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>> PERSPECTIVES_2012

THE FUTURE OF CHEMICAL AND PHARMACEUTICAL PRODUCTION IN GERMANY

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CMF JUNE 19, 2012 – FACILITATED BY DR. MICHAEL REUBOLD, CHEMANAGER

>> MANAGING
SITE RELOCATION.

THE CENTENNIAL TIGER RELOCATION PROJECT

Arno Rockmann
Celanese Group
ACHEMA PERSPECTIVES 2012

The centennial TiGer relocation project

Arno Rockmann

Site Director, Celanese Frankfurt

Frankfurt, June 2011

Agenda

- Celanese, Ticona, POM – process & applications
- Project motivation
- Project milestones & characteristics
- Site selection process
- Challenges
- Project safety performance
- Celanese at Industry Park Höchst

Celanese: A technology and specialty materials company

Celanese
($ in millions)

2011 Revenue: $6,763

Our Core Businesses

Acetyl Intermediates [2]

2011 Revenue: $3,083

- A leading producer of acetyl products

Consumer Specialties [2]

2011 Revenue: $1,158

- A leading producer of acetate products

Industrial Specialties

2011 Revenue: $1,223

- A leading producer of vinyl based emulsions

Adv. Engineered Materials

2011 Revenue: $1,298

Ticona
Performance Driven Solutions™

+ other JV's

- Headquarters: Dallas, TX - USA
- 7,600 employees worldwide

Advanced Engineered Materials: A Global Leader in High Performance Polymers

Ticona Engineering Polymers Portfolio
Hostaform®, Celcon® (Polyoxymethylene copolymer)
GUR® (Ultra-high molecular weight polyethylene)
Fortron® (Polyphenylene sulphide)
Vectra®, Zenite® (Liquid crystal polymer)
Celstran®, Compel® and Factor® (long fiber reinforced thermoplastics)






1,000s Of Global Applications Across Major Industries

Polyoxymethylene (POM) Copolymer

Hostaform® POM and Celcon® POM

Automotive, Consumer, Electrical / Electronics,
Fluid Handling, Medical

POM Manufacturing Process

Celanese

Methanol ← Oil/Gas

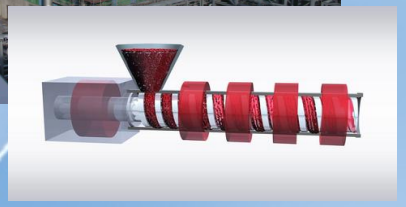
Formaldehyde

Trioxan

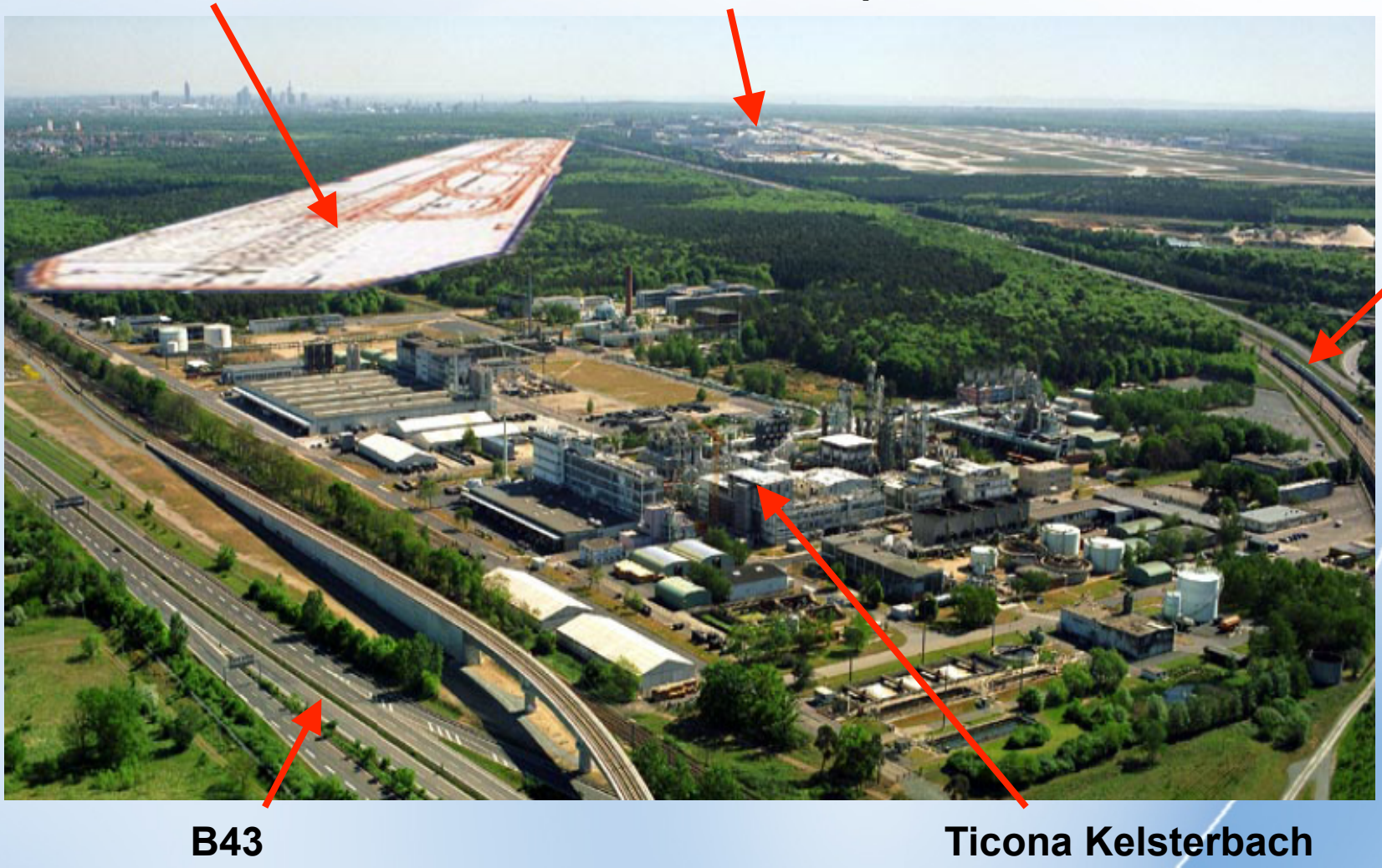
Polymerisation

Compounding

POM / Hostaform®



Project Motivation



Project Milestones

Nov 2006:
- Fraport and Celanese agreed to S/D Kelsterbach site until mid-2011
- Site selection process started

Jul 2007:
- Site selection process completed
- Permit approval process started

May 2008:
- Construction permit received

Sep 2008:
- Ground breaking

End 2010:
- Mechanical completion
- Start functional checks

Jul 2011:
- Trial operations mode
- S/D operations at Kelsterbach

Sep 2011:
- Grand opening ceremony
- Continuous operations at IPH

2006 2007 2008 2010 2011

Milestones

Site Selection Process

- **Starting point:** 56 chemical parks in Germany

  Basic questionnaire:

  - required ground space
  - raw material availability
  - electricity, steam, waste treatment capabilities
  - environmental permit feasibility

- **Principal feasibility:** 8 chemical parks

  Site visits, extended evaluation criteria:

  - period cost
  - energy cost
  - potential subventions
  - infrastructure
  - workforce retention

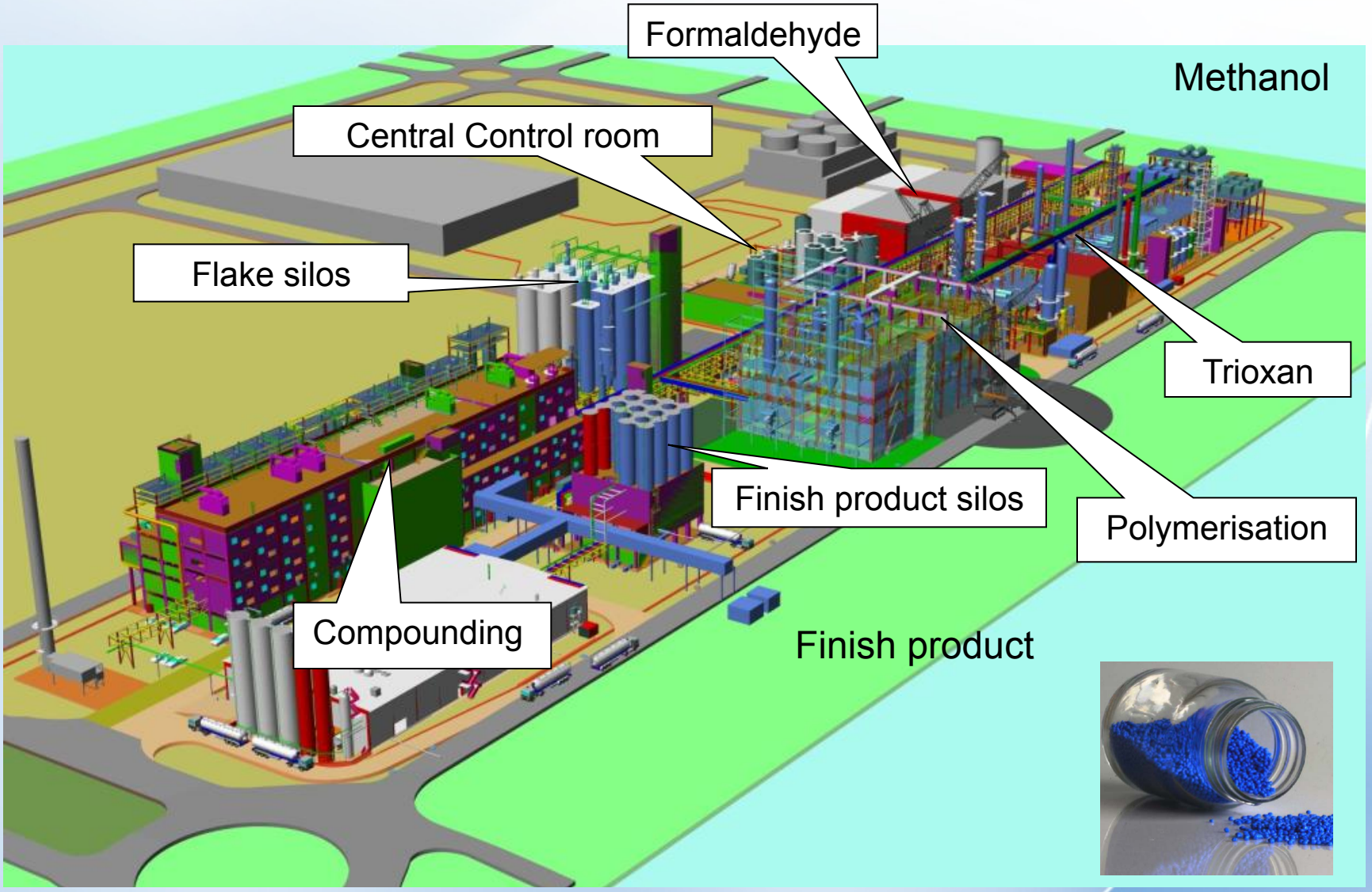
- **Final decision:** Industry Park Höchst (economically most attractive choice)

Source: VCI (German Chemical Industry Association) / Invest In Germany (Federal Investment Promotion Agency)

Project Characteristics

- **One of the biggest engineering projects in the European chemical industry within last 10 yrs:**
  - 3,800 pcs equipment & package unit
  - 82 km pipeline; 800 km cable power & control cable
  - 8,000 tons steel structure
- **Engineering:**
  - Main contractor FLUOR (EPCM) supported by ~ 20 Celanese/Ticona specialists
  - Up to 400 engineers performed ~ 1,0 mm engineering hrs at different locations globally (Haarlem/NL, Gliwice/PL, Frankfurt/DE, Mumbai/IN, Beijing /CN)
- **Construction:**
  - up to 1,200 craftsmen from many European countries (Italy, Germany, Ireland, Belgium)
  - performed ~ 5,6 mm construction hrs on site

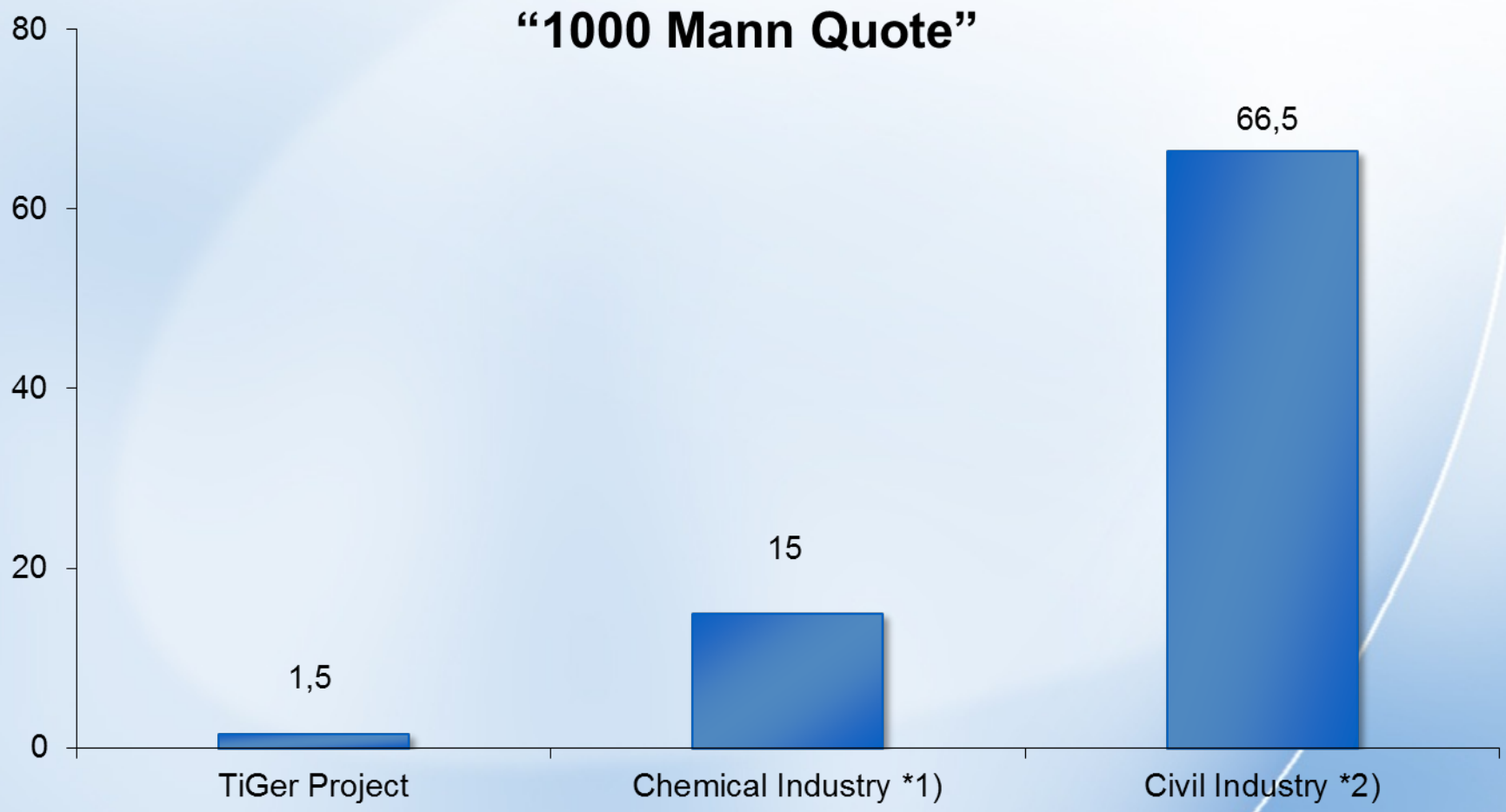
Model View


Formaldehyde
Methanol
Central Control room
Flake silos
Trioxan
Finish product silos
Polymerisation
Compounding
Finish product

Challenges

- **The right inventory to bridge transition:**
  - 2,000 products, change in product mix and volume over time
  - Quick recovery in demand after economic slow down end of 2008
  - Product re-qualification lead time (automotive: 0.5 yrs, medical 2-3 yr.)
- **Tremendous resource requirements:**
  - Manpower for Engineering, Know how transfer, Construction & supervision
  - Material demand and logistics
  - Overall strong resource demand because of economic recovery
- **Safety:**
  - During peak times ~ 1,200 people working in parallel on site
  - Multiple languages

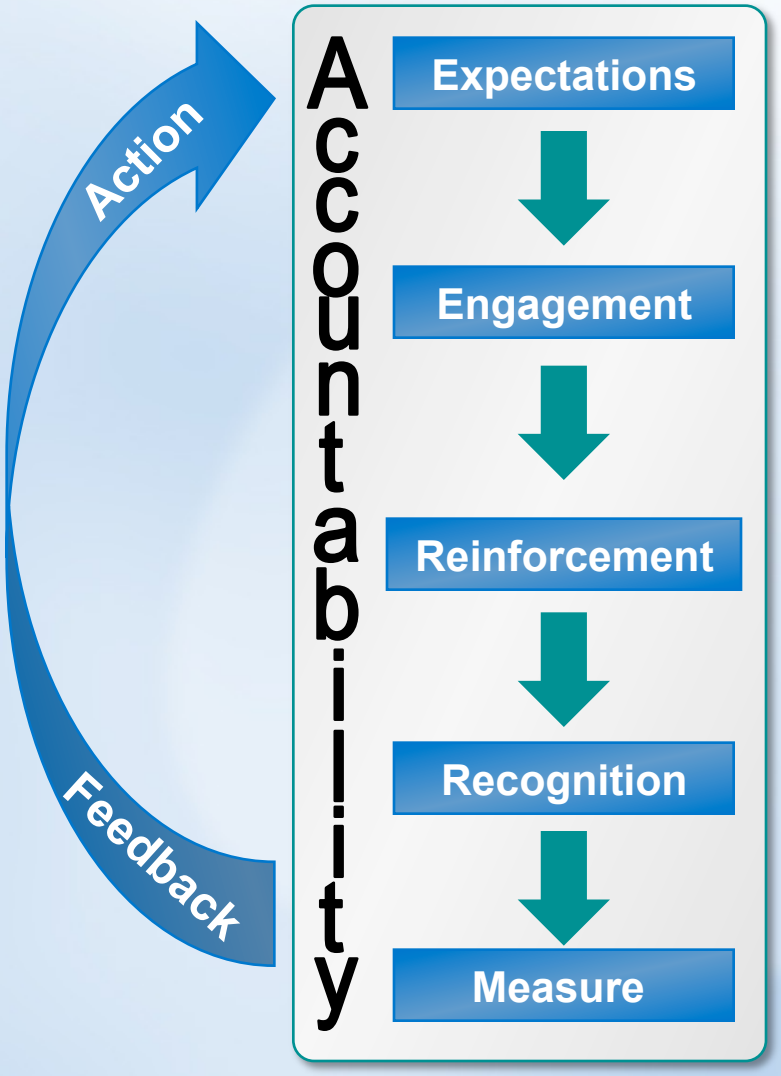
The TiGer Safety Performance



*1) Source: Jahresbericht BG RCI 2010;
*2) Source: Jahresbericht BG RCI 2010

The TiGer Safety Tools

Celanese



- One.Safety team incl. all contractors
- Intensive training

- Morning mass HSE meeting
- Pre-Task planning
- Knowledge centers
- Weekly “1 on 1” contractor management mialog
- Awareness (Signage, Slogans, Posters)
- Field safety demonstrations
- Recognition on the spot
- Monthly lottery
- Weekly management walk-arounds
- Safety observations cards

Leadership is key for success

Celanese at Industry Park Höchst

- Currently biggest Celanese site worldwide
- ~ 1,000 employees
- ~ 650.000 tons/yr. production volume
- Celanese businesses at site:

Acetyl Intermediates	**Basic chemicals:** VAM, Acetaldehyde, Plasticizer & Solvents, Esters/Specialities
Consumer Specialties	**Nutrinova**: Sunett, Sorbates
Industrial Specialties	**Emulsions Polymers:** VAE & conventional Emulsions, global reasearch
Adv. Engineered Materials	**Ticona:** POM, Technical Services, Technology & Innovation

Celanese

Thanks for listening!