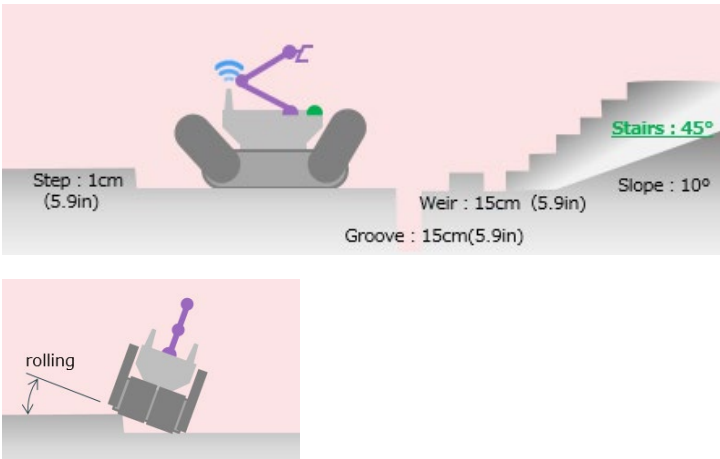


EX ROVR Q&A

項目 Item	質問 Question	回答 Answer
<p>機動性 Mobility</p>	<p>不連続な地表面における動作性、階段昇降につき確認したい。</p>	<p>自律運転モードで EX ROVR は幅 15cm の溝、高さ 15cm の堰や段差を乗り越える事が可能であり、サイト内の殆どの溝や障害物を乗り越える事が可能。遠隔操作モードでは EX ROVR は更に高い堰や段差を乗り越えることが出来る(堰や段差の形状や表面の状態にもよるが、最大記録は 40cm)。EX ROVR は傾斜 45°の階段及び傾斜 10°のスロープを昇降可能。左右の傾きは 20°まで転倒しない設計。</p> 

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	We would like to know about general mobility on different surfaces, climbing/descending stairs.	In the autonomous operation mode, EX ROVR can overcome a groove of 15cm width and the weir/step of 15cm height, meaning EX ROVR can travel over the most of grooves or obstacles at site. In the remote control operation mode, EX ROVR can climb over an even higher weir/step (maximum record is approximately 40cm, climbing ability depends upon the shape & surface condition of weir/step). EX ROVR can ascend and descend stairs with vertical angles from -45° to 45°and slopes with vertical angles from -10° to 10°. EX ROVR is designed for 20 degrees of rolling.
	移動表面の割れ目や穴の検知について確認したい。通路や階段からの落下防止策も確認したい。	EX ROVR は 15cm 幅の溝を乗り越えられる。通路上に EX ROVR が乗り越えられない穴があれば当該穴を避ける形でルート設定を行うか、穴の上に橋を渡して EX ROVR が通れるような措置を施す。EX ROVR は自己位置を 3D LiDAR で特定し、地図・シナリオ作成時に事前設定したルート上を移動するので通路や階段の端から落下する危険性は極めて低いが、落下防止のために通路や階段の手すりにワイヤーロープを設置する事が推奨される。

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	We would like to know about the detection of voids or holes in walking surfaces. How does it not fall off sides of walkways or stairs?	EX ROVR can travel across grooves/holes 15cm wide. If there are holes which EX ROVR cannot overcome, then the route setting is made to avoid such holes, or a bridge may be placed across holes so that EX ROVR can go through. EX ROVR identify its own location by 3D LiDAR and follow the route set during the mapping & scenario setting; therefore, the risk of falling from walkways or stairs is quite low. However, it is recommended to set wire rope at the handrail of stairs and walkway as an additional precaution.
	後進は可能か？ Can EX ROVR move backwards?	後方に障害物センサーが無いので自律走行は難しい。前後にカメラがあり遠隔操作なら対応可能。 Yes, but it is only recommended for remote operations mode. Since an obstacle detection sensor is not equipped on the back side of EX ROVR, moving backward during autonomous operation is not recommended.

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		On the other hand, a camera is equipped on the front side and back side of EX ROVR; therefore, moving backward during the remote operation is possible and safe.
	階段昇降中の横方向の安定性は？ How is the sideways stability going up & down stairs?	階段昇降時に斜度に平行且つ階段の軸に沿うよう制御している。 EX ROVR system works to ensure it is parallel to the angle of stairs and on the staircase axis before going up or down.
	EX ROVR は平面ではない場所では問題ないか？例えば、砂、砂利、グレーチング、凍結面等の上ではどうなるか？ How does the EX ROVR do on terrain that is not flat? For instance, how does it perform on sand, gravel, grating ice, etc.	EX ROVR のクローラ、サブクローラは凸凹な場所でも進めるように設計している。砂利、グレーチングは問題ないが、柔らかい砂ではクローラが潜って進めない可能性がある。凍結面についてはまだ検証できていないが、クローラで多点接地するので、凍結面、滑面、積雪に対してはその点は車輪や脚に比べて有利になると考えている。 The EX ROVR's crawler and subcrawler design allow it to travel over rugged terrain. It has had no issues with sand, gravel, and grating. It may have issues

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		with very soft sand or mud as the crawlers may sink. The system has not yet been extensively tested on ice, but its multiple points of contact across a large surface area of the ground should provide advantages on icy, slick, and snowy surfaces.
通信 Communication	<p>操作の遅延と最大通信距離につき確認したい。</p> <p>We would like to know the controller/tablet delay and maximum distance.</p>	<p>遅延は通信環境と遠隔操作場所に依存する。LTE を用いた場合の遅延は最大で 100msec 程度であり遠隔操作に支障はない。LTE が使える場合は遠隔操作に距離の制約はないが、キャリアによる通信制限がある可能性はある。</p> <p>Delay depends on the communication environment and the location of remote control station. In case LTE is used, latency is a maximum of 100 milliseconds and we have not had any problems during remote operations.</p> <p>If LTE is available, there is no limitation for the distance for remote control; however, there may be restrictions by the carrier depending on the location.</p>
稼働率 Availability	EX ROVR の稼働時間は？	2 時間間充電で最大 2 時間稼働。

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	How many hours can EX ROVR operate?	EX ROVR can operate up to 2 hours per 2 hour charge.
防爆認証 Ex Proof Certificate	<p>ATEXとICEEX 認証の詳細と自動充電の認証について確認したい。</p> <p>We would like to know the details around ATEX and IECEx certification of the robot and the autonomous charging.</p>	<p>Zone1 II B+H₂ T3 で検定取得予定。</p> <p>EX ROVR の防爆検定取得がスムーズに進むよう、検定機関と密に相談しながら開発している。</p> <p>充電ステーションは非接触充電を考えており CENELEC technical report の要求に合致している事から、充電ステーションについても試験が終了次第 Zone 1 での防爆認定検定取得予定。</p> <p>EX ROVR will have a Zone1 II B+H₂ T3 explosion proof certificate once the testing is successfully completed.</p> <p>EX ROVR has been and is being developed in close cooperation with the certification body to ensure the qualification process runs smoothly.</p> <p>The charging station is uses contactless induction and complies with the CENELEC technical report. The charging station will also have a Zone 1 explosion proof certificate once testing is successfully</p>

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		completed.
自律運転 Autonomous Operation	<p>自律運転に関して確認したい。</p> <p>We would like to know the process of conducting an autonomous round.</p>	<p>まず遠隔操作で 3D LiDAR を用いて地図作成を行いシナリオ設定を行う。地図作成とシナリオ設定に要する時間はシナリオの範囲と複雑さに依存するが、通常は 1 シナリオ設定に要する時間は 2 日程度。地図作成とシナリオ設定が終われば、EXROVR は当該地図とシナリオに従い自律運転を実施。複数のシナリオ設定が可能であり、運転員はスケジューラーソフトを用いて容易にシナリオを切り替え可能。</p> <p>First, map creation by 3D LiDAR and scenario setting are performed by remote control.</p> <p>While the duration required for mapping & scenario setting depends on the range and complexity of autonomous inspection scenario, the nominal duration is 2 days for 1 scenario.</p> <p>Once the map is created and the scenario is set, then EX ROVR performs autonomous inspection based on that map and scenario.</p> <p>Several scenarios can be set and scenarios can be</p>

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		easily changed by the operator through the software.
	<p>自律運転中に障害物を発見した場合の対応。</p> <p>We would like to confirm the countermeasures when the EX ROVR finds the obstacles during the autonomous operation.</p>	<p>事前に作成した地図に存在しない障害物をルート上に検知した場合、EX ROVR は自動停止する。当該障害物が取り除かれた場合、EX ROVR はシナリオに従い自律運転を継続する。安全上の配慮から、EX ROVR は自動で障害物を回避する事はせず、運転員が遠隔カメラで確認した上で遠隔操作による障害物回避等の対応を決定し、その後自律運転に戻す運用としている。</p> <p>During the autonomous operation, EX ROVR stops when it encounters an obstacle which does not exist in the map.</p> <p>If the obstacle is removed, then EX ROVR continues autonomous operation based on the scenario.</p> <p>For the safety purpose, EX ROVR will not avoid this obstacle automatically. Instead, a human operator should check the obstacle remotely through the EX ROVR's camera and decide the next step such as avoiding the obstacle by remote control.</p> <p>After this routine, EX ROVR will then resume</p>

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		autonomous operation.
	<p>通信遮断の場合の対応について確認したい。</p> <p>What happens if there is a loss in communications?</p>	<p>通信(4G LTE)遮断の場合もシナリオを続行して EXROVR は充電ステーションに自律で帰還する、シナリオ実行中に取得したデータは EXROVR に蓄積される。充電ステーションに帰還後も通信遮断が継続している場合は次のシナリオは実行されない。</p> <p>In case of loss of communication (4G LTE), the operating scenario is not impacted and will be continued and completed. Once EX ROVR returns to the charging station, the data acquired during the scenario is contained onboard EX ROVR and can then be uploaded if a reconnection is made at that location.</p> <p>If loss of communication still continues after return to the charging station, then execution of next scenario is suspended until the connection is re-established.</p>
	<p>シナリオ設定の数に制限はあるか？</p> <p>Are there any limitations to the number of</p>	<p>制限はない。</p> <p>There are no limitations for the number of scenarios.</p>

EX ROVR Q&A		
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	autonomous rounds that can be designed or scheduled?	
	EROVR がシナリオ実行中に停止した場合の対応は？ What is the countermeasure when the EX ROVR stops its operations during the scenario execution?	オペレーターにアラームが飛び、オペレーターが状況確認を行う。 Alarm is sent to the human operator, and then the human operator can respond to the situation.
	地図作成 シナリオ設定に必要な時間は？ How long does it take to create a scenario?	シナリオの複雑さにもよるが、概ね 2 日程度 It depends on the complexity of the scenario. The nominal duration is two days per scenario.
	ゲージ撮影の再現性は？ What is the repeatability of the process of the camera acquiring gauge images?	再現性は 100%では無いが、高解像度カメラによりカメラ位置の振れ幅をカバーできる。 While the process is not 100% identical every time, EX ROVR's high-resolution camera allows for a highly repeatable process and room for tolerance in the positioning of the camera.
	EX ROVR は開けた場所でも航行可能か？	3 D-Lidar の届く範囲に目印があれば航行可能。目印が無ければ簡単なマーカーを取り付ける。

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	Can EX ROVR travel autonomously in a wide-open area?	Yes, as long as there are landmarks within the range of 3D-LiDAR. If there is no landmark, then simple markers can be placed.
環境 Environment	積雪や凍結時に EX ROVR は使用可能か？ Can EX ROVR handle snow and ice?	<p>平らな表面上であれば、EX ROVR は積雪や凍結が有っても運転可能。 階段やスロープに凍結や積雪がある場合には滑落が懸念される為、滑り止め防止の措置が必要。 また、豪雨・豪雪の場合は 3D LiDAR のレーザ屈折や反射が懸念。 深い積雪の場合、事前作成した地図とリアルタイムの 3D-LiDAR データに齟齬が生じ、自己位置特定できない可能性あり。</p> <p>EX ROVR can operate on a flat floor even with snow and ice.</p> <p>When there is ice or snow on stairs or slopes and slippage is a concern, then the attachment of a high-friction surface on the edge of stairs or on slopes would help to avoid the slippage.</p> <p>In case of heavy rain or snow, laser of 3D LiDAR may be diffused or reflected.</p> <p>In case of heavily accumulated snow, identification of its own location may be difficult due to the difference</p>

EX ROVR Q&A		
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		between the map and 3D LiDAR live data under this extreme condition.
	<p>雨天で使用可能か？カメラの水滴対策は？</p> <p>Can EX ROVR operate in the rain? Are there any countermeasures against water droplets on the camera?</p>	<p>豪雨では 3D-Lidar のレーザが屈折反射する為自律運転が難しいが少々の雨は対応可能。 水滴対策としては運転員による定期ふき取りを推奨している。</p> <p>EX ROVR can operate in light rain. In case of heavy rain, the 3D LiDAR system could have issues with laser diffusion or reflection and autonomous operation may not be possible. As a countermeasure against the aqueous water droplet, periodic wiping by a human operator is recommended.</p>
	<p>直射日光への耐性は？</p> <p>What is the resistance to direct sunlight?</p>	<p>運転中に直射日光を受けても支障ないと考える。ステーションで継続して直射日光を受けるのは推奨できないので、ステーションの設置場所は日陰にして頂きたい。撮影に対する日照の影響は条件による。</p> <p>Operation in direct sunlight is typically no issue. Continuous exposure to direct sunlight for an</p>

EX ROVR Q&A		
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		extended duration at the charging station is undesirable; it is recommended that the station is located in a shaded area. Camera image capturing may be affected by direct sunlight depending on angle and intensity.
	耐塩性は？ What is EX ROVR's resistance to salt?	可動部は完全密封なので問題ない。部品はアルミが多いが、アルマイト処理を実施しているので、機能は損なわないと考える。 Moving parts are completely sealed and there is no concern. Most parts are made of aluminum with alumite treatment, so function can be maintained even when exposed to salt.
センサー Sensors	低照度でのカメラと Lidar の検知性能について確認したい。 We would like to know camera/LiDAR capabilities especially in low light conditions	3D Lidar と熱画像カメラは低い照度下でも機能する。 マニ先端に取り付ける FHD カメラには十分な照度が必要であり、マニ先端に照明をつける(最大照度約 200lux@1m)。 3D LiDAR and the thermal imaging infrared camera will function even in low light conditions. The manipulator FHD camera requires sufficient lighting to capture images properly. Currently, the plan is to

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
		place an optional lighting system (Approximately 200 lux at 1m) on the edge of the manipulator.
	計器読み取りの様な画像認識とデータ通信について確認したい。 Does EX ROVR have image recognition ability such as reading gauges and data communication?	マニ先端のカメラは計器に正対（AI でサポート）して撮影する、デジタル画像化には十分な解像度の FHD カメラ撮影画像が要求される事から、重要。 Gen. 2.0 自体はデジタル画像処理機能を有さないが、デジタル画像処理のソフトや AI による履歴異常判定機能をクラウドに追加する計画。 It is important for the camera to point directly at the gauge (AI support is considered) to ensure sufficient image resolution for the digitalization of the camera image. Gen. 2.0 EX ROVR itself will not have an onboard ability for digitalization of camera image data. The plan is to perform this via software in the cloud.
	熱画像カメラの性能について確認したい。 We would like to know the thermal imaging capability.	H50 X V40 °, 室温 ~ 約 500 °C, 精度は約 10 °C (暫定) H50 X V40 °, ambient temperature ~ approx. 500 °C, accuracy approx. 10 °C. (To be fixed later)

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	<p>ガス検知センサーの性能について確認したい。</p> <p>We would like to know the gas detection sensors and capabilities.</p>	<p>可燃性ガス、酸素、硫化水素、一酸化炭素を検知。拡散式。</p> <p>Combustible Gas, Oxygen, Hydrogen Sulfide, Carbon Monoxide detector. It is diffusion type gas sensor.</p>
	<p>音響データの取得・監視と異常判定について確認したい。</p> <p>Does EX ROVR have the ability to sense and monitor acoustic sound data to detect anomalies?</p>	<p>可聴範囲内の非圧縮音響データをアップロードする。</p> <p>AIによる異常判定機能は Gen.2.0 開発完了後クラウドに追加する。</p> <p>Sound data within the zone of audibility will be recorded and uploaded without compression.</p> <p>Anomaly detection by AI will be added to the system's capabilities and will be performed in the cloud after the development of Gen. 2.0 is completed.</p>
データ解析	<p>現段階でどのようなプラットフォーム上でのデータ解析を実施しているか確認したい。</p>	<p>Gen. 2.0 EX ROVR はデータ（可視映像、熱画像、音、ガス濃度）を取得しクラウドにアップロードする、当該データは AI によりクラウド上で解析する。 Gen. 2.0 EX ROVR 開発完了後にクラウドに AI を搭載し異常判定可能とする計画。クラウドを利用する事でロボット本体の防爆認証に影響を与える事なく機能拡張可能。</p>

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	What kind of data analytics are being utilized today on the platform?	Gen. 2.0 EX ROVR obtains environmental data (visible image, thermal image, sounds, gas concentration, etc.) and then uploads it to the cloud where data analytics will then be performed via AI. The concept is to add AI in the cloud after the development of Gen. 2.0 EX ROVR for anomaly detection. Since this is a cloud software update, this allows the flexibility to expand the function without requiring the revision of explosion proof certificate.
	データをより有用とする為に、アウトプットデータをより広範囲のデジタルプラットフォームと統合する計画はあるか？ How are you integrating the output information to the broader digital platform, making that data available and useful?	IA システムサプライヤーとの協調を模索しており、ロボットデータ管理のシステムを既存のプロセス制御システムと統合する事を考えている。 We are working with an Information Architecture system supplier to integrate the robot /data management system with the existing process control system.
マニピュレーター	マニピュレーターについて確認したい。	(ハンドを除いて) 6 軸マニピュレーターにより緻密な操作性を持

EX ROVR Q&A

項目 Item	質問 Question	回答 Answer
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We would like to know the detail of manipulator.

つ。ハンドはオプション。
The 6-axis manipulator (without gripper) enables the maneuvering dexterity. Gripper can be added as an option.

Detail is shown below.

Axis name	Joint Type	Angle of rotation (To be fixed later)	Reference Position Angle
W2	Rotation	±90°	0°
W1	Pivot	±90°	35°
E2	Rotation	±90°	0°
E1	Pivot	0-180°	55°
S2	Pivot	±90°	0°
S1	Rotation	±180°	0°

Payload	6.6 lbs (3.0kg)	At reference point on reference configuration
Speed	0.33 fps (100mm/sec)	At reference point on reference configuration, horizontal and vertical
Control Mode	Control of each axis or control of the pose of manipulator	Remote control or autonomous scenario control ★When control the pose of manipulator, attention is needed to avoid singular point of manipulator.
Point repeatability	Approx. ± 1mm	At reference point on reference configuration, without electrical termination.
Representative dimensions (TBD)	S2-E1 : 1.25ft (380mm) E1-W1 : 1.64ft (500mm) W1-mechanical interface flange: 0.16ft (50mm)	

マニピュレーターで如何いう作業が可能か？

マニピュレーターの先端力は 3kg。非常停止ボタンの操作等を想定している。サポート治具を使えばバルブ操作も可能と考えている。

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	What kind of operations can be performed by the manipulator?	The arm can carry a payload of up to 3 kg at the referenced position. The arm will also be able to push certain emergency switches and manipulate certain valves through the use of a support device.
開発の状況	EXROVR は現在どこで使用されているか確認したい。 Where is EX ROVR being used today?	プロトタイプ (Gen. 1.5) は現在三菱工場内で使用されており、ソフトとユーザーインターフェースのアップグレードを実施中。 実証機 (Gen. 2.0) は材料調達段階であり 2021 年 3 月に製作完成予定、その後防爆検定プロセスに入る。 The prototype (Gen. 1.5) is currently being used in the MHI shop for the upgrading and finalization of software and user interface. Regarding Gen. 2.0 demonstration, materials are being procured and manufacturing will be completed in March 2021. The demonstration unit will be used to complete the explosion proof certification process.
	EXROVR の今後の計画について確認したい。	2022 年初旬に Gen.2.0 の開発完了、その後ユーザーのサイトで POC を実施したい。

EX ROVR Q&A		
項目 Item	質問 Question	回答 Answer
	What are the future plans for EX ROVR?	Once the Generation 2.0 EX ROVR is commercialized in early 2022, we would like to propose proof-of-concept testing at operators' sites.
	製品は現段階で存在するか確認したい。 Are any EX ROVRs in production currently?	プロトタイプ(Gen. 1.5)が一台あるがこれは開発要であって製品では無い。2021年3月に実証機が完成するがこれも防爆検定用であり製品では無い。POC用の実機は2022年初旬に準備できる。 We have one prototype (Gen. 1.5) but it is used for the development process and is not a commercialized product. A demonstration unit of Gen. 2.0 will be completed in March 2021 but it is for the explosion proof certification process and is not considered a commercialized product. The commercialized Gen. 2.0 EX ROVR will be ready in early 2022.
耐久性 メンテナンス	EX ROVR の耐久性が知りたい。何時間テストしたか。何か耐久性に懸念があれば知りたい、またメンテナンスの要求を知りたい。 What is the reliability of the EX ROVR? (How many	プロトタイプでは累積 2,000 時間運転している。 階段昇降は 100 回以上実施しており落下したことは無い。 メンテナンスに関する現状の計画を表に示す。 Prototype (Gen 1.5) has an operating record of

EX ROVR Q&A

項目 Item	質問 Question	回答 Answer																
	<p>hours of testing etc.) . We would like to know if there is a concerns or issues for reliability. Also we would like to know the requirement of periodic maintenance.</p>	<p>approximately 2,000 hours Testing of the stair climbing ability (both up and down) has been conducted for more than 100 times by using the prototype resulting in no conditions where the robot has fallen. The preliminary maintenance plan is shown as below.</p> <p style="text-align: center;">EX ROVR / Expected Maintenance Interval</p> <table border="1" data-bbox="1249 692 1921 1082"> <thead> <tr> <th>Frequency</th> <th>Duration</th> <th>Work description</th> <th>Place</th> </tr> </thead> <tbody> <tr> <td>1 Every half a year</td> <td>2 days (inspection w/o disassembling)</td> <td> <ul style="list-style-type: none"> ✓ Visual inspection (Robot body, Glass parts cleanliness, Crawler belt, Manipulator wire, Cables, etc.) ✓ Crawler/Manipulator Drive motor (Motor current, Noise, etc.) ✓ Main body airtightness ✓ Proper sensing operation (Cameras, Sensors, etc.) ✓ Battery performance (Charging/Operation time) ✓ Charging station mechanical performance (Bottom rollers, Contact cylinder) </td> <td>On-Site</td> </tr> <tr> <td>2 Every year</td> <td>5 days (inspection and maintenance w/ parts small disassembling and replacement)</td> <td> <ul style="list-style-type: none"> ✓ Parts replacement <ul style="list-style-type: none"> • Airtight sealing of EX ROVR and Charging station • Main/Sub crawler belts • Manipulator wire • Outside deteriorated cables and antennas ✓ Gas detector calibration ✓ Flameproof casing check (Camera case, microphone case, battery case, etc.) </td> <td>Shop</td> </tr> <tr> <td>3 Every two years</td> <td>10 days (inspection and maintenance w/ parts disassembling and parts replacement)</td> <td> <ul style="list-style-type: none"> ✓ Parts replacement <ul style="list-style-type: none"> • Glass parts (Camera case, Lidar case, etc/) • Battery • Charging station rollers ✓ Drive unit overhauling </td> <td>Shop</td> </tr> </tbody> </table> <p>(Remark) Item/Interval of each maintenance may differed according to actual condition, environment, operation, etc.</p>	Frequency	Duration	Work description	Place	1 Every half a year	2 days (inspection w/o disassembling)	<ul style="list-style-type: none"> ✓ Visual inspection (Robot body, Glass parts cleanliness, Crawler belt, Manipulator wire, Cables, etc.) ✓ Crawler/Manipulator Drive motor (Motor current, Noise, etc.) ✓ Main body airtightness ✓ Proper sensing operation (Cameras, Sensors, etc.) ✓ Battery performance (Charging/Operation time) ✓ Charging station mechanical performance (Bottom rollers, Contact cylinder) 	On-Site	2 Every year	5 days (inspection and maintenance w/ parts small disassembling and replacement)	<ul style="list-style-type: none"> ✓ Parts replacement <ul style="list-style-type: none"> • Airtight sealing of EX ROVR and Charging station • Main/Sub crawler belts • Manipulator wire • Outside deteriorated cables and antennas ✓ Gas detector calibration ✓ Flameproof casing check (Camera case, microphone case, battery case, etc.) 	Shop	3 Every two years	10 days (inspection and maintenance w/ parts disassembling and parts replacement)	<ul style="list-style-type: none"> ✓ Parts replacement <ul style="list-style-type: none"> • Glass parts (Camera case, Lidar case, etc/) • Battery • Charging station rollers ✓ Drive unit overhauling 	Shop
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