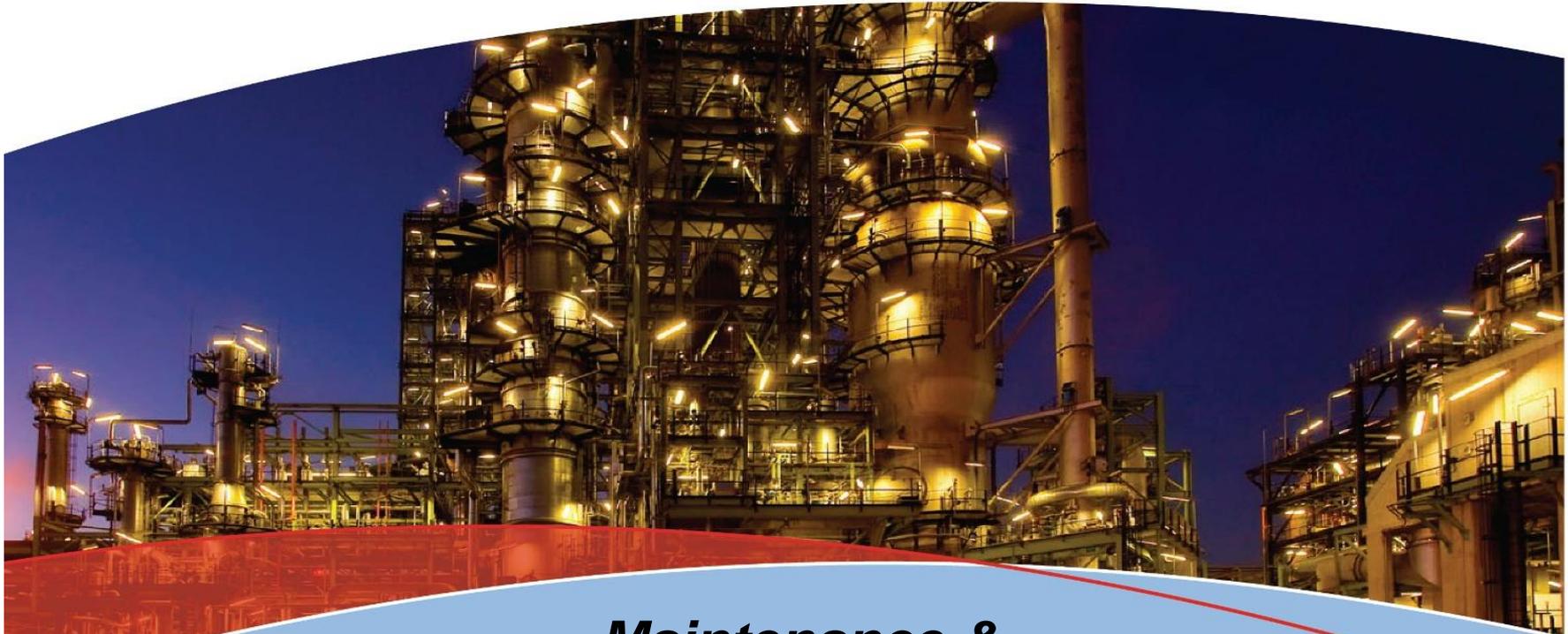


Presentation at the conference
„Global ManuChem Strategies“
organised by
We Conect global leaders GmbH
25.&26. Feb 2013 Berlin

SASOL
reaching new frontiers



Extract

***Maintenance &
Plant Asset Management development
as an element of Operations Excellence***

Dr. Gerd Pösch, Feb 2013

Maintenance & Plant Asset Management development as an element of OE

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Agenda

- **Sasol Olefins & Surfactants / Sasol Limited**
- **Why Maintenance Excellence?**
- **Maintenance Excellence as Element of
Operations Excellence and Plant Asset Management**
- **The first maintenance development plan 7/2007; Main achievements**
- **The Follow up development plan, Highlights / Challenges**
- **Critical success factors**

Integrated **energy and chemicals group** based in South Africa

Established 1950, started operations in 1955 with the **production of synthetic fuels** in Sasolburg, South Africa

Uses the **Fischer-Tropsch process** to convert coal and natural gas into liquid fuels, fuel components and chemical products

Extracts and produces **oil and natural gas**, among others in Gabon, Mozambique and West Africa

Produces and distributes **chemical products** in South Africa, Europe, Middle East, Asia and America

Roughly **34 000** employees in about **38** countries worldwide

Production sites, among others in South Africa, Qatar, Germany, Italy, China, Dubai and the US

Listed on the Johannesburg Stock Exchange (JSE) and the New York Stock Exchange (NYSE)

Continues to advance the **commercialisation of Sasol's gas-to-liquid (GTL) and coal-to-liquid (CTL) technologies**

First International GTL plant started in Qatar in 2007

Canada shale gas acquisitions concluded and field development in progress

Today one of South Africa's **largest petro-chemical companies**

at a glance: Sasol O&S ...

- Produces and markets a **broad range of organic and inorganic products** based on petrochemical and oleochemical feedstocks
- Manufactures **more than 700 products** in five major product lines
 - › Alcohols
 - › Alkylates
 - › Surfactants
 - › Organic intermediates
 - › Inorganic specialities/alumina
- Supplies **more than 3 000 customers** around the world
- Uses more than **17 different production technologies**
- Is organised in a **global functional structure**, comprising of the functions
 - › Operations
 - › Technology & Planning
 - › Two Sales & Marketing divisions: Organics and Inorganics
 - › Legal
 - › Finance and
 - › Human Resources (HR)

Why Maintenance Development ?

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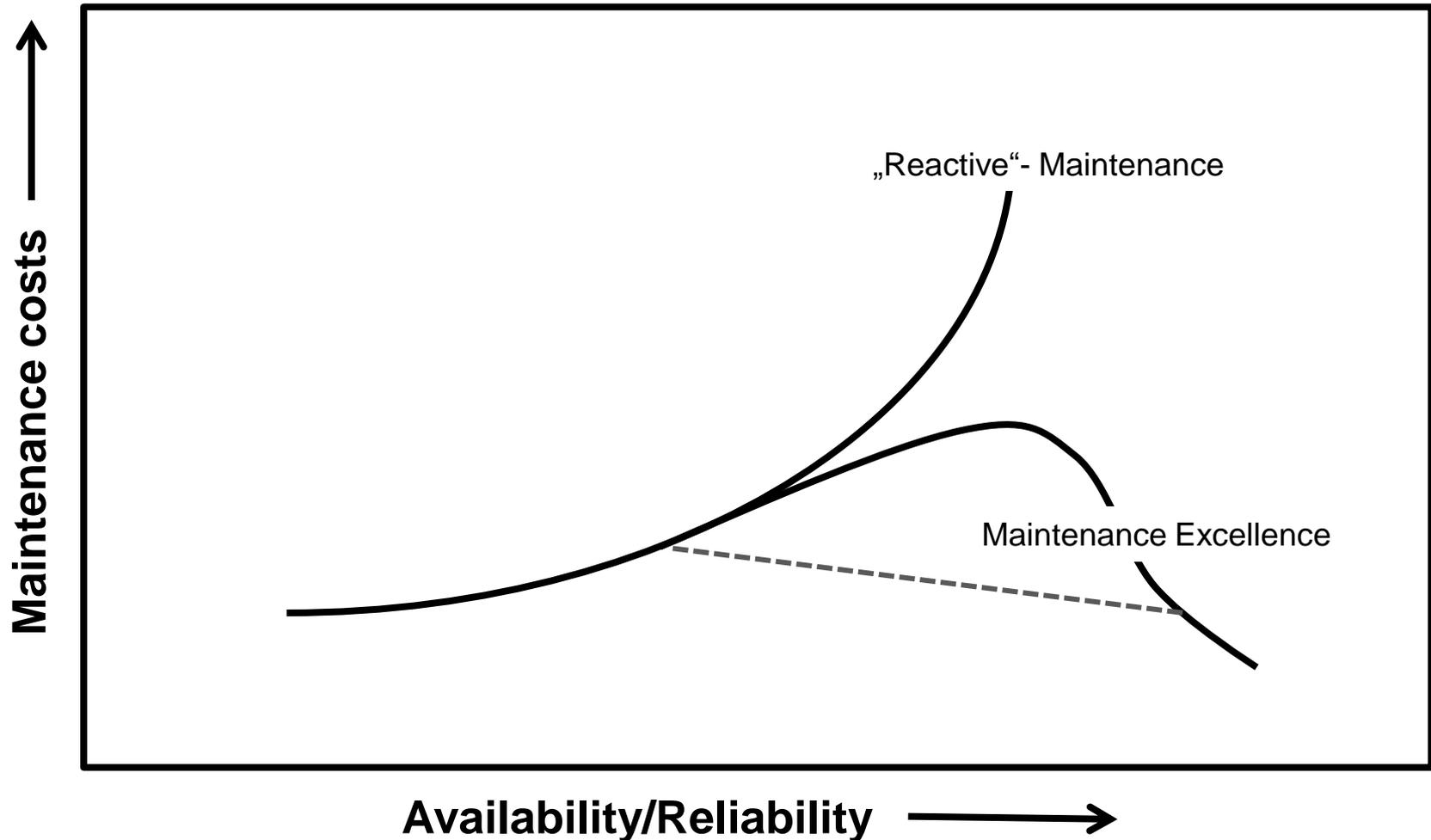


- Objectives:**
- Improved production efficiency
(less planned and unforeseen down times)
 - Improved availability
(shorter down times)
 - Long term cost optimization
(spend the money for the right activities)

The Driving Force :

- **More product volume per period and/or lower costs
increase competitiveness.**

Why Maintenance Development ?



Maintenance as part of Operations Excellence



(Metrics / KPIs & Practices)

The Maintenance Focus in the Sasol OE process:

PLAN

- Show a consistent set of **metrics, goals and long term plans**
- Use continuous and proactive improvement and review processes
- Use planning systems/processes which are actively used for **permanent optimization**

Do

- Demonstrate **production and maintenance work as one team**
- Have a several weeks maintenance planning horizon
- Show that management processes incorporate elements of lean, six sigma, reliability and other high performance tools.

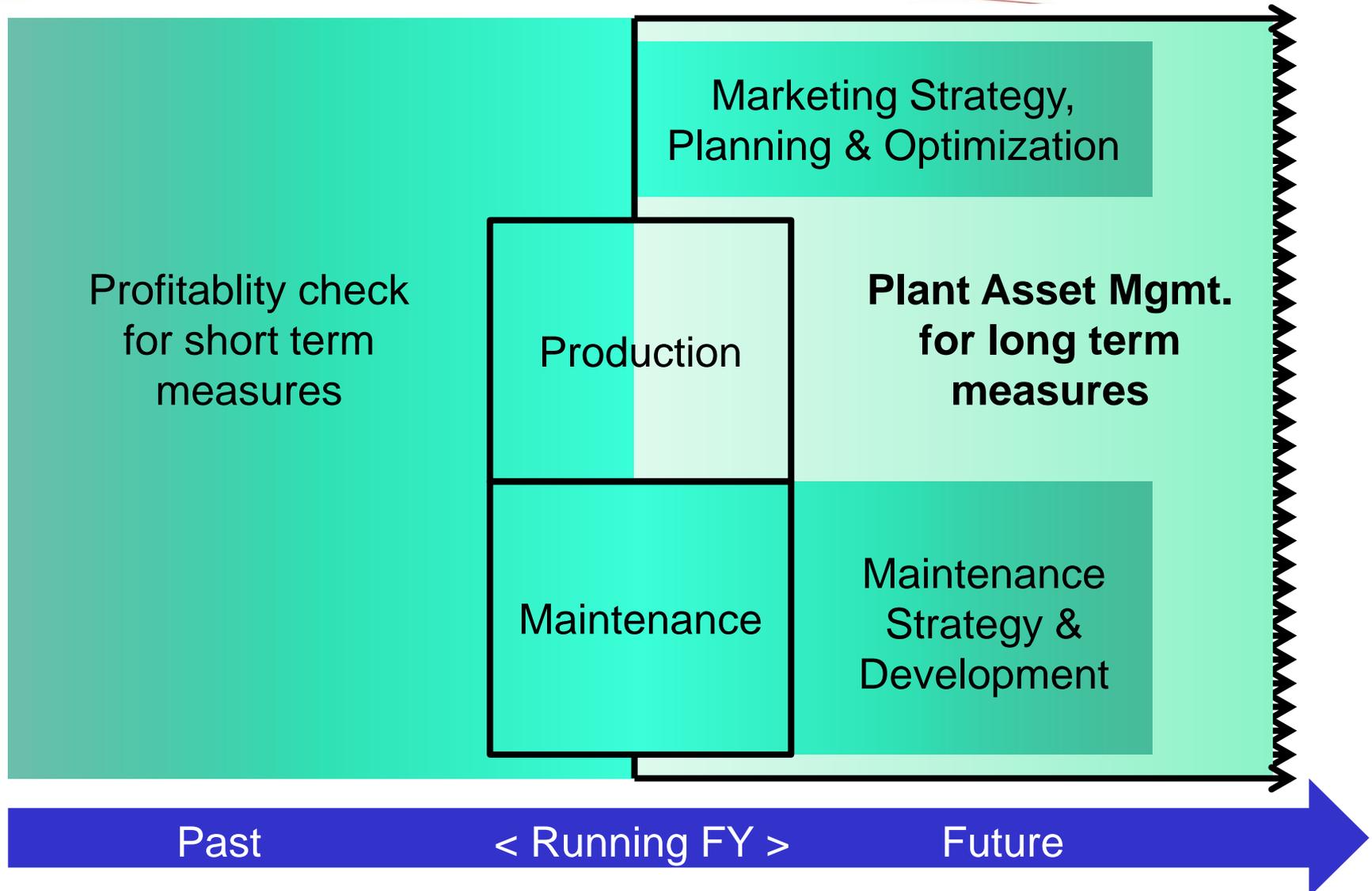
Review

- Show **asset reliability plans**, including shutdowns and preventive maintenance.

Improve

- Show **asset management strategies** are comprehensive and consider all aspects of risk, asset health as well as lifecycle cost evaluations.

Maintenance Strategy as part of Plant Asset Management



Maintenance Strategy as part of the Plant Asset Management

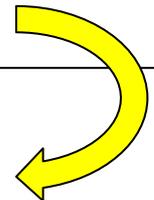


Plant asset management:

- Optimal plant utilization
- Optimal running of the plant (Staffing, education, training etc.)
- Optimization of the plant (Realization of opportunities for existing products; Process technology competitive?)
- Extension of utilization (Realization of opportunities for new products)
- Ensuring cost-efficiency and increasing reliability

Maintenance Strategy & Development with the following systematic approach:

- Analyse the important issues regarding maintenance (metrics & methods)
- Identify the need for actions
- Invest in long term improvements
- Realize measures for short term savings



The first Maintenance Development Plan

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Strategy-Elements (Target: Cost reduction)

- **Improve ordering and accounting quality.**
- **Alternative spare-part purchasing / manufacturing**
- **Increase percentage of planned maintenance work**
- **Improve work planning documentation for frequent orders**
- **Detailed cost reporting for all units**
- **Sensitize production colleagues to cost responsibility**
- **Consequent root cause analysis for failures of rotating equipment /Initiative for MTBF improvement**

**Funding of all activities out of the maintenance budget.
Start with a capital request and follow up costs and incentives.**

Objectives of the Follow Up Development Plan

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- **Best availability of the units**
Tools, Corrosion, Vibration measurement etc.
- **Ensure high quality and efficiency of maintenance work**
Mentoring, Documents, SAP/Comos,
Outsourcing, Plant design
- **Continue: Detailed cost reporting / follow up / discuss;**
RCA routine; MTBF improvements;
Expand buying alternative spare parts.

**Costs will be funded from the individual improvement effects.
Overall cost reduction will follow.**

Critical success factors for a satisfying Maintenance and Plant Asset Management Development Plan

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➤ **The Development and Implementation is a Top-Down Process**

Therefore: All levels of the operations and functions at a site have to buy into the active work or agree on the results.

➤ **It lives from discussion, creativity and enthusiasm.**

Some highly motivated people have to drive the process.

➤ **The result cannot be bought from external companies; It only can be externally supported.**

Therefore: Working time of own people has to be freed up for gaining results in acceptable time periods.

The activities compete with other activities.

There is a likelihood that the process loses momentum.

➤ **The journey is a cross-functional process**

Teams from maintenance and production have to be involved in developing the plan and later execute the measures.

This guarantees the highest possible acceptance from all parties.