NO MORE GEARBOXES

Max Gutberlet
Americas HUG
ELECTRONICS VS MECHANICS
MEASUREMENT PRINCIPLES IN GAS

MECHANICS
- DIAPHRAGM
- ROTARY
- TURBINE
- ORIFICE PLATE
- ULTRASONIC
- CORIOLIS
- THERMAL MASS

ELECTRONICS
MARKET TRENDS WE OBSERVE

TODAY - 2019

TOMORROW – 20XX

FLOWRATE

PRESSURE

MECH

ELEC

ELECTRONICS ONLY

FUTURE
ELECTRONICS – LOOKING AT THE MARKETS
CHINA – CURRENT MARKET PLAYERS

**GOLDCARD/TANCY**
- TAU METER
- **STATUS**
  - IN TEST WITH END CUSTOMERS

**SICK (GERMANY)**
- FLOWSIC 500
- **STATUS**
  - EXPENSIVE
  - 1000 units/year

**AICHI (JAPAN)**
- TOKEI AS
- **STATUS**
  - MARKET LEADER
  - 5000 units/year

**WYSE SHANGHAI**
- USM METER
- **STATUS**
  - Sold 5000 units contract

**STRONG LOCAL CONTENT REQUIREMENTS**
STATIC MEASUREMENT TECHNOLOGIES

**ORIFICE PLATE**
- **PRO:** Simple Design
- **CON:** Accuracy; Pressure drop

**THERMAL MASS**
- **PRO:** Cheap; get pressure „for free“
- **CON:** Accuracy; Scalability

**ULTRASONIC**
- **PRO:** High Accuracy, no pressure drop
- **CON:** Complex design; maintenance
ULTRASONIC – KEY CHALLENGES

• Complex design driving high cost
• Turbulence – laminated gas flow would be ideal
• Inlet and Outlet Length
• Sensitivity to dirty gas (Shale)
• Rangeability
• Drift on zero – measuring gas flow when there is none
• Battery vs. Mains powered
HONEYWELL LOW PRESSURE ULTRASONIC

Overview

• multi-path gas flow meters
• new low and medium pressure ultrasonic transducer design technology,
• does overcome ubiquitous zero drift problem, high measurement accuracy.
• remote and local data analysis and display.
• wide range of measurements
• Integrated into Honeywell Measurement IQ
• Battery powered minimum 3 years

New Transducer Technology

Sensitivity and Robustness

Overcoming Toughest Challenges

• Double bent – out of pane pipe configuration
• Worst case scenario for inlet pipe

• new transducer practically immune to worst case scenario
• All test without flow conditioner
LOOKING INTO THE FUTURE – WHEN?

Step 1: New low-pressure transducer at low cost (core technology)

Step 2: New software algorithm in PC (core technology)

Step 3: Final path layout and configuration

Step 4: Industrialization of Prototype

Step 5: Certification & Commercialization

We are here
OUR KEY MESSAGES TO YOU

1. **YES** – the market is moving from mechanical to electronics
2. **NO** – it will not happen overnight and globally
3. **YES** – Honeywell is working on our answer to these challenges
4. **NO** – it will not be ready tomorrow – but it will be ready in time for the markets
5. **YES** – the solution will be both price competitive and technological advanced
6. **NO** – it will not be the cheapest on the market – but it will offer the lowest cost-of-ownership
7. **YES** – please talk to us about this trend – the more customer input we get from you, the better our final product is going to be.
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>IS HONEYWELL WORKING ON A RESIDENTIAL METER</td>
<td>YES</td>
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<tr>
<td>CAN YOU SHARE DETAILS….</td>
<td>NO</td>
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<td>WHY NOT….</td>
<td>BECAUSE WE DO SOMETHING BRANDNEW</td>
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<tr>
<td>BUT COMPETITION HAS ALREADY LAUNCHED….</td>
<td>YES, BUT WITHOUT SUCCESS</td>
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