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PROPOSAL DETAILS

Confidentiality:	Confidential
Validity:	10 days from the date of proposal submission
Bosch Reference Number:	70013041
Date:	9th Aug 2023

STATEMENT OF WORK

This Statement of Work ("SOW2") is subject to the Terms and Conditions described under the Services Agreement between Phoenix Park Gas Processors Limited ("PPGPL") and Robert Bosch LLC ("Bosch"), with an effective date of 13th January 2023 ("Agreement"). In the event of a conflict between the terms of this "SOW2" and the "Agreement", the terms of the "Agreement" shall prevail.

1. Summary – SOW2

Phoenix Park Gas Processors Limited (PPGPL) is engaged in natural gas processing and the aggregation, fractionation and marketing of natural gas liquids (NGLs), operating as an NGL hub.

PPGPL aspires to drive predictive maintenance for critical assets deployed in their Plant. The Digital Twin – IAPM (Integrated Asset Performance Management) solution is intended to bring long term value to PPGPL by increasing asset performance availability through timely alerts.

The parties agree to SOW dated 9th August 2023 referenced by Bosch Reference number 70012378.
This SOW2 is referenced by Bosch Reference number 70013041 and addresses delivery of the foundational MVP (minimum viable product) portion of the Digital Twin solution for Phase 2A (Digital Business Transformation Program) in accordance with the terms of this SOW2. Subsequent to this MVP, completion of the Digital Twin final delivery in a production ready environment along with the integration with the Intelligent Enterprise Business Dashboard will be addressed under a separate SOW as part of Phase 2B.

For the purposes of this SOW2, PPGPL and Bosch have determined three critical assets listed below to be in scope of the digital twin solution. These will further realize enhanced efficiency and reduce the unexpected downtime through digital intervention by deploying MVPs of "Digital Twin for Three (3) classes of Plant Assets"

1. Pump
2. Cooling tower fan (Heat transfer fan) and
3. Gas turbine

Subsequent to the implementation of the three use cases, Bosch will integrate the Digital Twin-IAPM dashboards to the Intelligent Enterprise Business Dashboard.
This SOW2 provides an overview of the requirements, high level implementation plan and budgetary estimate for the above.

2. Scope

This SOW2 covers the development and deployment of MVPs of "Digital Twin for Three (3) classes of Plant Assets" jointly identified by PPGPL and Bosch. These MVPs are intended to show reduction of unexpected downtime for such assets through digital intervention by deploying asset performance management software and further enhance efficiency of these assets.

2.1. Assets of focus for Digital Twin – IAPM solution

Pump

Gas Turbine

Cooling Tower Fan

The following assets have been chosen for MVPs to be developed as part of Phase 2A:

1. Pump
2. Gas Turbine and
3. Cooling Tower Fan

For clarity, the following objectives have been jointly identified in Bosch's discussions with the PPGPL Operations and IT teams.

- Performance and alerting of anomalies in the cooling tower fan (Heat transfer fan)
- Health of the motor and pump
- Health of the bearings on the gas turbine

The digital twin application designed by Bosch for PPGPL will be based on engineering & sensor data and the first principles of Math and Physics as applied for modeling the solution.

Each of the Work package / Use Cases lists examples of activities that may be undertaken by Bosch to meet PPGPL's objectives.

Work Package 13: MVP for Asset – Pump

This Work package addresses monitoring the health of PPGPL's "Pump" type assets, with a focus on:

A. Monitoring Motor Health and predicting failures early

B. Prediction of impeller cavitation erosion

C. Predicting moving parts damage due to water hammer effect

Technical Approach:

A. Motor Health

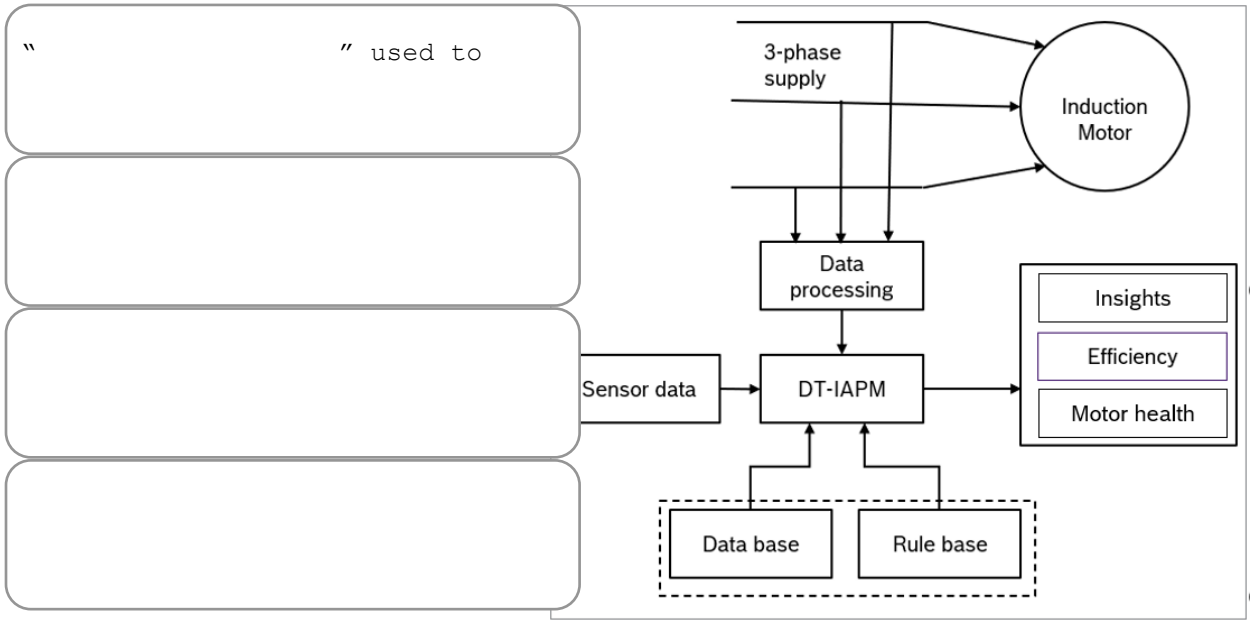


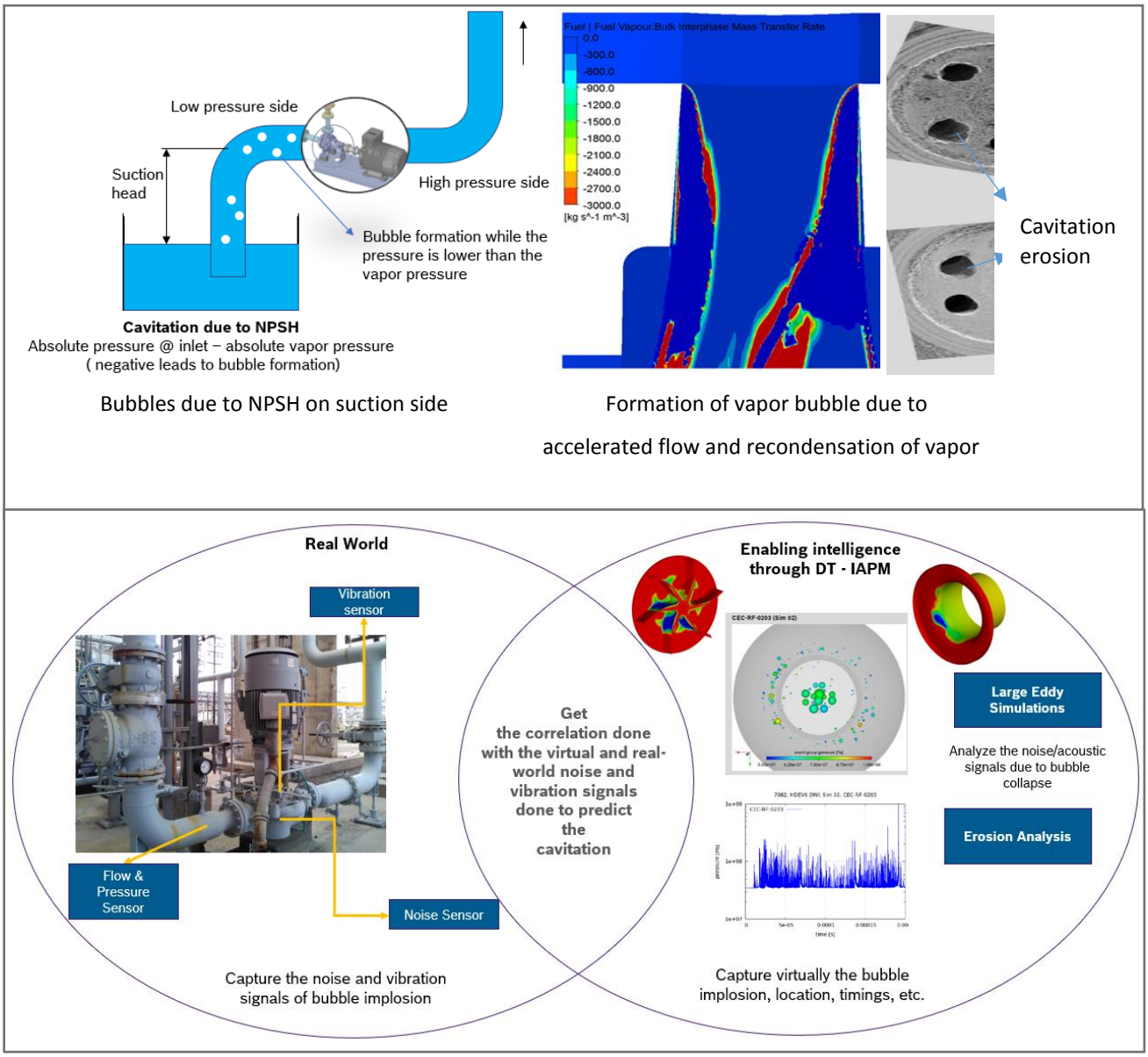
Figure 1: Illustrative health indexing workflow for pump motor

B. Prediction of impeller cavitation erosion

Prediction of bubble formation due to

- local acceleration of fluid which reduces the static pressure below the vapor pressure
- negative "Net Positive Suction Head (NPSH)"

Tracking of these bubbles help understand the implosion region and potential areas of risk for erosion phenomena.



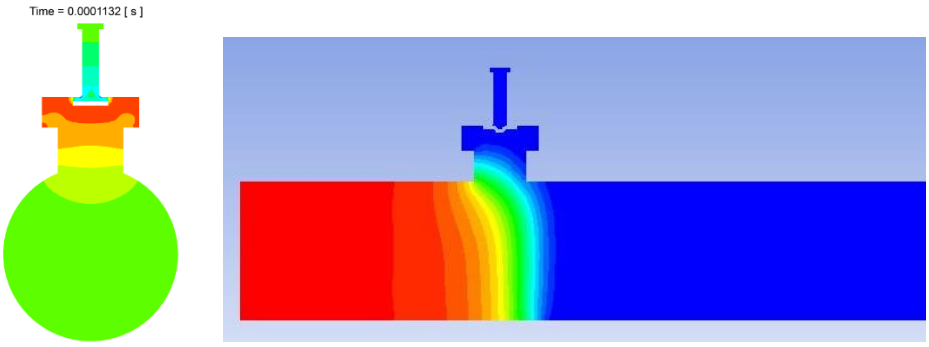
Figures 2, 3 Illustrative diagrams to represent bubble and recondensation back from vapor to liquid

High fidelity simulation will be used to understand the bubble formation for the entire operation range of the pump and respective collapsing regions with corresponding wall loading. The severity of the bubble size & volume and collapsing will be correlated with acoustic and vibration signals as these two signals are the direct impact of the local shock waves while implosion of the bubble. The wall loading due to the collapsing of the bubble will be further taken for the structural analysis for the wear prediction over a period on the impeller.

C. Predicting moving parts damage due to water hammer effect

Repeated water hammer can have significant damage to the pump, seal, valves, instrumentations, etc. The pressure waves generated while sudden conversion kinetic energy to static energy and propagation of these waves will be captured via high fidelity simulation and the impact of such waves on the connected parts will be evaluated.

Further the real time pressure signals from the field will be compared with the meta model (generated via simulation to understand the cause-and-effect relationship) and the alerts and notifications will be triggered on the possible failure during the real time situation.



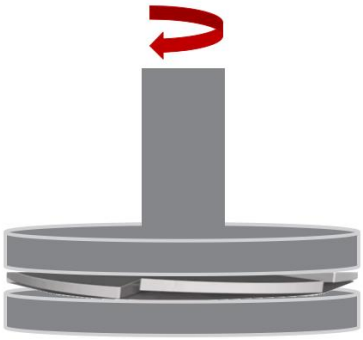
Illustrative Figure 4. Image to show the motion of pressure waves within the system

Work Package 14: MVP for Asset – Gas Turbine

This Work package addresses the Bosch solution to monitor health of PPGPL's "Gas Turbine" type assets with a focus on

A. Radial bearing (3 numbers) and
B. Thrust bearing (2 numbers)

A. Approach for measuring health of Thrust bearings – Tilt pad (Active end)



Health of the thrust bearing-tilt pad will be tracked with first principles approach. The key variables such as bearing lubrication temperature, lubrication flowrate, vibration/displacement data from the eddy current probes, etc. will be extracted and analyzed to infer the increase or decrease of contact surface of the tilt pads over the rotating surface and track the frictional heat generation under various operation ranges. This will be further used to indicate the health of the bearing.

Figure 5: Illustrative representation

B. Approach taken for measuring health of Radial (Ball or Roller) bearings on induction motor

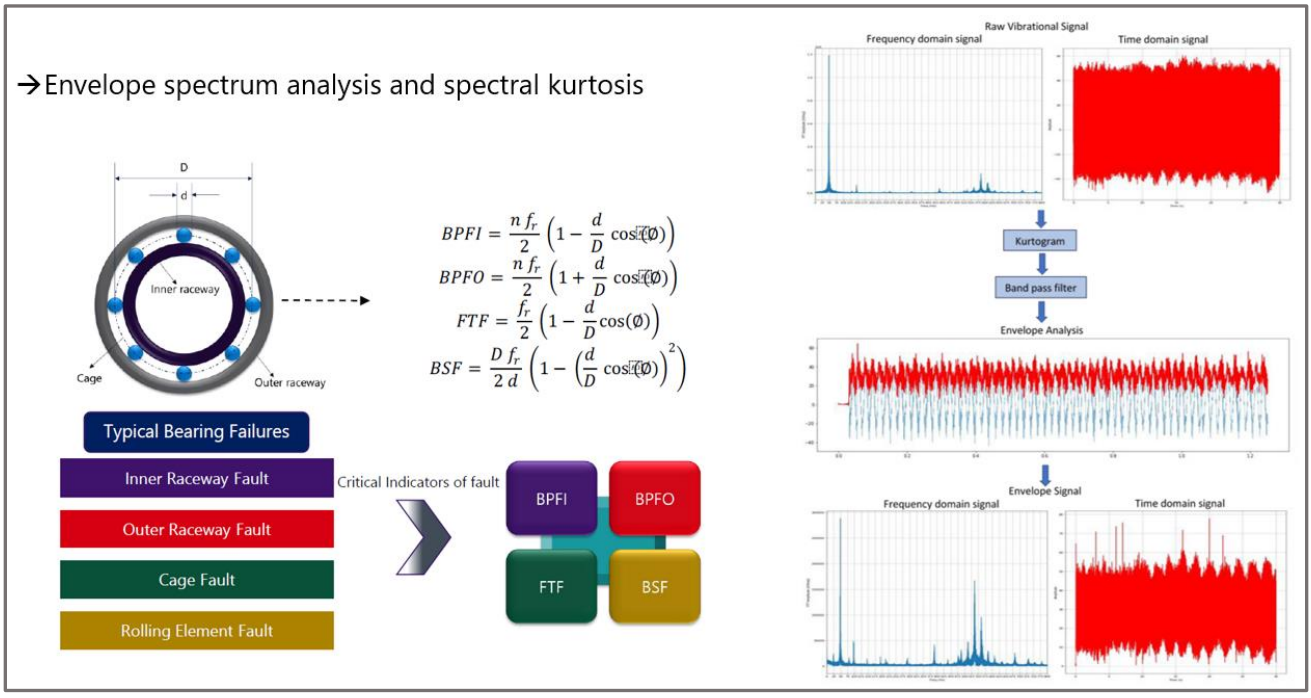


Figure 6: Illustrative representation

Work Package 15: MVP for Asset – Cooling Tower Fan

This Work package addresses the Bosch solution to monitor health of PPGPL's "Cooling Tower Fan" type assets with a focus on

- Display of time series raw sensory data with a provision to opt required channels
- Decision support system to showcase maximum 3 faults

The following lists example of activities, that Bosch expect to carry out as part of the preparation and due diligence prior to solution development and deployment:

- Evaluation of existing PPGPL network connectivity and cloud infrastructure for suitability to support AI & Analytics implementation
- Secure Azure cloud credential from PPGPL to review and assess the environment
- Evaluation of connectivity and ability to integrate with the other systems of interest such as the PHD/SQL Server data mirror, Oracle EBS, LIMS, and any other systems that need integration to achieve Phase 2A goals
- Access to existing cloud architecture information from PPGPL
- Evaluation of network capabilities, capacities and utilization to assess the capability of networking infrastructure to support the digital transformation
- Evaluation of security and IAM (Identity and access management) capabilities and structure, with the goal to ensure support for the external users (Bosch) who will deliver Phase 2A
- Understanding of PPGPL's current state and preferences for Azure accounts, subscriptions and resource groups management and develop agreement with PPGPL on naming/grouping conventions
- Evaluation of current data storage locations and capacities and its accessibility
- Engaging with Microsoft partner/support as appropriate on behalf of PPGPL
- Evaluation and initial set up for Program documentation and development tools (CI/CD, version control, etc.)
- Provide recommendations and requirements on changes in existing PPGPL infrastructure to support phase 2 work separated into short-term (Phase 2A) and long-term (Phase 2B) goals

Below is a list of common activities in scope of the three MVPs pertaining to requirements validation, data acquisition and gathering relevant telemetry:

- Detail technical discussion to understand the operations, performance, available instrumentations and determining data landscape of three machines in scope

- Data dictionary preparation which documents the required data required for Digital Twin as validated by PPGPL's data owners
- Deploy suitable data transmission systems to transmit field data to the cloud instance
- Design, develop and deploy suitable data ingestion mechanism on the cloud front to ingest field data on:

    - Data Transmission Schema
    - Data Rate
    - Available Connection to Edge

- Design, develop and deploy suitable Data Preparation mechanisms on the cloud front for

    - Staging, Transformation and Preprocessing
    - Data Pipelining

- Data Contextualization

Cloud and Infrastructure set up activities

- Design the Cloud deployment architecture as per requirement and finalized Landscape
- Implementation of Network landscape with security best practices
- Prepare the Infrastructure as a Code modules for the Azure components
- Provision Azure resources as per the approved design and BoM (bill of materials) for Production, QA and Dev environments as appropriate
- Support Application Team to deploy application on Azure cloud for Development, Quality and Production Environment
- Configuring high availability for required services
- Setting up the Azure native backup for supported services
- Plan, Design and Deploy the below capabilities on Azure cloud
- Logging and Monitoring - Azure Log Analytics and Azure Monitor
- Threat Protection & Vulnerabilities - Microsoft Defender for cloud
- Configure the Monitoring and alerts in Azure Monitor

Design, develop and deploy

- Suitable Data Preparation mechanisms on the cloud front for handling multiple sources of data from Pump, Gas Turbine & Cooling tower Fan

- Creating Multiple pipelines for processing and stream analytics
- Contextualize multiple streams of data based on source
- Configuration of platform services for Real-time processing of batch data
- Suitable APIs to communicate external sub-system
- Suitable data extraction methods from frontend for user to export historic data
- Data factory creation and aggregation of multiple data sources on to a single data store
- Various APIs shall be provided to communicate with external Microsoft applications
- Suitable Data Storage mechanism on the cloud front to store field data for further usage
- Suitable API Management mechanisms to communicate amongst various sub-systems
- Suitable data retrieving mechanisms to make the stored data available to the users
- Exploratory data analysis for data sanctity check and completeness with respect to algorithm building.
- Building simulation models for cavitation and validation
- Creation of data correlation matrix and basic statistical analysis on data points
- Creation of synthetic parameters or features based on relevance to model building
- Featuring engineering based on first principal and AI/ML approach – Based on vibrations and MCSA approach.
- Design and Development of data driven vibrational analysis algorithms to detect patterns in vibration shoot up
- Design and Development of standard decision support system algorithms to detect faults in the asset related to driving and driven equipment
- Training, testing and validation of the prediction models based on the collected datasets
- Hosting of the models on the kInAPM platform for inferencing and creating the required pipelines
- Notification of alerts/alarms in email and SMS.
- Visualization
- Alerts and notification on the key KPIs such as faults and important performance parameter of the asset.
- Reporting the performance of the asset based on data driven models
- Presentation of advanced data analysis and analytics model inferencing, fault detection modules and predictive insights generation modules
- IAPM dashboard configuration - provisioning of intuitive UI based dash boards to present various aspects of IAPM including but not limited to – fleet view, cluster view, live sensor data, insight engines, event history, inventory predictions, etc.
- System integration and testing

Not in scope

- Procurement of Azure subscription [PPGPL Tenant]
- Procuring of any Physical server/Infrastructure and other software
- Enabling Networking and infrastructure access on premise
- Making changes on existing machines
- Server maintenance
- Hardware procurement
- Hardware to connect from edge server to the DAQ
- Provisioning of edge server if it resides on premise
- Connectivity arrangements for data collection physically in the field. This does not include connectivity for any software data acquisition which will be in scope for Bosch and as referenced in previous section.
- Development of 3D CAD models
- Procurement of licenses for any 3rd party software used in the solution
- Procurement/Setup of MPLS connections from external
- Any Migration of data
- Functional testing and Load testing of the application
- Vulnerability assessment and Penetration testing of the application
- Procurement of DNS, SSL and any other networking security Certificates
- Security of operations and Management
- Support for additional Azure services not included in the architecture
- Major customizations in the IAPM Frontend dashboard

3. Pre-requisites and PPGPL responsibilities

Below requirements are to be procured by PPGPL.

1. Server Specification for the current use case for gateway software (Bosch Device bridge) to be enabled by PPGPL

Item	Specification
Net Core	3.1 Runtime (x64)
RAM	16 GB
Hard disk space	1 TB
OS	Windows Server
Note	Recommended to have a dedicated server / VM

2. The whole solution will be deployed in the PPGPL Azure tenancy
3. IT configurations based on PPGPL IT-security policies has to be taken care by PPGPL
4. Required internet facility has to be enabled by PPGPL

RASIC (R-Responsible A-Approve S-Support I-Inform C-Consult)

During the execution of this Program, the below given RASIC matrix will be followed for coordination and management between Bosch and PPGPL.

RASIC matrix for Coordination and Contract management	BOSCH	PPGPL
Requirement	C	R
Cloud Licenses	C	R
Gateway Software License	R	I/C
Solutioning	R	C
ML Model building, Custom ML Model Building	R	I
Overall System Integration	R	I/C
System Testing	R	A
Deployment	R	I
Administrative tasks (PO, Invoicing, etc.) coordination	R	I/A

Hardware Procurement	I/C	R
Hardware installation and field wiring at shopfloor	S	R
Hardware maintenance during operation	S	R
Any Physical Infrastructure including Network connectivity, firewall, Server, PC for device bridge and dashboards visualization (Bosch will be responsible for any software firewalls on Azure)	C	R
Quality Power supply with no surge and leakage currents to any of the instruments	I	R
Site Safety with respect to installed Sensorization and supporting instrumentations	I	R

RASIC – Responsible; Accountable; Supporting; Consulted; Informed

3.5.1 Scope Matrix

SN	Scope Matrix for PPGPL	Bosch	PPGPL
1	Sensors*, gateway, control cards		X
2	Edge server provisioning if installed on PPGPL's on-premise network		X
3	Enabling integration of Gateway software to the PHD Shadow server	X	
3	Extraction of process data and displaying in frontend	X	
5	Algorithm Development and deployment	X	
6	Installation of any new, identified Sensors*		X
7	Enabling Internet Connectivity		X
8	Enabling the availability of the Expert		X
9	Firewall within PPGPL's On-premise network		X
10	IT - Security software of PPGPL on the Edge on premise		X
11	Providing 3D CAD model		X
12	Enabling the availability of Design and functional details of the machine		X
13	Enabling the availability of historical, machine failure history, fluid properties, etc.		X

* As such Bosch does not anticipate any new sensors to be installed based on our preliminary study during Phase-1. However, we might request PPGPL to install approximately 5 sensors on PPGPL identified pump equipment only in case of data deficiency as per our discussion with the operations team in Phase 1. Such a requirement will be further clarified and aligned with PPGPL during the requirement phase

4. Deliverables

Below is the set of deliverables expected to be provided to PPGPL in a Sprint wise plan. The sprint plan will be shared by Bosch as part of the Program kick-off.

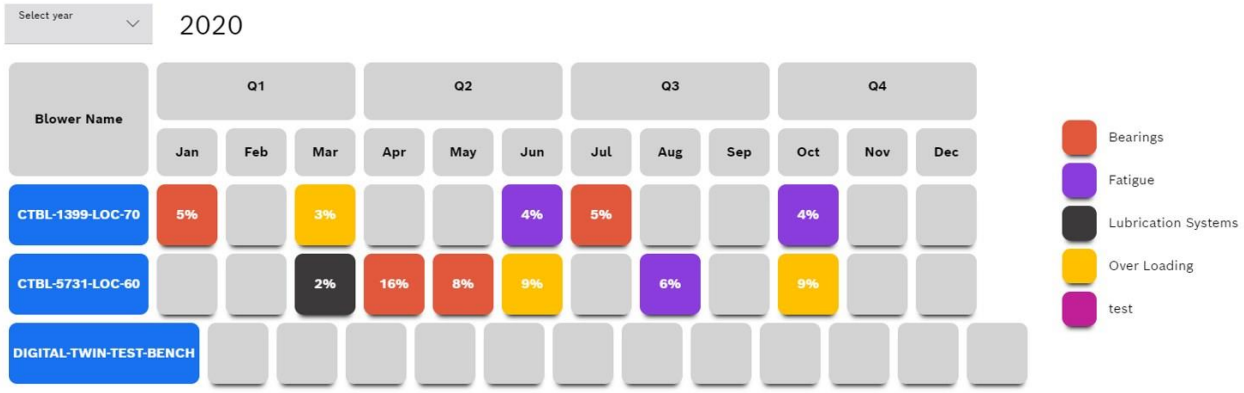
- Edge Software to collect data from various sources and transmit it to cloud
- Cloud access to view, archive and extract the collected data
- Detailed Documentation of the data captured and implementation of data collection methodology
- Deployment Document
- Provision to view, archive and extract collected data
- Time series view of individual data point + FFT (Fast Fourier transform) where applicable
- Historic view of the collected data in tabular or graphical format.
- APIs to connect to other external systems
- Documentation and Training as necessary
- Executable models to be hosted on IAPM platform
- Statistical Insights from data points.
- Alerts and Notification on mails and SMS
- Labeled Datasets used for model development
- Documentation and Training as necessary

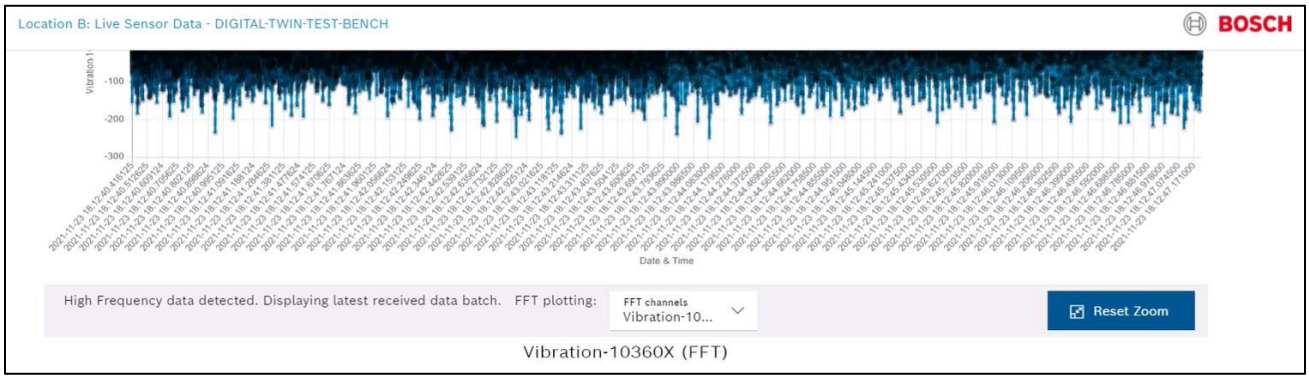
Dashboard Visualizations – Samples

C - Suite Info Board

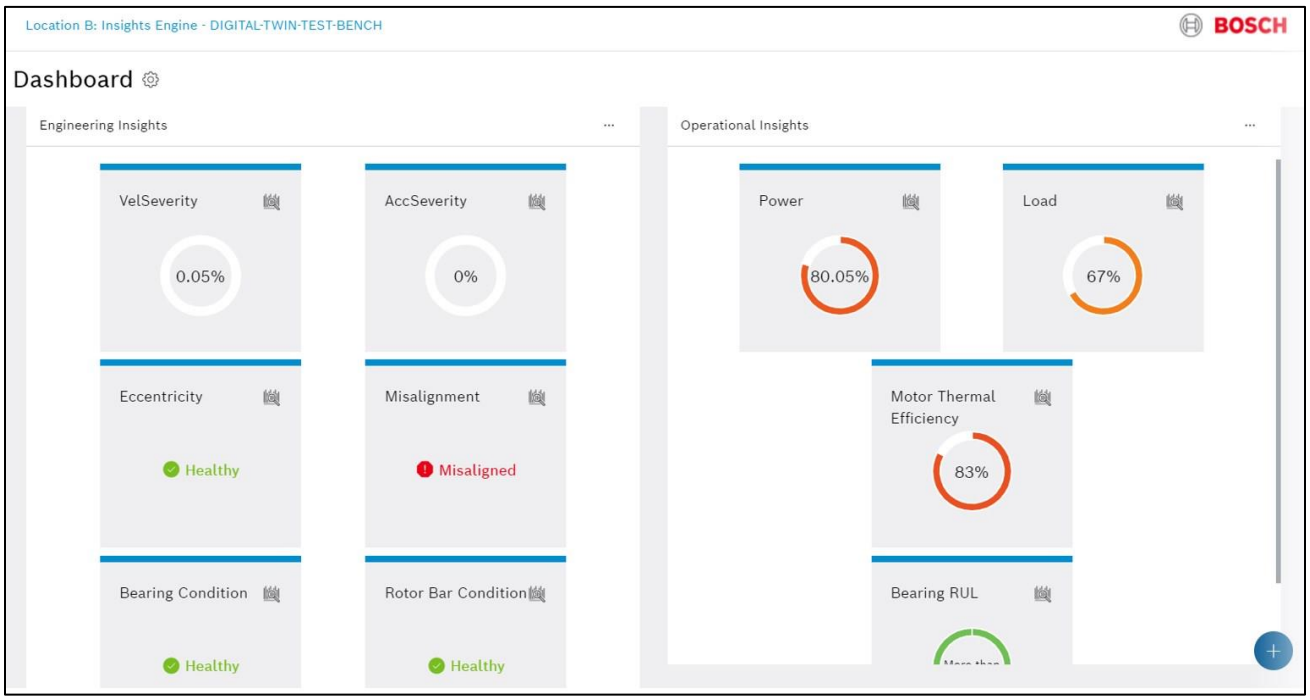
Title	Value	Dynamics
Spare parts inventory cost	18%	↓
Revenue from digital services	15%	↑
Field complaints	21%	↓
Major breakdown averted	32%	
Average fleet TCO	6%	↓
Fleet OEE	85%	↑

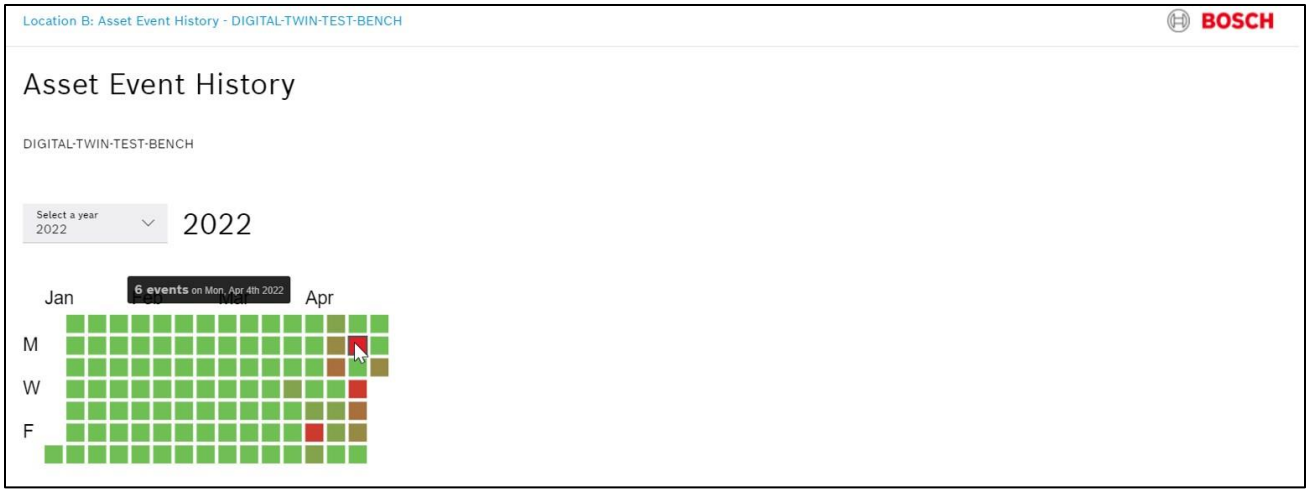
Common Causes of Failure

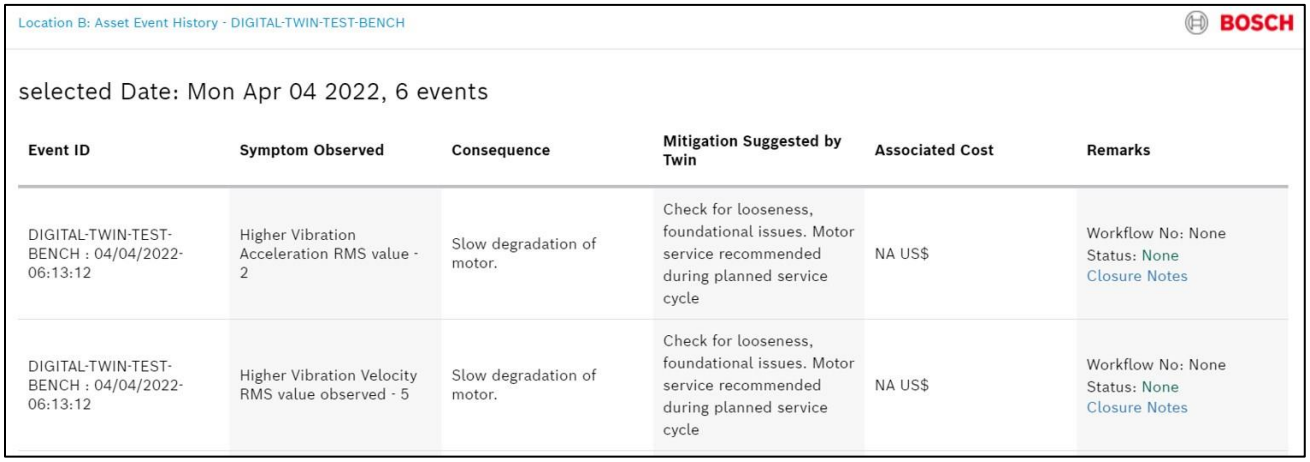





Inventory Predictions
DIGITAL-TWIN-TEST-BENCH
Part
Next 30 Days
Next 60 Days
Next 90 Days
Coupling
Fan Cover
Impeller Blades
Motor Rotor
DE Bearings
NDE Bearings
Blower Filter


Location B: Insights Engine - DIGITAL-TWIN-TEST-BENCH
BOSCH
Dashboard
Engineering Insights
VelSeverity
0.05%
AccSeverity
0%
Eccentricity
Healthy
Misalignment
Misaligned
Bearing Condition
Healthy
Rotor Bar Condition
Healthy
Operational Insights
Power
80.05%
Load
67%
Motor Thermal Efficiency
83%
Bearing RUL





5. Acceptance Criteria

Item	Definition and condition of Acceptance
Dashboard Availability	Time Series Data Alerts and Thresholds Spectrum Analysis Decision Support System (3 faults) User defined alarms Heatmaps Event History Downloadable data

Gas Turbine	Early warning on increased lube oil temperature Advanced warning on increased vibrations Advanced warning on increased lube oil filter differential pressure Alert on a valve calibration drift Alert on an increase in the turbine air inlet filter differential pressure Detection of decreased compressor differential pressure
Cooling tower fan (heat transfer fan)	Display of time series raw sensory data with a provision to opt required channels Display of FFT / frequency spectrum of the vibration measurements User defined alarms – Option to create events & notifications based on thresholds Decision support system to showcase maximum 3 faults Display of day wise asset heatmaps from Day 30 to end of Program Display of event history Provision to download historical field data in a specific file format
Pump	Impeller Degradation ▪ Cavitation erosion Water hammer effects Motor health indexing

A prerequisite for these above mentioned deliverables is available telemetry for the above mentioned assets (Gas Turbine, Pump and Cooling Tower fan) having required fidelity. PPGPL must provide data which is complete and accurate with regards to the above assets. In the event, the fidelity of the telemetry is found deficient, fault signatures will be created using synthetic data to demonstrate the functionality.

PPGPL will have up to five (5) business days at the end of each delivery milestone to review the deliverables and raise concerns “if any”, after which the work will be deemed as accepted.

6. Warranty

All services performed under this SOW2 will have full warranty for 6 months from the completion of all activities under this SOW2. This excludes any partial implementation that will continue into future phases under a separate SOW.

7. Assumptions and Dependencies

- This is a Fixed Fee contract with specific milestone-based Statement of Work to deliver the Digital twin solution as part of "Phase 2A" of a multi-phase / multi-year Digital Business Transformation Program
- It is the expectation of PPGPL to have some of their key resources to shadow the Bosch delivery SMEs (Subject Matter Experts). To achieve this, PPGPL will have to hire temporary contractors and/or consultants to augment their existing staff and free up their time to take part in this transformation program and learn along the way
- Purchase order for this Phase 2A scope of work shall be released by PPGPL by 10-August-2023
- Anticipated Program kick-off: 31-Aug-2023
- Expected Program start date: 4-Sep-2023
- Expected Program end date: 29-Feb-2024
- Bosch anticipate approximately 100 hours of effort over a span of 4 months from PPGPL SMEs under 1. Head of Operations and 2. Maintenance Manager
- Travel for Phase 2A execution for SOW2 is limited to totally 16 weeks and 5 travels. Any additional travels required, either due to request of PPGPL or necessary due to non-availability of personnel at PPGPL, will be discussed and charged additionally to PPGPL

Program Specific Assumptions and Dependencies:

- PPGPL shall bring in the required experts through the course of this Program who are involved in architecture, business operations and system methodology discussions to realize the twin from concept to reality. These experts will further facilitate the takeover of steady state operations
- PPGPL shall specify if there are any reservations for open data models which facilitate interoperability over cloud
- PPGPL has DAQ + control, electronics test & instrumentation, and communication infrastructure available from which all the required process, operational, fluid properties and maintenance data can be harnessed
- It is assumed that Network, firewall, etc. are available
- On premise data storage (as and when required) would be under the scope of PPGPL
- High speed data services at required bandwidth would be made available by PPGPL

- PPGPL shall provide complete machine information, specification, operating manuals, operational data, historical data, maintenance and service & performance history, CAD models etc. which are necessary to build the Digital Twin
- Sprints would be handled in parallel and Program delivery would be planned to deliver in 4 months + 1 month for stabilization
- The accuracy and machine fault prediction from the developed algorithms will greatly depend on the fidelity of the data, actual design details of the machine, failure history to capture all possible failures of the asset. It's important that PPGPL enables Bosch on all the above listed vital information in the digital journey of predictive maintenance. Issues concerning data accuracy would be addressed by retraining the digital twin model over a period with actual data gathered from the Digital Twin-IAPM deployment
- Post deployment if the system discovers the deficiency in the existing telemetry from the machine owing to issues like loss of sensing accuracy of the sensor or disruption in the data path for unknown reasons and similar uncertainties like this which cannot be captured at this stage, it is assumed that PPGPL will ensure the fidelity of the telemetry is brought back through the installation of new sensing/data acquisition system
- Should PPGPL decide to continue running the MVPs delivered as part of Phase 2A, any issues arising post deployment will be fixed on a best effort 'Fix on Fail' basis.
- The Bosch scope in Phase 2A SOW2 is limited to enable PPGPL with the information about alerts, warnings and potential errors from the three MVPs delivered. Bosch is not liable for the outcome of decisions/actions taken by PPGPL in this regard
- PPGPL needs to ensure safety and hygiene work conditions for Bosch FTEs working on the Program during the Program. Bosch will work with PPGPL to ensure pre-compliance and pre-entry requirements before traveling on site
- Plant data extraction software package - Telemetry and applicable process data from appropriate machines will be extracted with the gateway software and pushed to cloud. A server with minimum configuration as mentioned in Section 4, is required to install the gateway software to connect with PLC/OPC Server for data ingestion
- Bosch would deploy the solution on cloud platform for which PPGPL must enable with required networking infrastructure. It is expected for the network provisioning to enable Bosch team to connect to required server (VM) infrastructure via RDP and similarly to connect to the Internet or Azure storage locations, Honeywell PHD system etc. This must be governed by PPGPL data security policy and other networking policies. The download speed, upload speed and network latency must be – min. download speed 30 Mbps and min. upload speed is 20 Mbps, Latency 50 ms or less – to achieve consistent data flow between systems for glitch-free user experience

- In the event of no-fault manifestation on the machine during this Program, fault detection demonstration would be through synthesized fault signatures

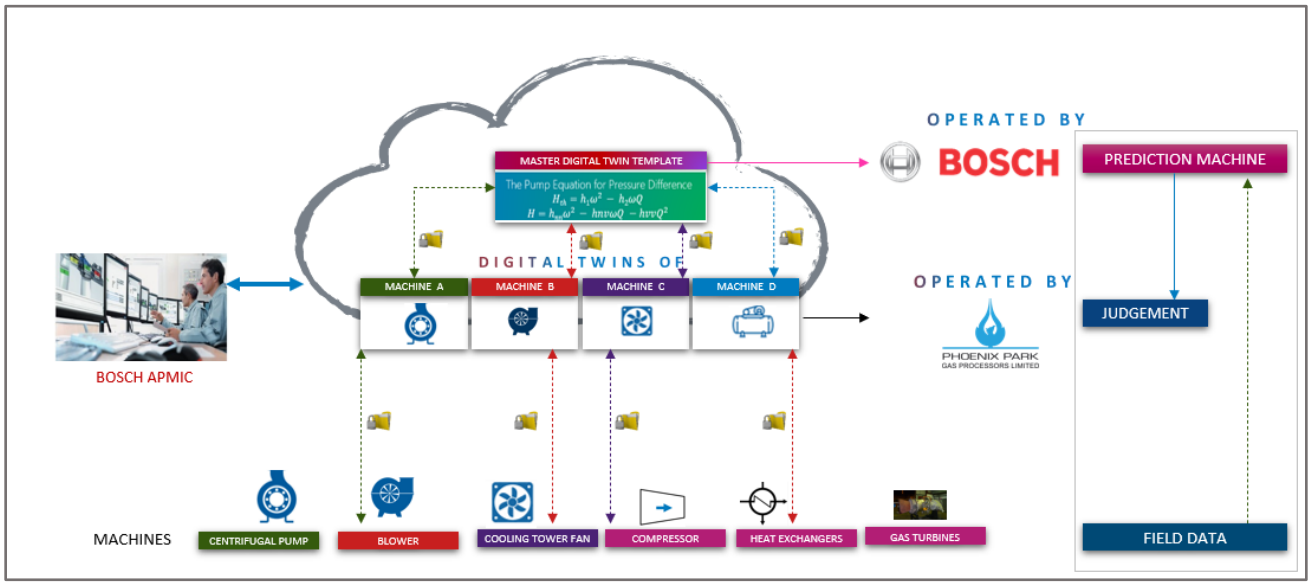
8. Pre-requisites

No	Program Phase	Pre-requisites
1	Program Kick-off	• Leadtime for Program Kick off would be 2 weeks from the date of PO receipt • Provide Access of VPN, email, and teams in PPGPL Account to Bosch FTE consultants • Business rules for any KPI calculations shall be provided/clarified by PPGPL SPOC • Source Data Files (Excel,csv) • To be provided in File Share • Consistent file format with proper naming convention • Business rules for any KPI calculations • Excel file headers should be in English
2	Design	• Data Files are shared on excel format in drive location with access to Bosch FTE Consultants. • Fetch the data multiple location files in from network drive to power bi desktop application. • Visualize the insights into dashboard
3	Development, Deployment & Unit testing	• PPGPL to provide necessary access to data source systems / Excel files • Access to the existing landscape/cloud (Quality/Production) • Access to the existing applications for understanding master data
4	UAT	• UAT Environment must be ready
5	Go Live	• Access to Production environment

9. Timeline:

At the time of kick-off, Bosch will outline a clear sprint plan with delivery milestones. For each of the sprints, Bosch team will articulate a clear set of activities and milestones.

Scaling Plan (Illustrative)



The detail plan and techno-commercial proposal for scaling the Digital Twin Program which includes industrialization and addition of further asset classes, will be discussed and mutually agreed by 30 September 2023 as part of Phase 2B planning activities.

Indicative Program Timeline

This is a high level Program plan and the activities within each milestone are subject to change based on the reality on the ground and subsequent to formal Program kick-off.

10. Program Management

Program execution model for Program will be as shown below:

Note – the PPGPL Program team members identified above are part of the PPGPL Operations Team and as identified in the PPGPL Organization chart.

Roles and Responsibilities

PPGPL and Bosch	
Role	**Responsibility**
Joint Steering Committee	▶ Align to the strategic goals and direction set by the executive leadership ▶ Provide execution and implementation goals ▶ Review management plans, performance against goals, risks, issues, and escalations ▶ Resolve escalated issues and identify issues requiring escalation to the executive council, and prepare supporting materials
PPGPL Program Team	▶ Coordination with Bosch and internal departments ▶ Provide necessary approval in all phases ▶ Status reviews, technical reviews ▶ Approve bills

Bosch Execution Team	▶ Allocation of right skill resources, Competency Development ▶ Provide resources for the Program ▶ Clarification for invoicing / billing ▶ Responsible for billing ▶ Overall status reviews and coordination ▶ Manages, reviews, and prioritizes the Program work plans with objective to stay on time and on budget ▶ Provides status and progress reviews to Sponsor and Steering Committee

Program Communication

No.	Communication Type	Participants	Frequency	Reporting
1	Program Review	Bosch Program Manager, Bosch Onsite Program Manager, Bosch Functional Consultants PPGPL Track SPoC's PPGPL Program Lead	Once in 2 weeks	Video Conference, email
2	Steering Committee meeting • Key decisions • Program update	PPGPL CIO/VP Finance & Technology PPGPL Program Lead Bosch Transformation Executive Client Partner Program Manager	Monthly	Onsite meeting & email summary

Issue Escalation Mechanism

The Escalation Process is meant to ease the potential bottlenecks that may be encountered during the engagement.

The below matrix depicts the issue escalation levels along with the named contact details:

Level	Bosch	PPGPL
1st Level	Program Lead/Program Manager	Program Owner PPGPL

	(Bosch & PPGPL)	
2nd Level	Bosch (Delivery Head)	PPGPL (Program Owner)/ Steering Committee

Contact details for the issue escalation will be shared before the start of engagement to ensure that all issues are resolved within the predefined timelines.

All deviations and outstanding issues will be recorded in the status reports. These will be discussed at the weekly status meetings between the Bosch & PPGPL Program Manager and the PPGPL Coordinator, and appropriate corrective action will be initiated.

Issues will be tracked on a continual basis. If an issue becomes critical, it will be escalated to Bosch and PPGPL management at appropriate levels to get resolved. If the critical issue is not resolved in two meetings or mutually agreed timelines, it will be escalated up to the next level to ensure a speedy resolution.

Bosch has highly effective and proven procedures for tracking, reporting & communicating various types of issues, including technical, resources, communication, deliverables, and SLAs related issues

Risk Management – Identified risks and mitigation plan

No.	Risk Description	Mitigation Plan	Responsibility	Impact
1	Non-availability of Program Related Infrastructure/ Environment and required access	Regular meetings to follow-up with PPGPL SPOC/ PM and minimize the impact on overall scope and schedule. The additional cost, effort and timeline will be mutually discussed and agreed	PPGPL	Medium
2	Delay in receivables to Bosch	Status of receivables to be discussed as part of kick off meeting and agreed on timeline for closure	PPGPL	High
3	Delay in requirement signoff/ clarification from PPGPL team	Regular meetings to follow-up with PPGPL SPOC/ PM to get timely feedback and approval. Any additional cost, effort & timeline will be mutually discussed & agreed	PPGPL	High
4	Change in scope after Program initiation	Any change in scope will be taken as a separate CR and cost, effort and timeline will be mutually discussed and agreed	PPGPL	High

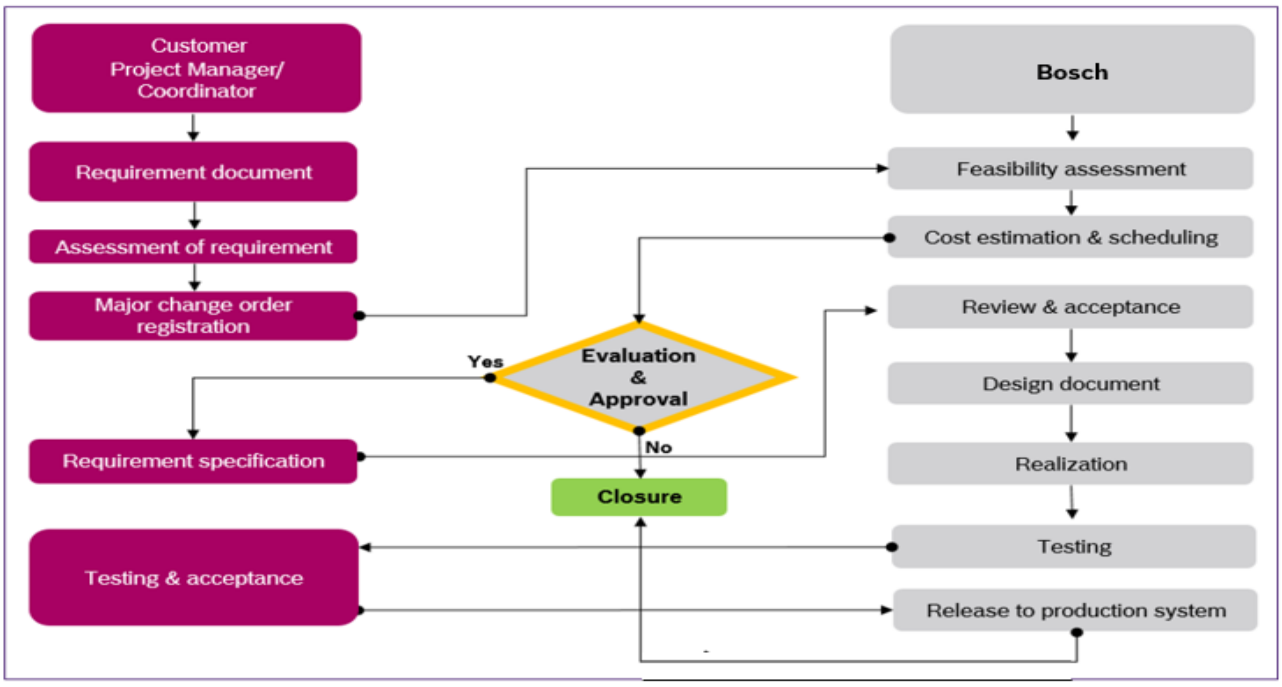
5	Any changes in source systems during Program execution	Regular meetings to follow-up with PPGPL SPOC to discuss the impact on overall scope and schedule. The additional cost, effort and timeline will be mutually discussed and agreed	PPGPL	Medium
6	Unavailability of skilled resources	Necessary Back Up resources to be made available, such that delivery is not impacted	Bosch	Medium
7	Non availability of source systems	Regular meetings to follow- PPGPL SPOC/ PM and made available for manual data in required format on regular intervals. The additional cost, effort and timeline will be mutually discussed and agreed	PPGPL	High

Change Management Process

Any contract amendments required during the execution of the Program would be routed through the Change Request (CR) Process. The CR Process will be triggered under the following circumstances:

i) Any addition /modification to the scope as outlined in the Program scope

ii) Any change in the Program schedule due to delays from PPGPL in providing infrastructure, clarifications, and inputs



#	ACTIVITY	RESPONSIBILITY
1	Receipt and Acknowledgement of Change Request	Bosch
2	Documenting the Change Request	Bosch
3	Impact Analysis (Change Control Board) Evaluation of change request for the impacts such as Software Configuration Items Schedule Effort Other Program specific items revised cost	Bosch
4	Disposition of Change Request (Acceptance by PPGPL)	Bosch
5	Implementation of Changes	Bosch

11. Total Fees and Payment Milestone Schedule:

In consideration of the Services performed by Bosch under this SOW2, PPGPL will pay the amount of USD 552,249 ("Total Fees") for the Digital Twin solution in accordance with the milestone schedule below. Additionally, please refer to section 9 (Timeline) for delivery milestones 1 to 5, listed against the Invoicing plan.

Milestones are based on the completion and PPGPL's signoff of the Deliverables.

Payment Milestones	Milestone Summary	Billing %
Completion of Milestone 1	Completion of Digital Twin foundation design	15%
Completion of Milestone 2	Completion of Digital Twin foundation Implementation	15%
Completion of Milestone 3	Implementation of Work Package 14: MVP for Gas Turbine & Implementation of Work Package 15:MVP for Cooling Tower Fan)	20%
Completion of Milestone 4	Implementation of Work Package 13:MVP for Pump	25%
Completion of Milestone 5	Integration with PPGPL Intelligent Enterprise Business Dashboard Customer acceptance of all 3 MPVs	25%

12. Payment Terms and Conditions

- All the rates are in USD
- All payments and invoicing will be as per the original Services Agreement "Agreement" signed dated Jan 13th 2023

13. **Signatures**

In Witness Whereof, this Agreement is duly executed by the duly authorized representatives of the parties as set forth below:

Phoenix Park Gas Processors Limited (PPGPL)	**Robert Bosch LLC**
Signature: DocuSigned by: Kantapersad 0DF0DB70B16B4D8...	Signature (Primary): pki, BOSCH, US, D, I, Digant.Shah Digitally signed by pki, BOSCH, US, D, I, Digant.Shah Date: 2023.08.14 20:57:17 -04'00'
Name: Jasso Kantapersad	Digant Shah

Title: VP – Finance, Technology & Risk (Ag)	Vice President
Date: 8/10/2023	Date:
	Signature (Secondary)
	John Sinclair pki, BOSCH, US, J, O, John.Sinclair Digitally signed by pki, BOSCH, US, J, O, John.Sinclair Date: 2023.08.14 20:45:10 -04'00'
	Head of Consulting, Americas
	Date: