



Improvement and Harmonisation in Nuclear Safety through Peer Reviews

Key Note 2

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Plant Information

Chronology of the Mühleberg Nuclear Power Plant (KKM)

- 2012** OSART Mission
Beginn Project DIWANAS
- 2009** Adjustment of the electrical gross and net output
due to turbine refurbishment
(372/355 → 390/373 MW_{el})
- 2006** WANO Peer Review (Follow-up 2008)
- 2000** OSART Mission (Follow-up 2002)
- 1993** Second thermal power-uprate of 10%
(997 → 1097 MW_{th})
- 1992** Containment Venting System (CDS) and Drywell
Spray and Flooding System (DSFS)
- 1989** SUSAN commissioning
- 1986** Replacement of the recirculation lines
- 1974** First thermal power-uprate of 5%
(949 → 997 MW_{th})
- 1972** Start of commercial operations



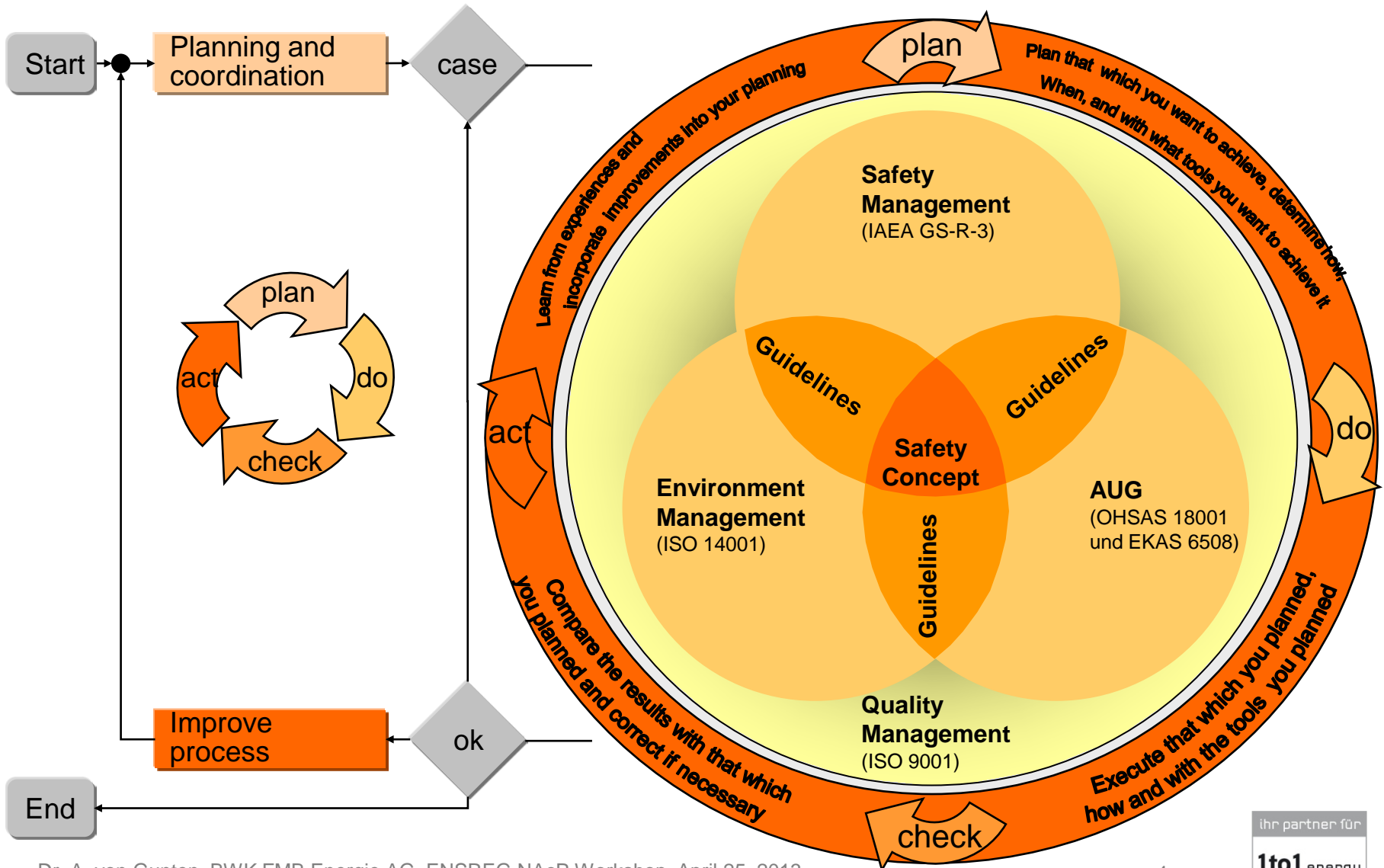
Plant Standards

External Assessments through Experts and Authorities

- **Certification** by an accredited, independent agency with certification and maintenance audits.
 - Inspections by the **regulating authority (ENSI)** as well as expert discussions between ENSI and KKM.
 - Inspections by **cantonal agencies**, such as the fire department or the food safety administration.
 - **Peer Reviews** by the World Association of Nuclear Operators **WANO**.
 - Assessments by the Operational Safety Review Team **OSART** of the International Atomic Energy Agency, IAEA.
- The ideas that underly our quality management contribute **substantially to the success of such missions**.
- A goal of such missions is to integrally improve processes. One such improvement includes the **opportunity to further develop our quality management**.

Plant Standards

Quality Management at KKM



External Assessments

Why we wanted OSART

Safety is our top priority.



We want to meet and surpass international standards.



We value a culture of continuous learning and improvement.



Politically, the situation in Switzerland has been difficult since Fukushima 2011.

The results of the OSART Mission are public. We want to regain public trust by sharing the results.

We can show that we have a safely run NPP

External Assessments

Preparation for the OSART Mission

Goal:

To mentally prepare the entire plant staff for the mission, 5 weeks before start of mission:

- We want this mission and support it.
- An Osart mission brings added value to KKM because we can show that we adhere to and even surpass international safety standards.
- Positive attitude towards OSART.
- Willingness to inform and discuss openly. We want to improve ourselves.

Tools:

- Posters, OSART "coffee breaks", coaching for counterparts, information at monthly personell meeting.

Osart-Mission 2012

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Osart-Kaffeepause

☑ **Dienstag 25. September 9:00 Uhr**
im Personalrestaurant
Thema: Wie beeinflusst diese Mission meine Arbeit?
Die Teilnahme ist freiwillig.
Die Folien werden ins KKM-Intranet gestellt.

☑ Wir unterstützen das Osart-Team bei seiner Arbeit.

☑ Wir freuen uns auf die Osart-Mission!

☑ Die Osart-Mission findet vom
8. bis zum 25. Oktober statt.

Die Kraftwerksleitung

ihr partner für
1to1 energy

Osart = Operational Safety Review Team

BKW®

External Assessments

Intended Use of OSART Results

Safety is our top priority. We want to integrate the OSART results into our safety culture, as detailed in «Our Standards». For instance:

Safe Operations

- External assessments are part of a safely run NPP.

Sense of Responsibility

- We expect professionalism on the job.
- We foster a culture of continuous learning.

Organization

- We seek best practice.

Motivation

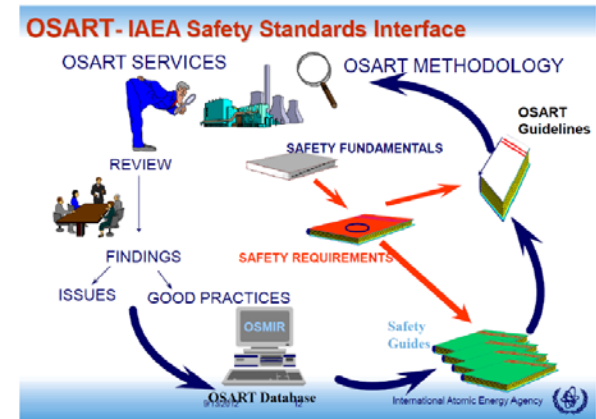
- We all give our best.
- We are ready to take responsibility.



External Assessments

Benefits for the Plant

- We will use the results of this mission to improve the operations of our plant.
- The processes behind OSART are impressive; they ensure a high quality review:
 - Competent leadership and team members.
 - Diligent approach and strong work ethics.
 - Fair assessment of plant conditions to IAEA guidelines and standards.
 - Effective culture of discussion.
- The team showed us where we stand in relation to international standards and guidelines.
- We identified 86 measures to implement the findings of the team.



External Assessments

Communication as possible pitfall

Our priority was to create the right (positive) mindset among plant staff for the mission.

- Our experience with past external assessments was that attitude has a strong impact on the quality of the review.
- Cultural differences between plant staff and reviewer can also cause misunderstandings and even friction during a mission. Successful missions depend on recognizing these differences without qualifying them as good or bad.
- Goodwill is required on both sides – not in terms of leniency, but in terms of willingness to understand and discuss the respective point of views.
- Superior Language skills (even with interpreters present) are a must.

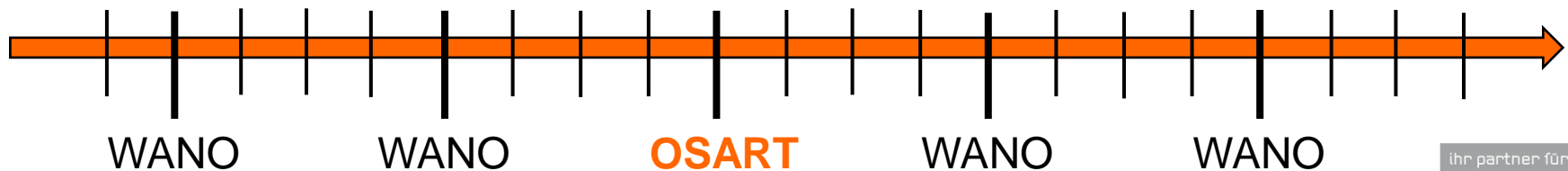
External Assessments

Comparison between WANO and OSART

WANO peer review	OSART mission
Worldwide industry standard as measure	Fulfillment of rules and regulations as measure
No regulatory involvement	Regulatory involvement
Strictly confidential results	Public results
...	...

WANO recommends that a WANO peer review should occur every four years. However, it should be possible to replace a WANO peer review with an OSART mission. They complement each other; KKM sees OSART as an equivalent to WANO.

- Lack of resources prevent a small single unit plant from being able to prepare and follow through with WANO and OSART reviews concurrently.



Credentials

Author's internal, national, or international review experience

- 1996** Qualification as Internal Auditor of KKM's Management System
- 2000** Osart Mission at Mühleberg NPP (Host Plant Peer)
- 2002** Osart Follow up at Mühleberg NPP (Host Plant Peer)
- 2006** Wano Peer Review at Mühleberg NPP (Host Interface Representative)
- 2007** Wano Peer Review at Krško NPP (Organization and Administration)
- 2008** Follow up Wano Peer Review at Mühleberg NPP (Host Interface Representative)
- 2008** Follow up Wano Peer Review at Krško NPP (Industrial Safety, Chemistry, Fire Protection)
- 2010** Full scope and start up Wano Peer Review at Калининская АЭС (Training and Qualification)
- 2012** Osart Mission at Mühleberg NPP (Liaison Officer and Host Plant Peer)



BACK UP

Plant Standards

Safety Concept

- BKW considers safety to be its top priority.
- BKW strongly emphasizes a well-functioning safety culture at Mühleberg NPP. A well-functioning safety culture consists of a match between BKW's corporate culture and its leadership guidelines with the patterns of behavior of individual employees.
- Safety culture is an integrated concept that covers all relevant aspects of technical and operational safety.
- The safety concept is the **foundation for the safety guidelines**. These are detailed in our brochure «Our Standards» to the point that they can be applied to day-to-day business.




Unsere Standards

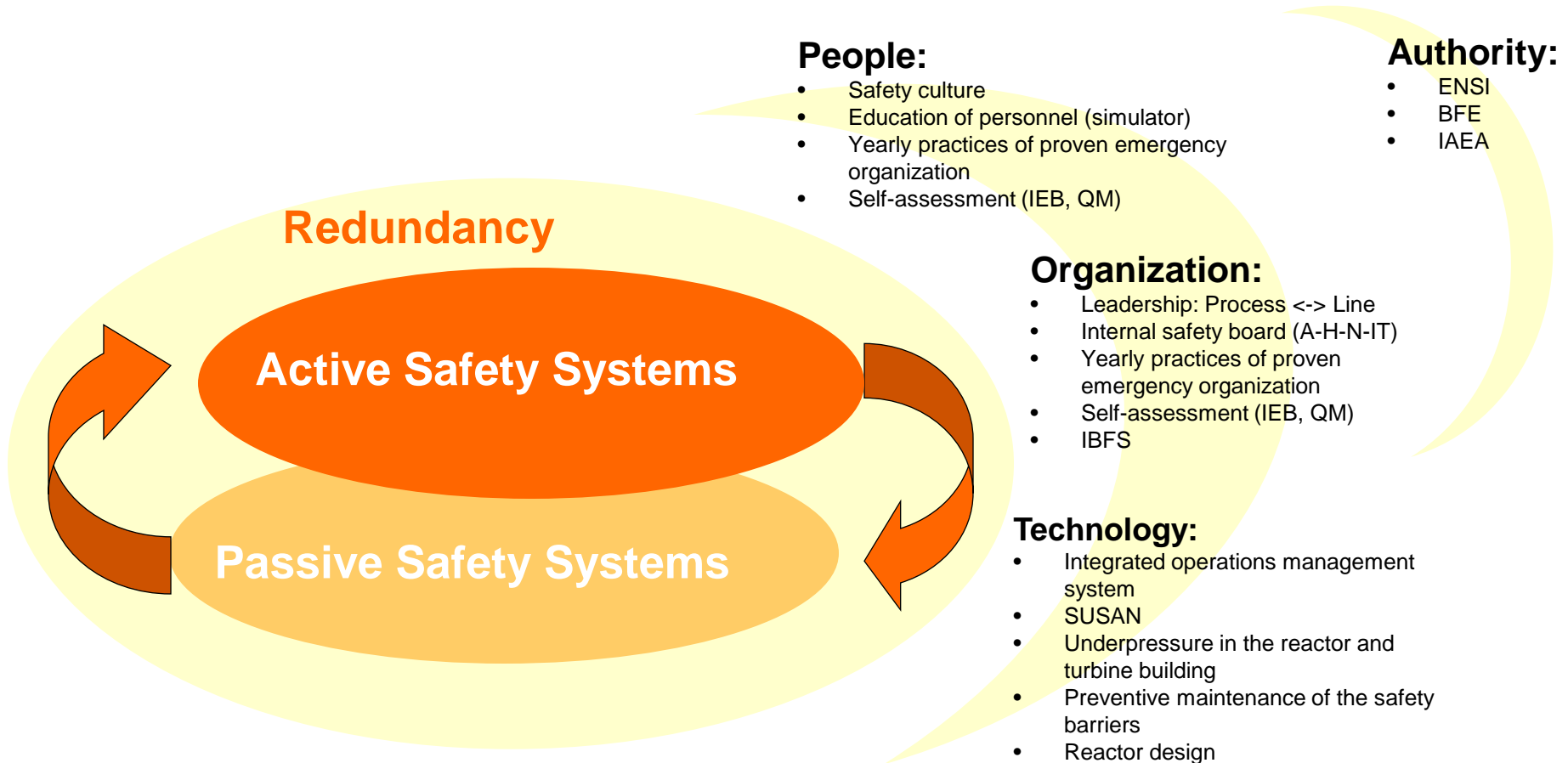
Im Kernkraftwerk Mühleberg (KKM) der BKW FMB Energie AG produzieren wir elektrische Energie für unsere Gesellschaft.

- sicher
- zuverlässig
- umweltschonend
- wirtschaftlich

ihr partner für
Ito1
energy

Plant Status

Safety at the KKM: Key Interactions



Top Priority is the safety of the reactor and the safe containment of radioactive fission products.

Safety Culture, Quality Management, and Assessment

Internal Assessment of Quality Management

