Safety moment
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- Familiarize yourself with the nearest evacuation routes, and in case of an emergency do not delay to exit the building
- Session is being recorded if you need to watch and listen later
Creating value with digital solutions

Introduction

David Lincoln, ABB Digital Lead for Measurement and Analytics, drives digital transformation for ABB’s wide-ranging sensing business which includes analyzer, instrumentation and force measurement solutions.

Previously, David oversaw service Technology, productization and product management for this business. As Technology Manager, he set up the Measurement and Analytics development center in China and supported its growth for five years.

David holds a Master’s degree in Mechanical Engineering from the University of Manchester in England and a Ph.D from Cardiff University in Wales. He is based in the UK.
Digital solutions for measurement devices
Measurement made easy for Food & Beverage
Agenda

1. Introduction
2. Market drivers
3. Measurements in F&B
4. Solution examples
5. Key takeaway
6. Q&A
How to make a great loaf of bread
The key to success

1. Recipe (Procedure)
2. Ingredients
3. Equipment
4. Skill
4. Environment
How to be successful making 140,000 loaves each day

The key to success

- Recipe (procedure)
- Ingredients
- Equipment
- Skill
- Environment
- Productivity
- Quality
- People
- Regulations
Volume production is dependent on automation systems containing sensors and controllers.
A Digital wave of disruption has started to erode the island view
Information Technology and Operational Technology are converging

Data fusion, contextual awareness, alerts, insights

IT

ERP

HRMS

Enterprise resource planning

Human resource management system

IT

IoT

OT

OT – operation technology, IT – information technology, IoT – internet of things
Penetration of digital technologies is fast paced

2005
Two days after pope John Paul II. died

2013
His successor Benedikt XVI. retired and a new pope was elected
Industrial markets primed to adopt digital technologies

Computing + connectivity + cloud + analytics set to unlock value

Level of digitalization

Digital S-Curve

Innovations

1. Touch screen
2. Camera
3. App store
4. 3G > Streaming
5. Tablet
6. Sensing (GPS…)

Time

ABB end-market
Other industries

Note: relative size of industry for advanced economies
Source: ABB analysis

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Industrial markets primed to adopt digital technologies

Computing + connectivity + cloud + analytics set to unlock value

<table>
<thead>
<tr>
<th>Level of digitalization</th>
<th>Innovations</th>
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<td>Digital S-Curve</td>
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Innovations:
- Predictive maintenance
- Autonomous production
- Block chain traceability
- Sustainable products
- Alternative protein sources
- 3D printing

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Source: ABB analysis
Note: relative size of industry for advanced economies
Digital solutions can be targeted to specific customer needs

Connectivity

“I run many sites and need quick access to a range of productivity data 24/7”

Skills

“My team keep retiring, I need simple solutions to ensure new starters can maintain and operate the plant effectively

Productivity

“I need ways to increase output using my limited engineering resources and budget”

Regulatory

“I need safety related data available when I need it without having to look through paper records”
# ABB Digitally enabled smart devices for Food and Beverage processes

- **Evaporator**
  - Flow meters, pressure, temperature, Conductivity, pH, Recorders, Controllers, Actuators, Level, Positioners

- **Storage silos**
  - Flow meters, temperature, Recorders, Controllers, Level

- **Water Treatment**
  - Flow meters, pressure, temperature, Conductivity, pH, Recorders, Controllers, Actuators, Level, Positioners

- **Filling line (Bottles / cans)**
  - Flow meters, Recorders, Controllers

- **Retort control**
  - Pressure, Recorders, Controllers, Actuators, Positioners

- **Mixing / blending vessels**
  - Flow meters, temperature, Recorders, Controllers, Level

- **Heat exchangers**
  - Pressure, temperature, Conductivity, Recorders, Controllers

- **Cold storage**
  - Temperature, Recorders, Controllers

- **Control room**
  - Recorders, Controllers

- **Pasteurizers**
  - Flow meters, temperature, pressure, Recorders, Controllers, Positioners

- **Clean in place station**
  - Pressure, Conductivity, pH, Recorders, controllers, Positioners

- **Boilers**
  - Flow meters, pressure, temperature, Conductivity, Oxygen, emission monitoring, pH, Sodium, Silica, Recorders, Controllers, Actuators, Positioners
ABB Digitally enabled smart devices for Food and Beverage processes

Flow
Positioners

Pressure
Recorders | Controllers

Temperature
Water analysis

Level
Gas analysis incl. CEMS
**Alcohol blending measurement solution**

Delivering Regulatory adherence | Improved quality | Increased productivity

---

### Customer need

- **On-line measurement** of alcohol concentration
  - **Today using manual** portable meter
  - Manual measurement and recording every 4 hours
- **Regulations** | QMS require online measurements and storage of data for 2 years minimum

### ABB Solution

- **FCB450 Coriolis Mass flowmeters** with integrated DensiMass\(^1\) software for measurement of Mass Flowrate, Density, Temperature, Concentration
- **Paperless Recorder RVG200** analyzing blend data
  - Concentration
  - Temperature
  - Mass flowrate
  - Density
  - 24 channels recording data logging for up to 6 bottling lines.
- **Data manager Pro Software**
  - Remote back-up of data, analyzes alarms / trends

---

1) DensiMass software enables to perform direct concentration measurement,
Alcohol blending measurement solution
Much more than just a measurement

**Online device management**

**ABB Ability™ Field Information Manager**
- Configuration
- Commissioning
- Maintenance

**Remote data access**

**Web server**
- Access diagnostics and performance data via any internet browser
- Ethernet enabled

**Data manager Pro**

**Data analysis software**
- Manage, analyze and store data archives

**Device health and accuracy check**

**ABB Ability™ Verification for measurement devices**
- Maintenance
- Troubleshooting

**Fast fault diagnosis and tech support**

**Dynamic QR code technology**
- Share device ID + system health data via QR codes
- Email or use ABB’s My Installed Base app to receive support

**On-site self-support**

**My Measurement Assistant**
- Step-by-step assistance
- Downloadable action reports

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* Free software or feature
Up-skilling operators & maintainers with Guided self-service support

My Measurement Assistant

Free tool

- Video tutorials
- Checklists
- Contact us
- Spare parts catalog
- Error code checking

Access the web-app today

https://my-measurementassistant.marketplace.abb.com

Coriolis flowmeter
Hygienic Master
Process Master
Vortex/Swirl Master

Pressure
Temperature
Positioners
Thermal mass flow

Released Q3-2020
Beer brewing operation

Delivering highest possible measurement accuracy in challenging application

Process
Measure and compute mass flow rate of steam control heat for boiling the wort*

Challenge
Avoid expense of re-piping the brew house to achieve higher accuracy

Solution
ABB’s swirl flowmeters allow highest accuracy with lowest inlet and outlet sections

+ Suite of high value apps to lower cost of ownership and enhance productivity

* A sugary solution in a kettle
Smart device surrounded with Digital solutions that address customer needs

Online check of device health and accuracy
ABB Ability™ Verification for measurement devices*
• Maintenance
• Troubleshooting

Productivity

Online device management
ABB Ability™ Field Information Manager*
• Configuration
• Commissioning
• Maintenance

Augmented / Virtual Reality support
ABB Remote Insight

On-site support
My Measurement Assistant*
• Step-by-step assistance
• Downloadable action reports
• Access the app now

Skills

Swirl flow meter

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* Free software
ABB Ability™ Verification for measurement devices

The best possible check of measurement accuracy, without removal from the process

Free Software*

Test reports  Predictive maintenance  Flexible license options

Coriolis flowmeter  Electromagnetic Flow meter  Vortex/Swirl Master  Thermal mass flow  Level  Pressure  Temperature  Positioners

Easy to use  Fast  Reduces downtime  Helps with Quality control

* Enhanced & Premium versions also available
Customer expectations are changing

Typical buying journey example

1. Awareness
   - Reliable, accurate measurement

2. Education
   - Total cost of ownership

3. Decision
   - Is my asset future proof?

I need Level measurement during mixing to improve product quality
Customer expectations are changing

Typical buying journey example

1. Reliable, accurate measurement
2. Total cost of ownership
3. Is my asset future proof?

I need perfect measurement, low cost of ownership and security that my Level solution will still be relevant in 6 years time.
Customer expectations are changing

Typical buying journey example

1. **Awareness**
   - I choose this Level solution
     - Reliable, accurate measurement

2. **Education**
   - Total cost of ownership

3. **Decision**
   - Is my asset future proof?

---

**Device health and accuracy testing**

ABB Ability™ Verification for measurement devices
- Commissioning
- Maintenance

**Laser level**

ABB LLT100
- Detect any liquid without calibration
- Narrow beam, filtering of blade interference if required

**Device management**

ABB Ability™ Field Information Manager
- Configuration
- Commissioning
- Maintenance

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ABB is a pioneering technology leader that works closely with utilities, industry, transportation and infrastructure customers to write the future of industrial digitalization and realize value.
All Manufacturers investing heavily in SW above the device level

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Key takeaways

1. Digital creates new value opportunities often without significant customer investment

2. Solutions can target specific customer needs

3. Solutions are more and more a combination of the physical devices and software

4. Talk to ABB today about your solution needs for tomorrow and let’s co-innovate

Infinite possibilities in future
Contact me:
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Digital leader ‘Measurement & Analytics’
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Visit ABB Advance Digital Service webpage
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