Adding a new dimension to productivity with ABB Ability™ Connected Services

Rev. 6.0 /English version
ABB Ability™ Connected Services
Proactive maintenance with measurable productivity increase

What is it?
Services for interpreting, managing and converting robot data into actionable insights as well as for minimizing both maintenance and production costs.

Elevator pitch
ABB Ability™ Connected Services let users remotely monitor, troubleshoot and optimize entire robot fleets for maximum performance together with minimum maintenance and total lifetime costs.

Providing data driven proactive maintenance, faster issue resolution and typically 2 additional monthly production hours per robot.
Customer Values

- Fast recovery
- Status monitoring and troubleshooting
- Optimum mechanical preventive maintenance
- Fast expert support anytime, anywhere
- Highest robot fleet performance, availability and lifetime

ABB Ability™ Connected Services
Fast recovery

1. Backup Management

- Fast and easy recovery from fatal crash or unwanted changes
- It decreases downtime dramatically in critical situations
- Avoidance of re-programming

“Firefighter” level
Status monitoring and troubleshooting

- Control over the current fleet status
- Fast notification and identification of failure and low performing robots ➔ It highlights quickly where to act
- Possibility of Proactive Monitoring by ABB for taking care of it
Status monitoring and troubleshooting

Real case with customer “ABC”

Who is the customer?

- Automotive tier 1 real customer
- It produces mechatronic components and systems for vehicle doors, seats and body in more than 20 countries
- One every two new vehicles worldwide is currently equipped with at least one of such automotive supplier’s products.

How was the situation?

- Factory with more than 70 ABB robots, mainly in arc welding applications.
- Although the Maintenance Manager was convinced that all ABB robots worked very well and practically had no problems, he agreed to connect all the robots to analyze their operational status.

What did we find out?

- After a month of testing, ABB Ability™ Connected Services detected around 700 events in a month from 15 robots only that represented robot stoppages. This translates into a loss of productive time per month!!!
- The Condition Monitoring and Diagnostics service helped the customer to identify the existing problems in its installation.
Optimum mechanical preventive maintenance

- Optimized maintenance intervals as well as better asset management
- More efficient maintenance with less costs (and less effort) and data driven decisions about robots to be reused or replaced.
- It allows a better spare parts management
Optimum mechanical preventive maintenance

Real case with customer “ABC”

Conclusions:

- If possible, reduce speed and accelerations on robot group with very high utilization
- Shorten TTNM (“time to next maintenance”) in the robot group with very high utilization
- Spare parts possibly needed for axis 1 and 6 of robot 66-67827
- During preventive maintenance of robot 66-67827, have special focus on axis 1 and 6
Highest robot fleet performance, availability and lifetime

- Avoid unplanned downtimes and improve operational performance by using ABB insights and recommendations
- Prescriptive maintenance, ABB tells you what to do for avoiding failure and also for having a smoother production without micro-stoppages and other issues
- It allows customer to react before critical situations occur
- Highest robot fleet performance, availability and lifetime which means, more production and less costs
Highest robot fleet performance, availability and lifetime
ABB Ability™ Connected Services cost savings contribution

Real case with customer “ABC”

- Travel Cost
- Lifetime Asset Cost
- Downtime Cost
- Production Cost
ABB Ability™ Connected Services cost savings contribution

Real case with customer “ABC”

Main robot alarm&events coming out from 15 robots during 30 days BEFORE

- Motion Supervision
- Joint Collision
- Lost communication with I/O device
- Joint load too high
- Missing scheduled backup
- No Contact With I/O Device
- Joint Speed Error
- Externam Manual Request

TOTAL: 697 alarms & events

Main robot alarm&events coming out from 15 robots during 30 days AFTER implementing Asset Optimization recommendations

- Max Force or Torque reached
- Motion supervision
- Joint collision
- Lost communication with I/O device
- Joint load too high
- No Contact With I/O Device

TOTAL: 237 alarms & events
ABB Ability™ Connected Services cost savings contribution

Real case with customer “ABC”

Typically 2 hours of additional productive time per robot per month

- Travel Cost
- Lifetime Asset Cost
- Downtime Cost
- Production Cost

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Typically 2 hours of additional productive time per robot per month
Fast expert support anytime, anywhere

70% of incidences can be solved remotely with Remote Access
# What services do I need?

<table>
<thead>
<tr>
<th>Customer benefit</th>
<th>Condition Monitoring &amp; Diagnostics</th>
<th>Backup Management</th>
<th>Fleet Assessment</th>
<th>Asset Optimization</th>
<th>Remote Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Fast recovery</td>
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ABB Ability™ Connected Services...

• ...help you in maximizing the **availability** of your robot fleet

• ...provide the **smoothest run** of your production while saving on **maintenance** and specially **production** costs

• ...range from a **support tool** to a **peace of mind** service bundled in one of our ABB Service Level Agreements (SLA)
Additional considerations
**Heat Map 2019**

Connected robots in relationship with installed base

<table>
<thead>
<tr>
<th>Region</th>
<th>Count</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>China</td>
<td>325</td>
<td>0.5%</td>
</tr>
<tr>
<td>USA</td>
<td>101</td>
<td>0.5%</td>
</tr>
<tr>
<td>Europe</td>
<td>7093</td>
<td>7%</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>949</td>
<td>4.8%</td>
</tr>
<tr>
<td>Americas</td>
<td>376</td>
<td>4.5%</td>
</tr>
<tr>
<td>Australia and New Zealand</td>
<td>23</td>
<td>1.1%</td>
</tr>
<tr>
<td>South Africa</td>
<td>30</td>
<td>4%</td>
</tr>
</tbody>
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Total # of connected controllers on Jan’2019: 6,089

Total # of connected controllers on Dec’2019: 8,653

% growth in number of robots: +39%

Total # of customers: 1,075

Europe 81%, South East Asia 12% and remainder 7% of connected base.
And what about security and data policies?

**Ability™ GT&Cs**
- We do not either share or sell data to other companies
- We only use it for the purpose of the contracted services
- ABB will not take any IP out of such data (data belongs to customers)

[https://ability.abb.com/terms](https://ability.abb.com/terms)

**Legal**
- Ability™ follows
  - Regulations (GDPR, Trade compliance, etc),
  - International standards (ISO27000, IEC62443, etc)
  - Guidelines (NIST and IIC frameworks, etc).

It is also based on Azure with largest compliance portfolio in the industry (Huawei Cloud for China in the future)

**Anonymized data**
- We upload only technical anonymized data and never personal data

**Technical security**
- We use all technical means for enhancing security:
  - Encrypted data,
  - Certifications,
  - Firewalls,
  - Etc.

**Whitepaper**
You can also find a technical cybersecurity whitepaper in:

Within the “Internal material” chapter, among many other documents
What is Power on Connect?
Definition & Connectivity Options

Power on Connect is a functionality built in all Omnicore controllers (RW7) that automatically connects securely the controller to the ABB cloud without any kind of setup.

(Not on Wifi / Wired configuration)
How to get it now?

1. ALL ABB new robots: **FREE** Condition Monitoring & Diagnostics during warranty period

2. **FREE** Condition Monitoring & Diagnostics service for non-connected robots until the end of the year 2020 to overcome the current situation
