

JOHN ZINK CLEAN COMBUSTION. CLEAR SOLUTIONS.™

Use of KM Principles in Leading a Global R&D Organization

Joseph Colannino, Director R&D

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About John Zink

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About John Zink

- John Zink Flare Group
- Coen Combustion
- Process Burners
- Flare Gas Recovery
- Vapor Recovery/Absorption
- Biogas

RESPONSIBLE SOLUTIONS FOR YOUR ENVIRONMENT

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John Zink Capabilities Framework







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▶ John Zink Institute

www.johnzinkinstitute.com

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▶ **What is Knowledge Management?**

- **Knowledge Management** is the administration of intellectual capital.
- **Characteristics**
 - ...administration... = on-purpose activity
 - ...intellectual... = concerning ideas (metaphysics)
 - ...capital... = the managed asset must have value
- It includes creation, discovery, storage, sharing, retention, use, and protection.
- It involves
 - communities of practice and other organizational and social aspects
 - tacit and explicit varieties

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▶ Principles of KM

- Principle 1: Create a common culture
- Principle 2: Create a shared vocabulary
- Principle 3: Create a shared space

- Outcome: Get everything

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▶ An early project using KM principles

▶ The Tower of Babel (Genesis 11)

1. Now the whole earth used the same language and the same words.
2. It came about as they journeyed east, that they found a plain in the land of Shinar and settled there.
3. They said to one another “Come, let us make bricks and burn them thoroughly.” And they used brick for stone, and they used tar for mortar.

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▶ An early KM project: The tower of Babel; Genesis 11

4. They said to one another “Come, let us build for ourselves a city, and a tower whose top will reach into heaven, and let us make for ourselves a name, otherwise we will be scattered abroad over the face of the whole earth.
5. The LORD came down to see the city and the tower which the sons of men had built.
6. The LORD said, “Behold, they are one people, and they all have the same language. And this is what they began to do, and now nothing which they purpose to do will be impossible for them.”

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▶ An early KM project: The tower of Babel; Genesis 11

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▶ An early KM project: The tower of Babel; Genesis 11

7. Come, let Us go down and there confuse their language, so that they will not understand one another’s speech.
8. So The LORD scattered them abroad from there over the face of the whole earth; and they stopped building the city.
9. Therefore its name was called Babel because there the LORD confused the language of the whole earth; and from there The LORD scattered them abroad over the face of the whole earth.

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▶ An early KM project: The tower of Babel; Genesis 11

7. Come, let Us go down and there **confuse their language**, so that they will not understand one another's speech.
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9. Therefore its name was called Babel because **there** the LORD **confused the language** of the whole earth; and from **there** The LORD **scattered them abroad** over the face of the whole earth.

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▶ Principles of KM for companies

- Principle 1: Create a common culture
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▶ **Principles of KM for companies**

- Principle 1: Share culture
 - Customer value is subjective; provide customers what they value; i.e., provide superior value.
- Principle 2: Share vocabulary
 - Research the customer, educate them, interact with them; i.e., stay "close" to the customer.
- Principle 3: Share space
 - Stay close to the customer; co-locate, provide virtual tools.
- Summary: the company that provides superior value and is easiest to do business with wins.

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▶ **Principles of KM in R&D**

- Principle 1: Share culture
 - Make R&D relevant
- Principle 2: Share vocabulary
 - Customer and internal education: John Zink Institute; Market Based Management™, MBM Academy
- Principle 3: Share space
 - Internal R&D resources are co-located
 - Telephony, Email, GoToMeeting, Sharepoint, Video Conferencing, Travel...

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▶ **On the Anthropocentricity of Knowledge: Tacit and Explicit**

- One cannot have knowledge without people
- Organizational knowledge resides in and is employed by people (knowledge workers and knowledgeable workers)
- Not all knowledge can be declared
 - *We know more than we can tell* – Michael Polanyi
 - *If only Hewlett Packard knew what Hewlett Packard knows, we would be three times more productive* – Lew Platt

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
▶ Elements of successful research

- Researchers are the most important part of research; respect and understanding for the R&D worker is essential
- Creative people need creative space
- The secret ingredient in successful R&D is love
- Bootleg research is necessary
- Breakthroughs come primarily through serendipity; therefore, maximize opportunities for serendipity

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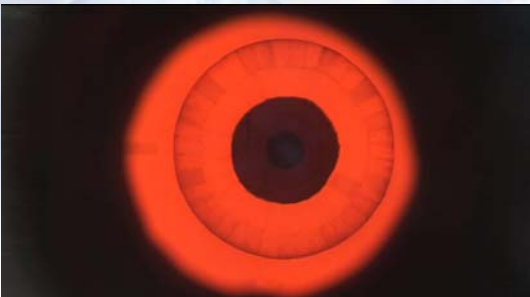
▶ An Example of Breakthrough R&D:
Combustion with Near Zero Emissions

- $N \equiv N + O = O \xrightarrow{\Delta} N = O, O = N = O$ (Air + heat \rightarrow **NO_x**)
- $N = O + C_xH_y + O = O \xrightarrow{h\nu}$  (NO_x + hydrocarbons + air + sunlight \rightarrow **ground level ozone**)
- $C_xH_y + O = O \xrightarrow{\Delta} O = C = O, C \equiv O, H - C - H$

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▶ Uniform Temperature Profile



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▶ Questions?

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▶ WKID Defended and Defined

- WKID is not a definition of knowledge nor a model of knowledge management
- WKID is a hierarchy of assets:
 - Wisdom > Knowledge > Information > Data

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▶ **WKID Defended and Defined**

□ **Definitions* for Wisdom > Knowledge > Information > Data**

- *da·tum; \dā-'təm; noun; Latin, from neuter of datus; 1646; plural da·ta; \-ə; 1: something given or admitted especially as a basis for reasoning or inference; i.e., bare facts*
- *in·for·ma·tion; \in-'fər-mā-'shən; noun; 14th century; 2b: the attribute inherent in and communicated by one of two or more alternative sequences or arrangements of something (as nucleotides in DNA or binary digits in a computer program) that produce specific effects; i.e., facts organized for a purpose – useful collection of facts*
- *knowl·edge; \nā-'lij; noun; Middle English knowlege, from knowlechen to acknowledge, irregular from knowen; 14th century; 2c: the circumstance or condition of apprehending truth or fact through reasoning; i.e., systematized information – includes categorization, models, paradigms*
- *wis·dom; \wiz-'dəm; noun; Middle English, from Old English wīsdōm, from wīse wise; before 12th century; 1b: ability to discern inner qualities and relationships; i.e., knowledge + moral component – corporate culture, normative assessments, best practices*

*Merriam-Webster online dictionary, <http://www.merriam-webster.com/dictionary/>, last accessed 9 June 2010

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▶ **WKID Defended and Defined**

□ **WKID is a hierarchy of assets:**

- Wisdom > Knowledge > Information > Data
- However, one does not know what counts as data without understanding why one is collecting it (information)
- One does not collect data (information) without a reason (knowledge)
- One does not organize information (knowledge) without discerning a larger purpose or need (wisdom) to organize information in the first place
- *Therefore, from a cognitive perspective, the traditional hierarchy is reversed: one does not know what counts as data without information, one does not know what counts as information without knowledge, and one does not know what counts as knowledge without wisdom.

*Tuomi, I. (2000) Data is More than Knowledge: Implications of the Reversed Knowledge Hierarchy for Knowledge Management and Organizational Memory. Journal of Management Information Systems, 16(3), pp. 107-121.

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