admin

Received Time \*: 17-Jan-24 01:30 PM

Received By \*: Admin

Register Time: 17-Jan-24 01:30 PM

Delete

# Sample Work Flow – Sample Assign

Sample Analysis WorkFlow

Select SampleID / Name

ABC Chemical Company > Default > SaturatorBrine > 17-Jan-2024 01:30 PM

ID	Sample Time	Collected Time	Sample Status
309096	17-Jan-2024 13:30	17-Jan-2024 13:30	Approved

Time stamps at each step of the workflow can be tracked to measure the time / delay and priority can be assigned

**Register**  
17-01-2024 13:30

**Assign**  
Assigned

**Measure**  
Measured

**Approve**  
Approved:Default

**Sample Assignment**

Measure Status: Approved

Equipment: pipettes

Method: method1

Assigned To \*: Admin

Priority: Medium

# Sample Work Flow – Sample Measure

Sample Analysis WorkFlow

Select SampleID / Name

ABC Chemical Company > Default > SaturatorBrine > 17-Jan-2024 01:30 PM

Sample Details Sample Master Details

ID	Sample Time	Collected Time	Sample Status
309096	17-Jan-2024 13:30	17-Jan-2024 13:30	Approved

Register  
17-01-2024 13:30

Assign  
Assigned

Measure  
Measured

Approve  
Approved:Default

Values for each sample are entered directly on hand held devices or on web; ranges can be defined for each paramter

**Sample Measurement**

Measure Status: Completed Sample Expired Status : InValid

Measured By \* Admin

Start Time 17-Jan-24 01:30 PM

End Time 17-Jan-24 01:30 PM

**Sample Measure Results**

MeasureName	Result
NaCl	100.00
Ca	300.00
Mg	11.00
TotalCl2	11.00

# Sample Work Flow - Sample Approval

Sample Analysis WorkFlow

Select SampleID / Name

ABC Chemical Company > Default > SaturatorBrine > 17-Jan-2024 01:30 PM

ID	Sample Time	Collected Time	Sample Status
309096	17-Jan-2024 13:30	17-Jan-2024 13:30	Approved

Approval matrix can be configured by the admin (the roles are linked to the active directory)

- Register (17-01-2024 13:30)
- Assign (Assigned)
- Measure (Measured)
- Approve (Approved:Default)

### Sample Approval

Measure Status: Approved

By \* Admin

Time 17-Jan-24 01:30 PM

Remarks Approved

# Sample Work Flow – Sample Master Data

The screenshot displays the InSis suite Quality Management interface. The main window shows a 'Sample Analysis Workflow' for 'ABC Chemical Company > Inorganic Compounds > Refine...'. A table lists sample records with columns for ID, Sample Time, and Sample Name.

ID	Sample Time	Sample Name
170696	18-11-2023 23:35	App...
170695	18-11-2023 23:27	App...
169696	17-11-2023 16:56	Assi...
169695	17-11-2023 17:18	App...

A 'Sample Details' modal window is open, displaying the following information:

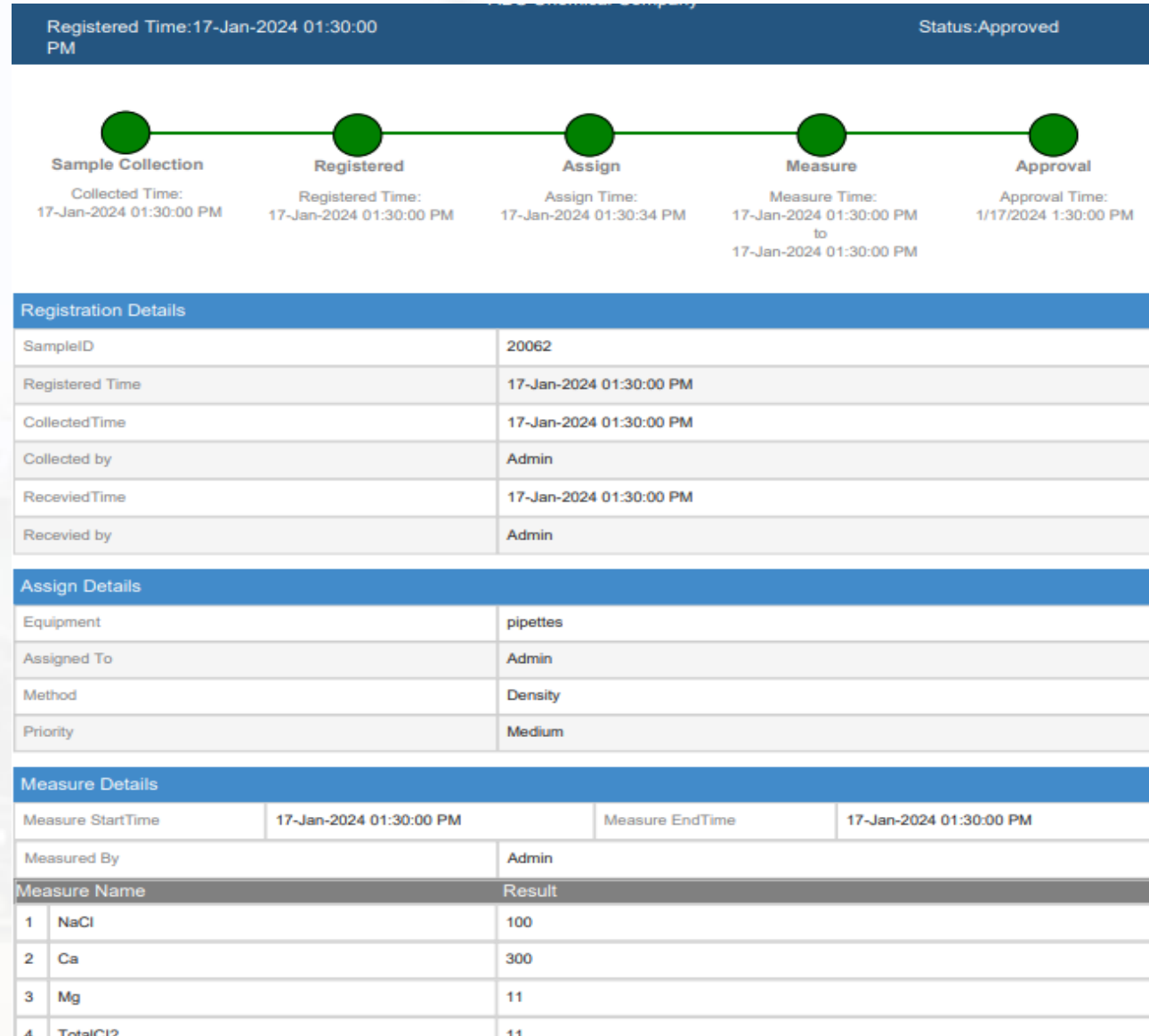
SampleName	Refinery Chemicals
Description	Catalysts, desulfurization agents, and additives used in the refining process.
Category	Fuel Additives
Type	Processing Chemicals
CollectionPoint	Crude Oil Reception
Quantity	3
Collection SOP	Procedures for handling hazardous materials, emergency response protocols, personal protective equipment (PPE) requirements, and safety checks.
Measure SOP	Identify the Measurement Process

Below the modal, a 'Sample Measures' table is visible:

Name	Group	Method	Repeatability	Reproducibility
PurityandComposit...	Inorganic	Chromatography (GC)	Yes	Yes
PhysicalProperties	Inorganic	Chromatography (GC)	No	Yes
ImpuritiesandCont...	Inorganic	Spectroscopy	No	No
PhysicalPropertyTe...	ProductQuality	Physical	Yes	Yes

The background interface shows a 'Results' section with input fields for 'Position' (10,000.00), 'Properties' (300), and 'Contamin...' (Enter string..).

# Sample Workflow | Sample Summary



# Summary Reports

inSis suite Quality Management Quality

SampleData Report

SampleList

- Refinery Chemicals
- Ethylene

SampleMeasures


- PurityandComposition
- PhysicalProperties
- ImpuritiesandContaminants
- PhysicalPropertyTesting
- SulfurAnalysis

PurityandComposition Start Time 01-Oct-2023 00:00 AM End Time 07-Dec-2023 16:59 PM Go

Sample Location	Collectiontime	Status	SampleResults
Crude Oil Reception	17-Nov-2023 16:22	Approved	52.36
Crude Oil Reception	17-Nov-2023 16:56	Assigned	
Crude Oil Reception	18-Nov-2023 23:27	Approved	20
Crude Oil Reception	18-Nov-2023 23:35	Approved	10000

# Sample Lab Logbooks

			COPY NO.
			DOC. NO. Rev 1
Shift : SHIFT C (23:00:00 To 07:00:00)		Date : 16 Jan 2024	
Preparation Person : Amit Vyas		Approving Person : Awadesh Kumar	
Saturator Brine	Units	DesignValue	16-Jan-24 23:00
NaCl	gpl	295-320	304.00
Ca	mgpl	<=600	
Mg	mgpl	<=200	
Total Cl2	ppm	0	11.40
Sulphite as SO3	ppm	<=5	0.00
pH	unit	8.5-10.5	11.00
Reactor Over Flow / Clarifier Inlet	Units	DesignValue	16-Jan-24 23:00
NaOH	ppm	100-250	264.00
Na2CO3	ppm	200-400	297.00
Free Cl2	ppm	0	0.00
Clarifier Overflow	Units	DesignValue	16-Jan-24 23:00
NaCl	gpl	295-320	305.00
Ca	ppm	<=3.0	3.60
Mg	ppm	<=1.0	
NaOH	ppm	100-250	152.00
Na2CO3	ppm	200-400	254.00
Turbidity	NTU	<=10	2.10
Na2SO4	gpl	6-10	
Individual Anthracite Filters	Units	DesignValue	16-Jan-24 23:00
Avg Turbidity	NTU	<=1	

			COPY NO.
			DOC. NO. Rev 1
Shift : SHIFT C (23:00:00 To 07:00:00)		Date : 16 Jan 2024	
Preparation Person : Amit Vyas		Approving Person : Awadesh Kumar	
Polished Brine	Units	DesignValue	16-Jan-24 23:00
Turbidity	NTU	<=0.3	0.18
Hardness	ppm	<=3	3.20
pH	unit	8-11	
Total Cl2	ppm	0	0.00
Ion Exchange Column	Units	DesignValue	16-Jan-24 23:00
Column 1 Hardness	ppb	<=10	5.10
Column 2 Hardness	ppb	<=10	5.00
Feed Brine	Units	DesignValue	16-Jan-24 23:00
NaCl	gpl	295-320	307.00
NaOH For ( UHDE )	ppm	<=200	248.00
Na2CO3 For ( UHDE )	ppm	<=400	276.00
Acidity For ( AKCC )	ppm	<=4000	
Total Cl2	ppm	0	0.00
NaClO3	gpl	<=8.0	
Na2SO4	gpl	6-10	
pH For ( UHDE )	unit	8-11	11.00
Turbidity	NTU	<=0.3	0.14
Total Hardness	ppb	<=10	5.00
Anolyte Brine	Units	DesignValue	16-Jan-24 23:00
NaCl	gpl	200-230	223.00
Free Cl2	gpl	<=1.5	
HOCl	gpl	<=1.5	1.02
NaClO3	gpl	<=10.5	
pH	unit	3.5-4.5	4.50

# inSis platform is hardened for cyber attacks



**CYBER  
SECURITY**



Role-based Access & Privileges



Login with Multiple Captcha



User Activity & Blocking



IP Block  
Restrict access from IP addresses



Data & Credentials Encryption



End-to-end Transport & Message encryption



Resilient to various penetration tests



Multifactor Authentication and Biometric

## Other Security features:

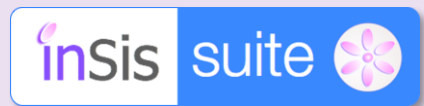
- Auto Logout
- Login with OTP (Email/SMS)
- Block User on multiple login failures
- AD Integration
- SSO
- HTTPS
- Implemented OWASP Recommendations
- Separate Mobile Access Control
- Support EMX
- Disable Screen Capture from Apps



# Thank You



**Jaaji Technologies**  
Sophistication with Simplicity



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