



Innovation – do we really need it? by M. Khaimov

www.mairec.com

When the wind of change blows, some people build walls, others
build windmills.

Chinese Proverb

About MAIREC



Technology-driven and innovative solutions for the recycling of complex materials in the precious metals industry.

About MAIREC



- > founded in 2003
- > diverse manufacturing and end-of-life clientele
- > excellence in separation, sampling, and value determination
- > flexibility of service with robust quality control
- > ISO-9001 and ISO-14001 certified

About MAIREC.....Still....



- > 130 Employees in Germany, 45 in the U.S.
- > Growth of over 200% in the past 6 years
- > Multi-lingual staff (> 20 languages spoken)
- > Winner of "Bavaria's Top 50 Companies" in 2014
- > Winner of "Top 100 Germany's Innovative SMEs" in 2017
- > Winner of "1000 Companies to Inspire Europe" in 2017 by the London Stock Exchange



Challenges? What Challenges?

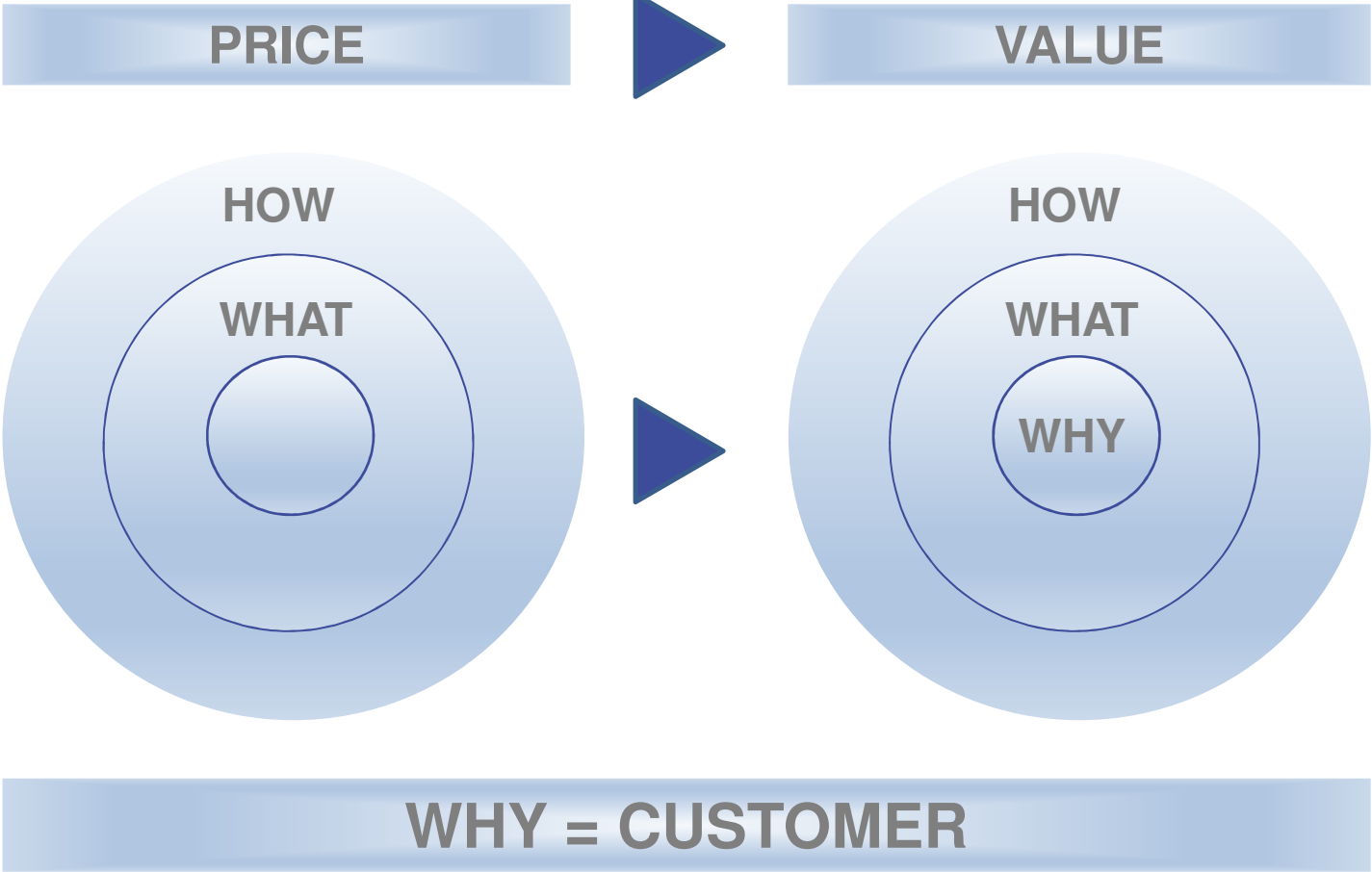


- > Platinum Today \$936 / Toz
- > Platinum in 1992 \$400 / Toz
- > Palladium Today \$1000 / Toz
- > Palladium in 1992 \$100 / Toz (Really!)
- > More global market
- > More information on every level (internet, social media, news)
- > Regulatory changes
- > Stronger competition has eroded margins
- > More complex markets and materials

**RACE TO THE
BOTTOM**

Two large, bold, black arrows pointing downwards from the word "BOTTOM", emphasizing the downward trend of prices.

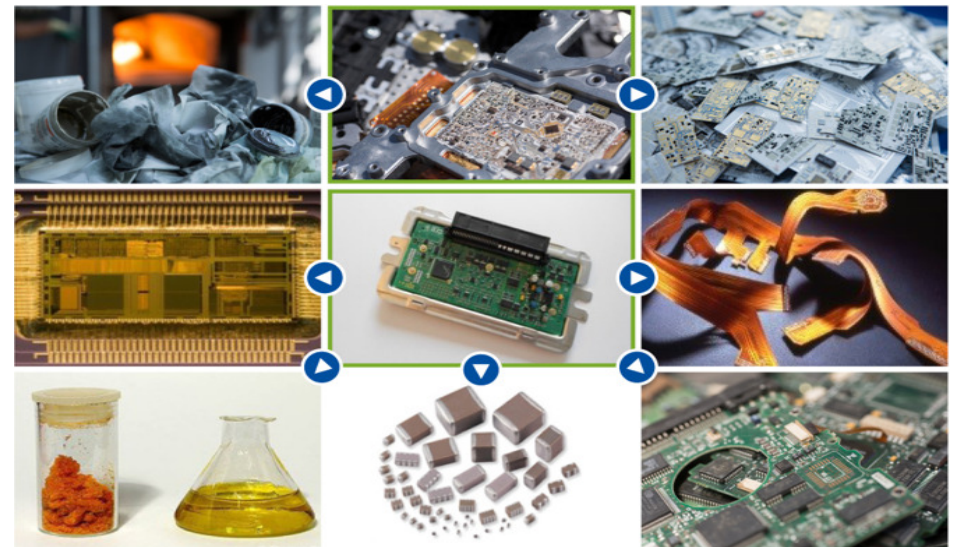
Changes in Thinking



Innovative Solutions



- > Challenge: recycling of low-value complex materials to maximize value for customers (ECU, oxygen sensors, etc.)
- > *Solution:* multi-purpose, selective size reduction, separation unit



Innovative Solutions



- > Challenge: entry into a mature U.S. autocatalyst market with highly competitive environment
- > *Solution:* collaborative partnerships and first ever closed loop automated converter dismantling unit



Innovative Solutions

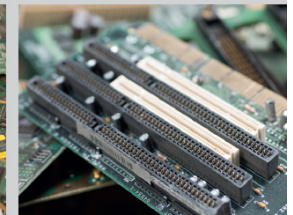
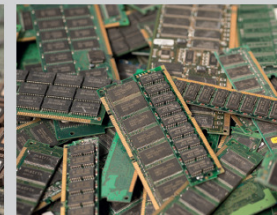
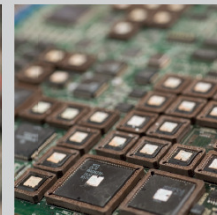


- > Challenge: maximizing E-scrap value for customers
- > *Solution:*
collaboration with
remarketing partners
know-how support



$$E = Re^3$$

Traditional recycling
is relative.



- > Challenge: market need for faster feedback and liquidity
- > *Solution:* reduction of assaying times for autocatalyst down to 3-4 days after material receipt and for e-scrap down to 3 weeks
- > Challenge: increased business complexity combined with need for cost improvements
- > *Solution:* custom-built ERP combining all areas under "one roof" (production, inventory, PM management, BI reporting, etc.)



Future Outlook



- > SiC of hearing about SiC? Get used to it!
- > Closer link to supply chain
- > More value-based rather than price-based
- > Stronger online presence and connectivity
- > Increased digitalization
- > MAIREC will soon be introducing more disruptive changes in the market. Stay tuned!



Innovation distinguishes between the leader and the follower.

Steve Jobs

THANK YOU!