HANSATON AQ
A Revolutionary Rechargeable Hearing Instrument

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Outline

• Replaceable vs rechargeable
• Basics of operation
• Why have they not caught on?
• HANSATON Rechargeable Instruments
  – AQ Custom
  – AQ X-Mini RIC
• Adopting new technology

What rechargeable devices do you use?

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Rechargeable Devices

Primary Cell

• Irreversibly transforms chemical energy to electrical energy.
• When chemicals are depleted, replace the cell.
Secondary Cell

- Like a primary cell, it transforms chemical energy into electrical energy.
- When chemicals are depleted, reverse the process, recharge and start again.

Primary Cells

- Battery life
- Readily available
- Good discharge characteristics
- Small
- Battery life
- Cost
- Small
- Handling
- Jammed batteries
- Broken battery doors
- Swallowing hazard
- Counseling time
- Environmental impact

Secondary Cells

- Convenience
- Environmental benefit
- Cost
- Handling
- Counseling time
- Operating time per charge
- Memory issues
- Battery longevity
- Charging errors
- Wrong battery
- Inverted battery
- Handling
- Worn contacts
- Need for power source
- Counseling time
Technology Adoption Life Cycle

Moore, *Crossing the Chasm*, 2002

Technology Adoption Life Cycle Model

Moore, *Crossing the Chasm*, 2002

HANSATON Technology

- AQ Rechargeable Hearing Systems
- In development for over 10 years
- Ready for prime time
- (AQ = Accumulator)
AQ 2G Custom Rechargeables

- NiMH battery sealed in case
- Legance faceplate for natural appearance
- Three technology levels

What's special about the AQ battery?
1. Preselection
2. Conditioning
3. Testing after placement

AQ 2G Custom Rechargeable System

- Inductive charger
- No electrical contacts
- LED glows when charging

AQ Custom Rechargeables

- Charging Station turns off HA
- HA communicates wirelessly with charger
- Charging begins and ends automatically
- Digital process prevents overcharging
Impression Requirements

• Complete impression is essential
  – Avoid voids
  – Fill ear completely

Impression Requirements

• Use enough material to define the concha rim.

AQ 2G X-Mini Rechargeable RIC
AQ X-Mini in Charge Station

Exquisite Control of Charging Process

- Proprietary circuit monitors the battery and calculates precisely the point of 100% charge.
- Never overcharges
- No memory issues
- No rigid recharging regimen required

Key Issues for HA Users

- Operating time
- Time to charge
- Battery longevity
- Ease of use
**AQ 2G Performance**

- Operating time
  - Custom: 20-30 hours per charge
  - X-Mini RIC: 20 hours per charge
- Time to charge: 2-4 hours
- Battery longevity: 5 years
- Ease of use: *Never touch a battery.*

**AQ Discharge Curve**

Steady voltage throughout discharge cycle

**Design Issue**

- Allow substitution of a primary cell?
- HANSATON decision: Prevent problems by sealing the compartment
  - Reduced moisture ingress
  - No battery errors
  - No broken doors
  - Never have to touch a battery
Design Issue – Cell Substitution

- Not for everyone
- Must have a power source
- How many of your patients spend extended time in the wilderness?

Design Issue

- Smaller custom rechargeable instruments?
- Decision: Hard line on battery performance
- Design goal: minimum 16 hours per charge
- What does the future hold?

Wonderful power source!

But what does it power?
Sound Processing Technology

- Speech Detection
- HiFi Sound
- Noise Reduction
- Situation Optimizer
- Sound Impulse Management
- Acclimatization Manager
- Active Wind Block 2G
- Natural Sound
- Multi-channel Adaptive Directional
- Speech Beam
- Active Feedback Block 2G
- i-com2 Wireless
- Bluetooth Connectivity

Wireless Sound Processing Technology

i-com2 Wireless
Bluetooth Connectivity

Secondary Cells – Handling the Downside with AQ

- Convenience
- Environmental benefit
- Cost
- Handling
- Counseling time
- Operating time per charge
- Memory issues
- Battery longevity
- Charging errors
- Wrong battery
- Inverted battery
- Handling
- Worn contacts
- Counseling time
- Need for power source
Target Patients

- Elderly
- Physically impaired
- Visually impaired
- Hearing impaired

Product Readiness and the Technology Adoption Life Cycle

- Usefulness
  - Ease of use

Professional Readiness

- Knowledge
- Skills
- Attitude
Patient Readiness

- Knowledge
- Skills
- Attitude

Technology Adoption Life Cycle

Market Penetration

Time

AQ will bring rechargeables into the majority market.

AQ 2G from HANSATON

- Rechargeables ready for prime time
- Out of the niche, into the mainstream market