

PRESENTATION TO:

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**Oil Shale Technology Status -
First ATP System for FMG Completes Construction**
Colorado School of Mines, 30th Oil Shale Symposium



Agenda

- Corporate Introduction
- FMG Project Update
- JEML Project Update
- Oil Shale Services
- Questions

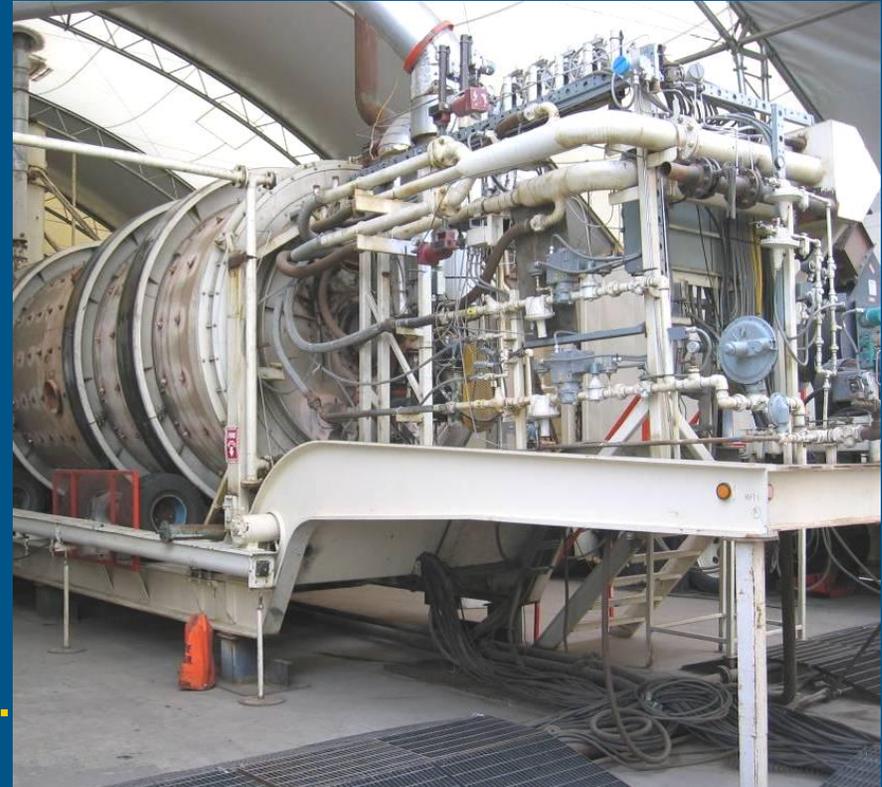
UMATAC Industrial Processes

Overview:

- Alberta Taciuk Process (ATP).
- A company of Polysius AG.
- Laboratory, pilot plant facility.
- Engineering office.

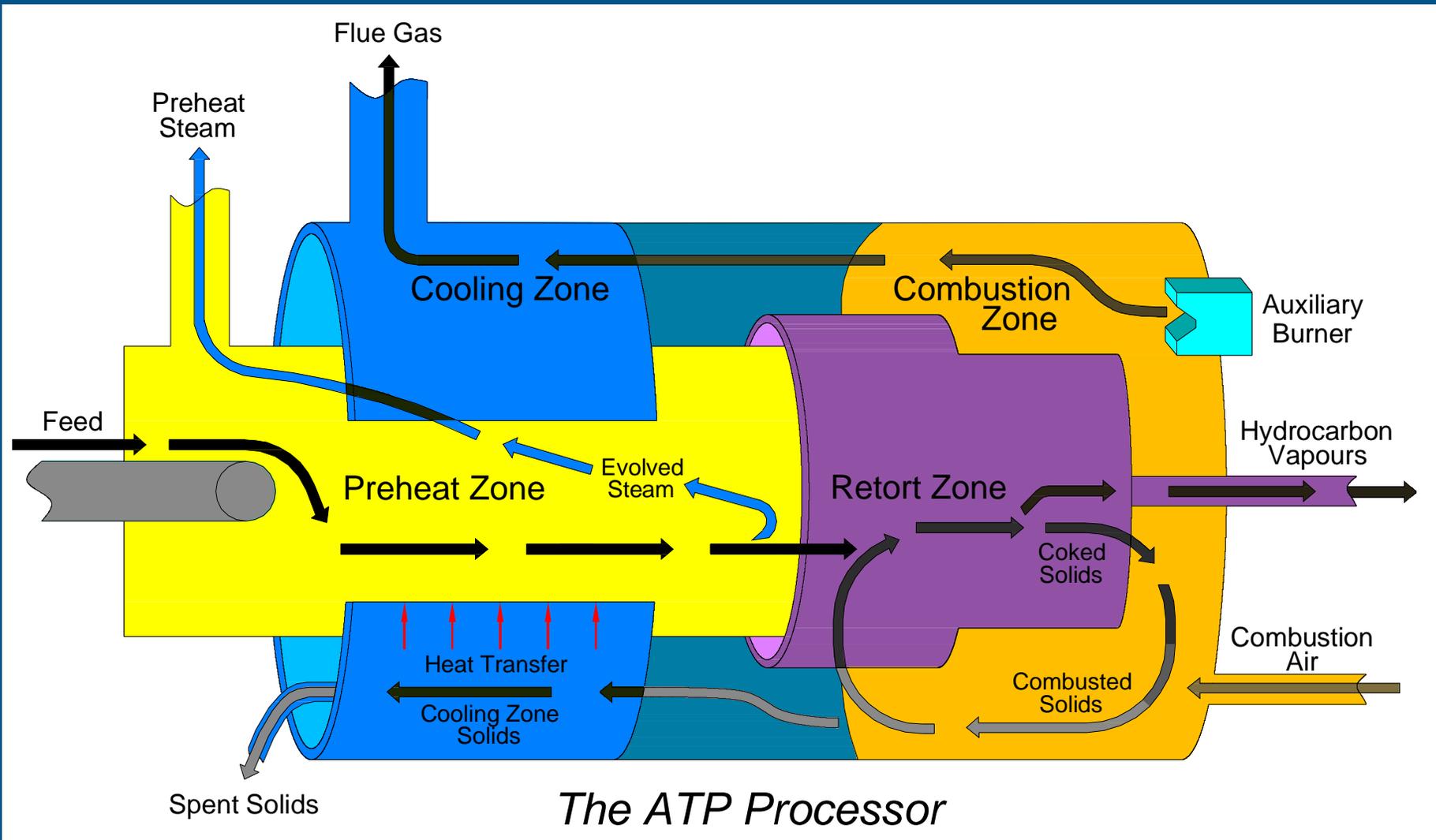
UMATAC and Polysius Offer:

- Complete ATP project engineering.
- Oil shale and oil sand ore evaluations.
- Process and mechanical engineering and equipment supply.
- Collaboration with ThyssenKrupp Technologies Companies (eg. Uhde, Fördertechnik).



ATP60 Pilot Plant

ATP Processor



ATP Technology – Demonstrated Advantages

ATP Designed to Process Fine Oil Shale

- Complete utilization of ore resource

ATP Produces High Oil Yields

- Full recovery

ATP Recovers Heat From Combusted Solids and Gases

- High thermal efficiency

ATP Produces a Concentrated Hydrocarbon Vapour Stream

- Minimum hydrocarbon recovery system size
- Straightforward hydrocarbon separation and recovery

ATP Produces a High Heating Value Fuel Gas

- Fuel gas is a high value product

ATP Technology – Demonstrated Advantages

ATP uses Residual Coke as Process Fuel

- Effective utilisation of kerogen by-products

ATP Processor Operates at Atmospheric Pressure

- Inherently safe process

ATP Uses Solids for Heat Transfer

- High processing capacity per ATP Unit
- Stable process operation

ATP Flue Gases and Ash Always Separated from Pyrolysis Products

- Good environmental performance
- Uses standard flue gas treatment technologies

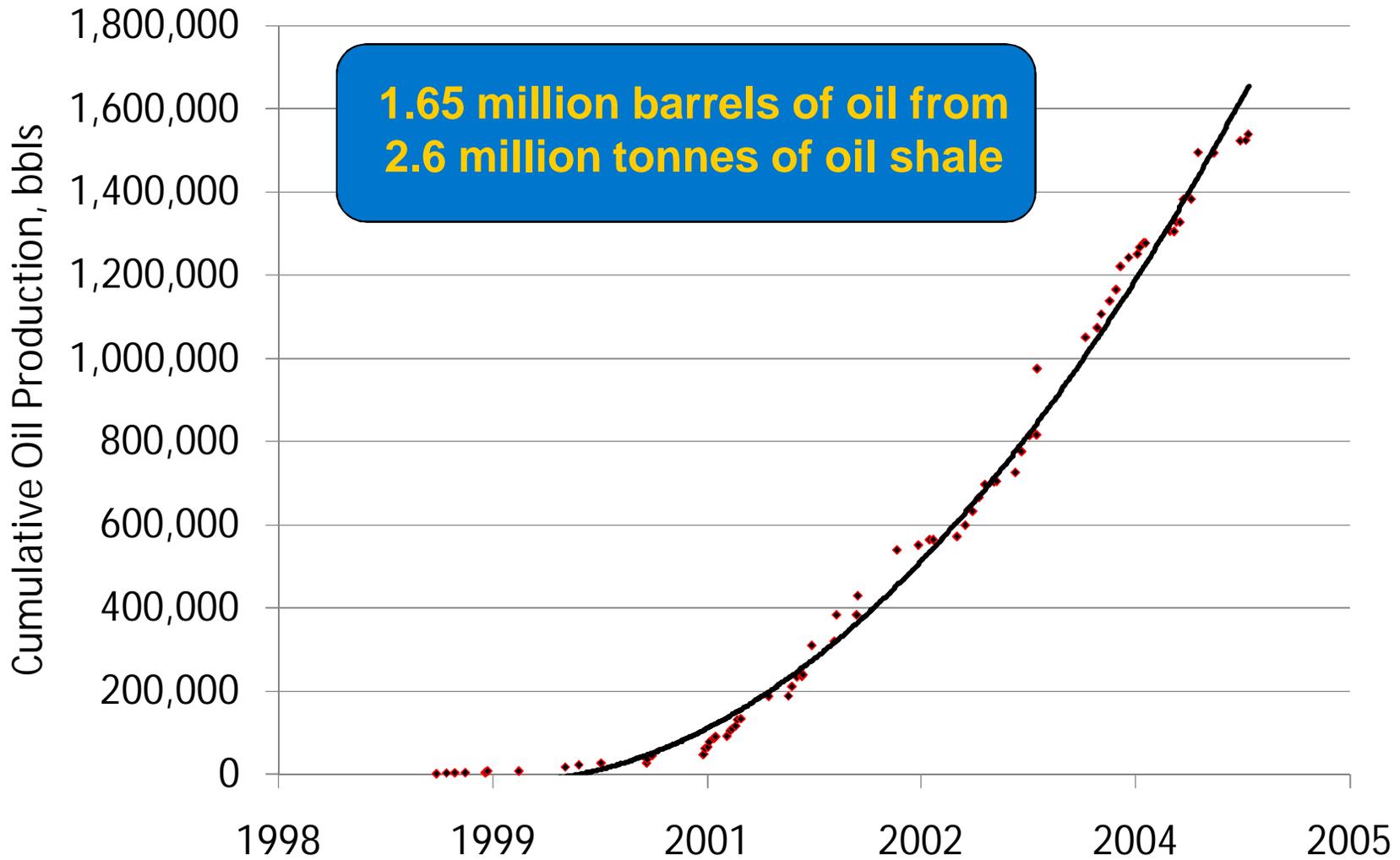
ATP Processor uses Proven Heavy Rotating Machine Design

- High reliability and mechanical availability

Australia - Stuart Demonstration Project



Stuart Oil Shale Demonstration Project Cumulative Oil Production



China - FMG Project Update



China – FMG Project Update

First of planned multiple train development

UMATAC and Polysius

- Process design
- Supply of ATP Processor key mechanical components
- ATP Processor detail mechanical engineering
- Technical advisors during construction and commissioning
- Training

Fushun Mining Group

- Owner, Project Manager, Procurement, and Plant Operator
- Coordinated detailed engineering by local engineering firm
- Coordinated construction by local construction firm

FMG Project Update - Mechanical Completion 2010



FMG Project Update - Key Component Fabrication



FMG Project Update - Field Welding and Fabrication



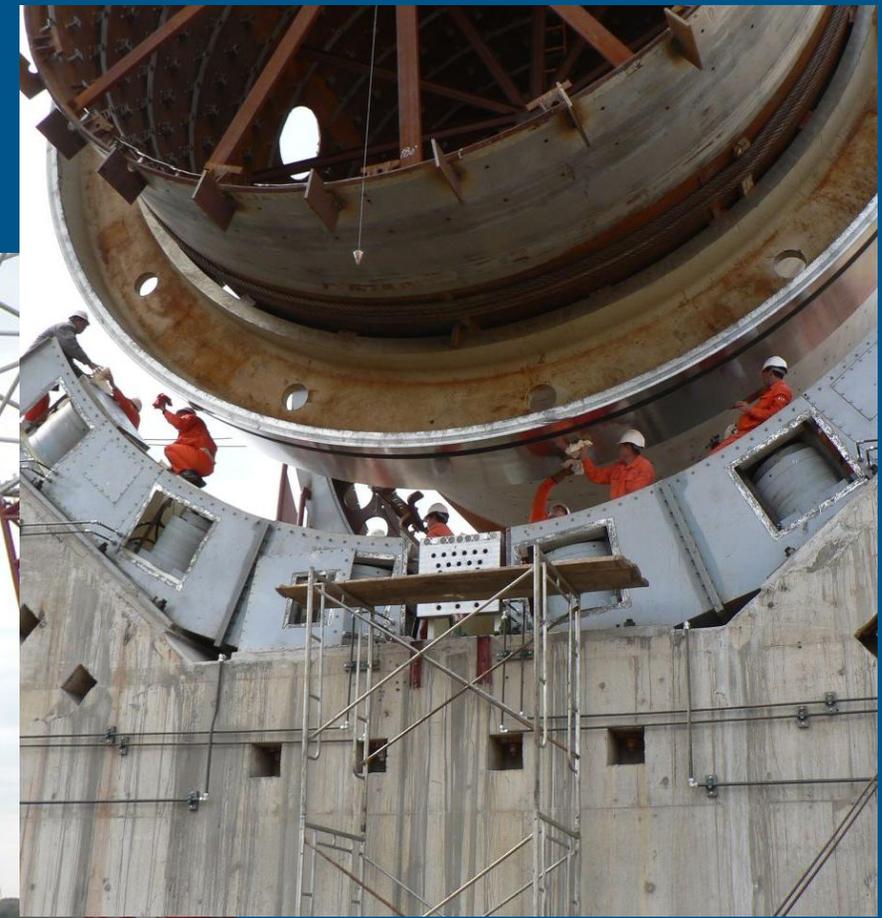
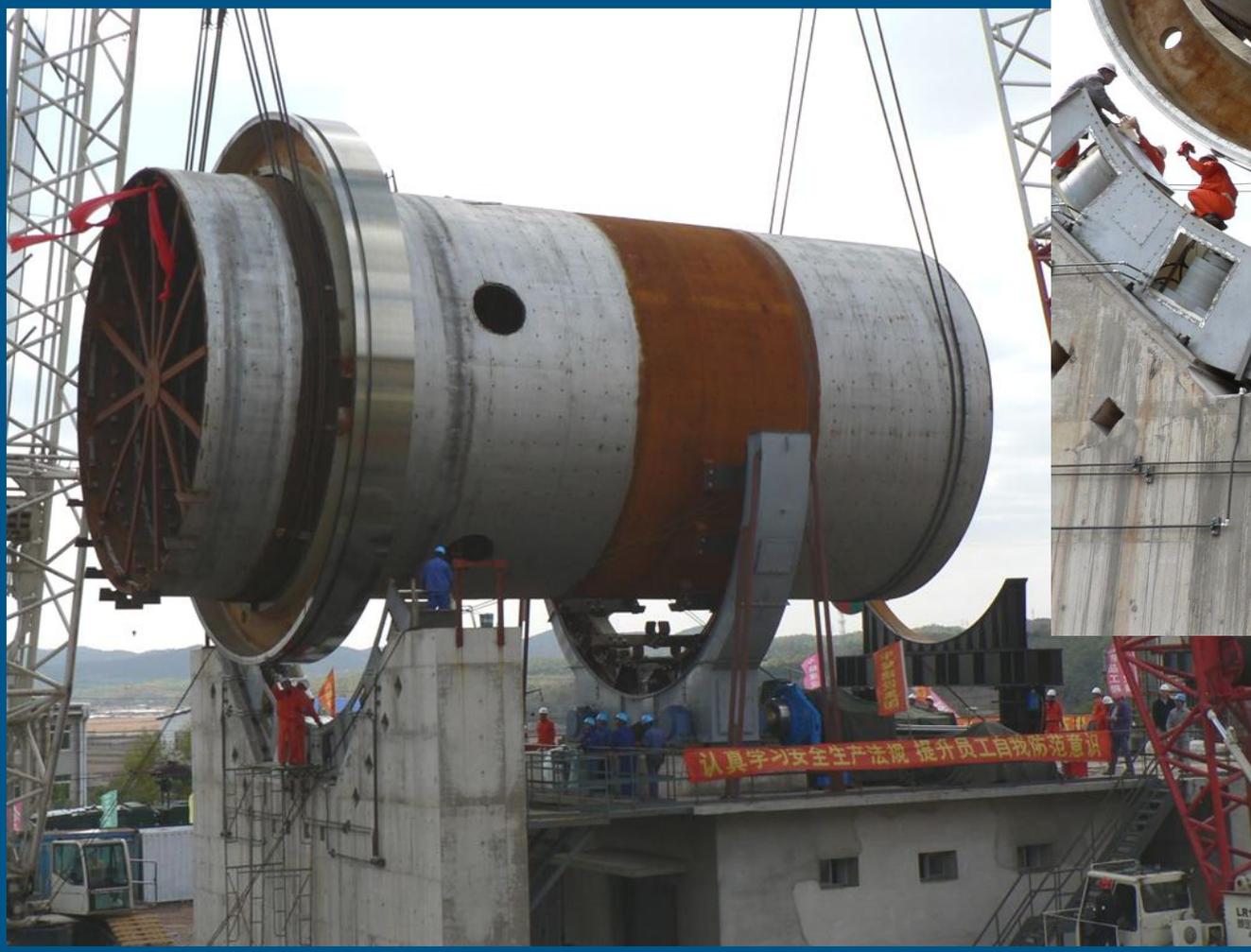
FMG Project Update – a bit of fun also



Every day in China is an adventure!

FMG Project Update

Heavy Lifts



FMG Project Update



ATP Processor & Flue Gas System



HC Vapour Handling System

FMG Project Update - Training

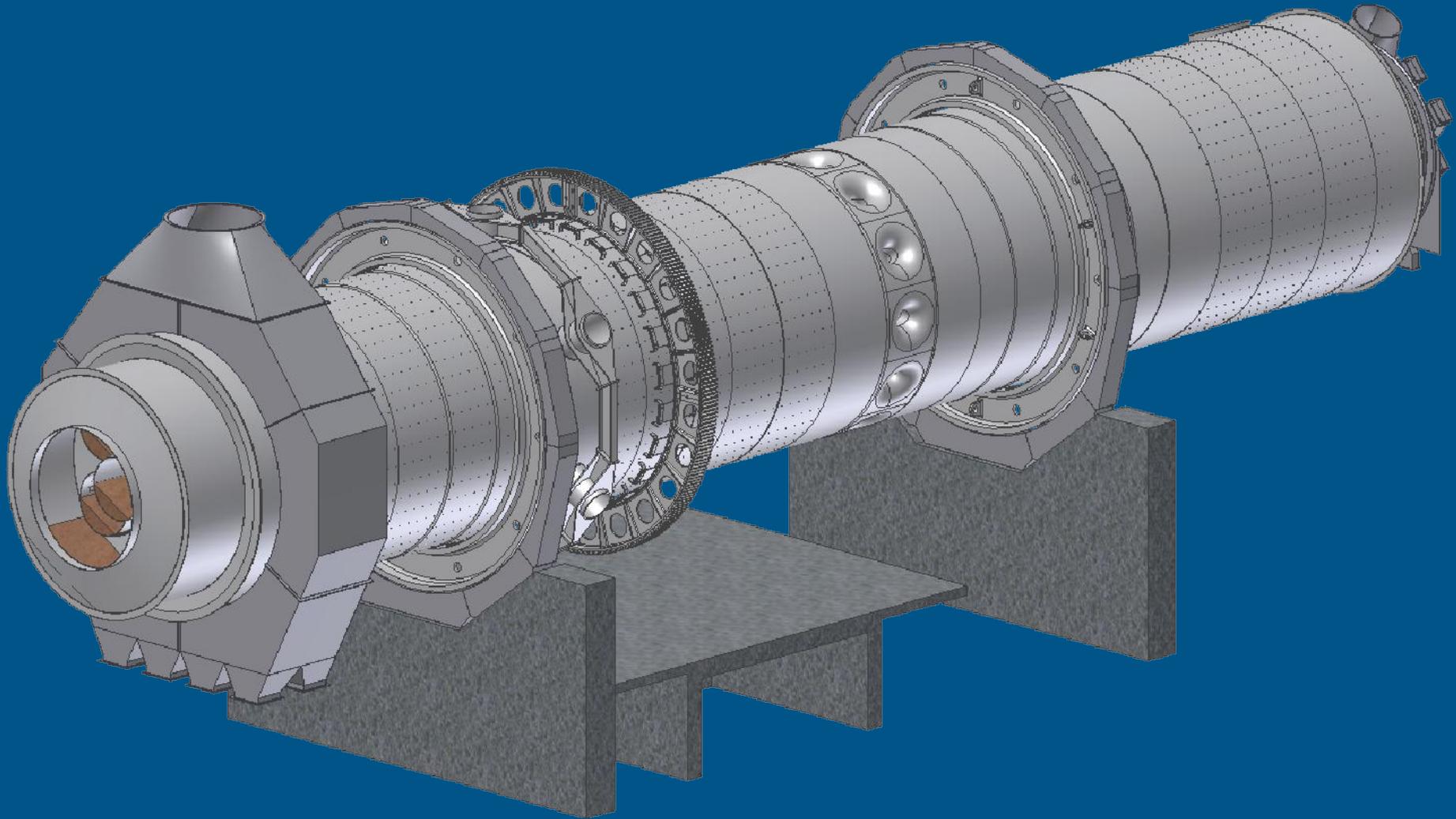


FMG Project Update – Life as a Commissioning Engineer



Jordan - Jordan Energy and Mining Ltd. Project Status

Oil Shale – 15,000 bbl/d ATP plant



JEML (Jordan Energy and Mining Ltd.) Project Status

Two 500 t/h ATP Processor Trains

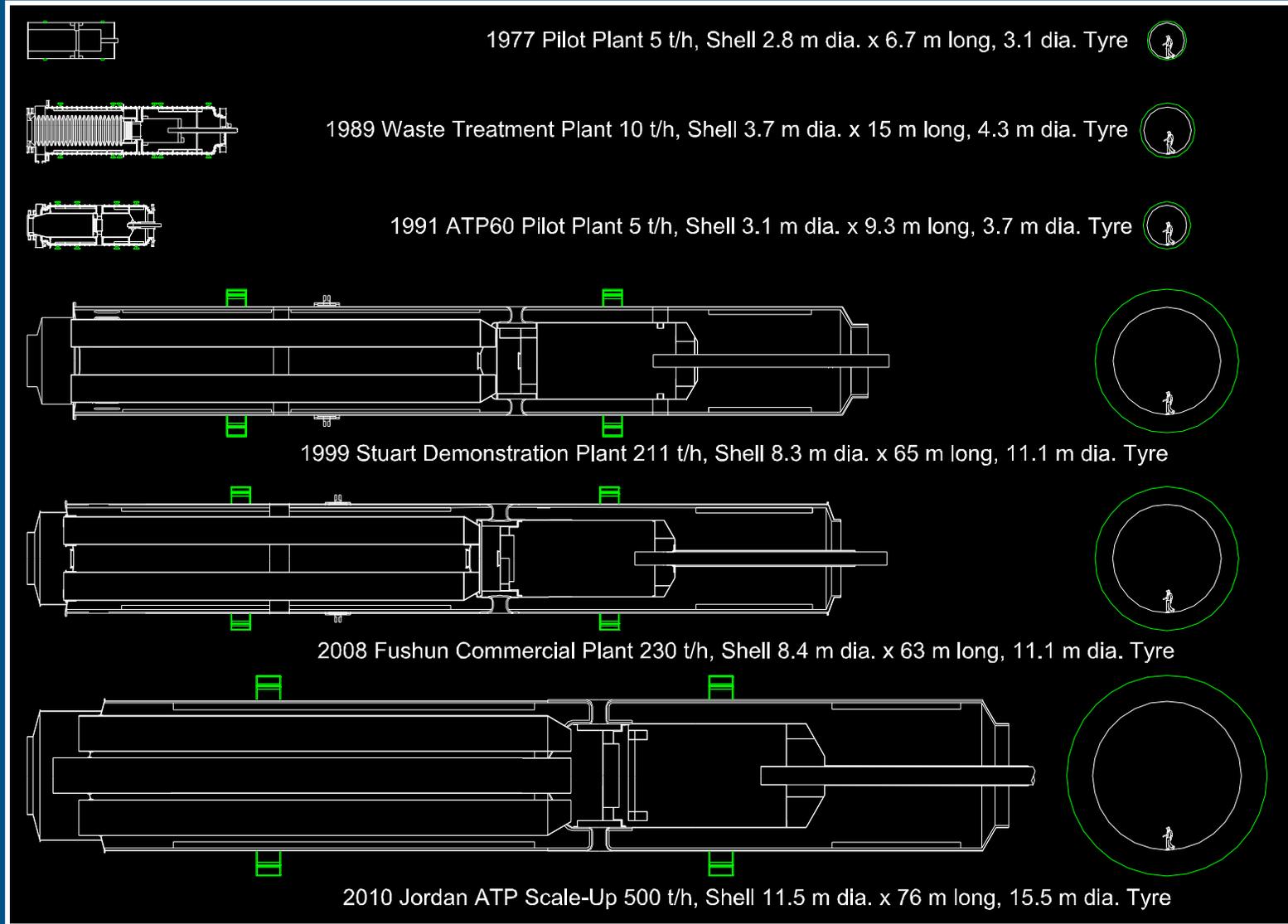
- ✓ ATP60 pilot testing program completed.
- ✓ Preliminary engineering completed.
- ✓ ATP System feasibility study inputs completed.
- ✓ Feasibility study, a multi-party effort, completed in 2009/2010.

Oil Shale Upgrader & Power Plant

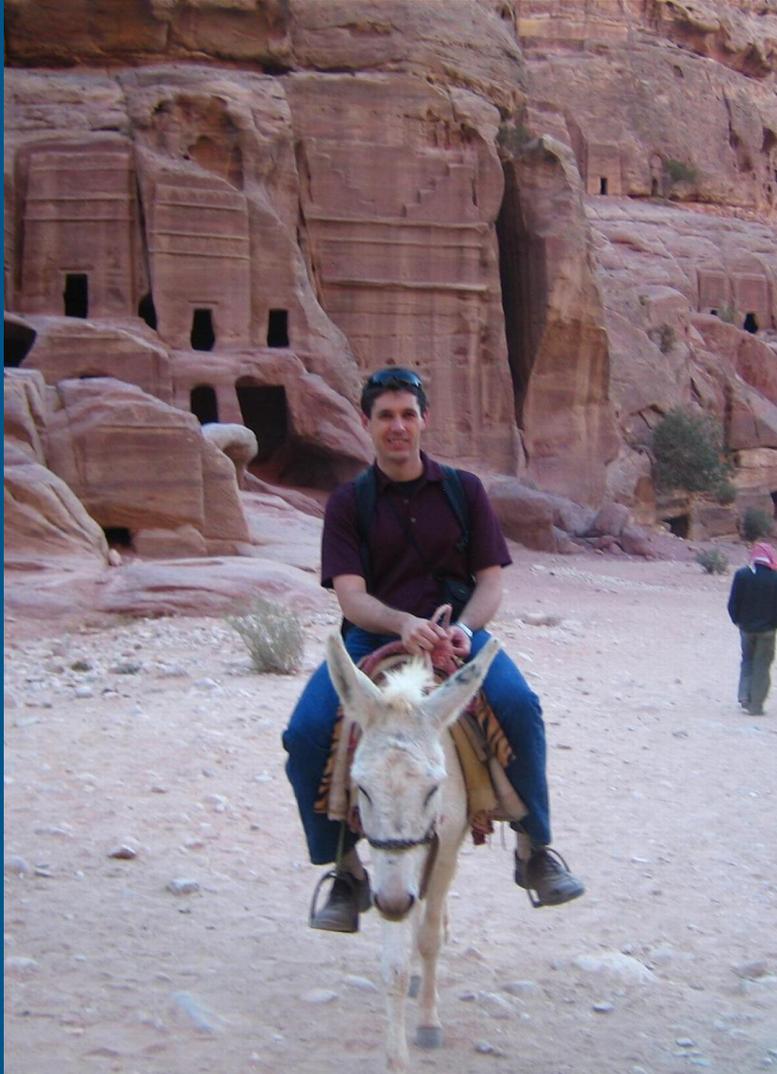
- ✓ Hydrotreating pilot testing completed by two licensors.
- ✓ Product quality options – SCO or finished transport fuels.
- Gas turbine power plant powered by excess off gas - electricity self-sufficient plant.

**Feasibility Study Completed.
Ready to move to FEED and detailed engineering.**

ATP Processor Scale-Up 1977 to 2010



Jordan – **Hardly** Working



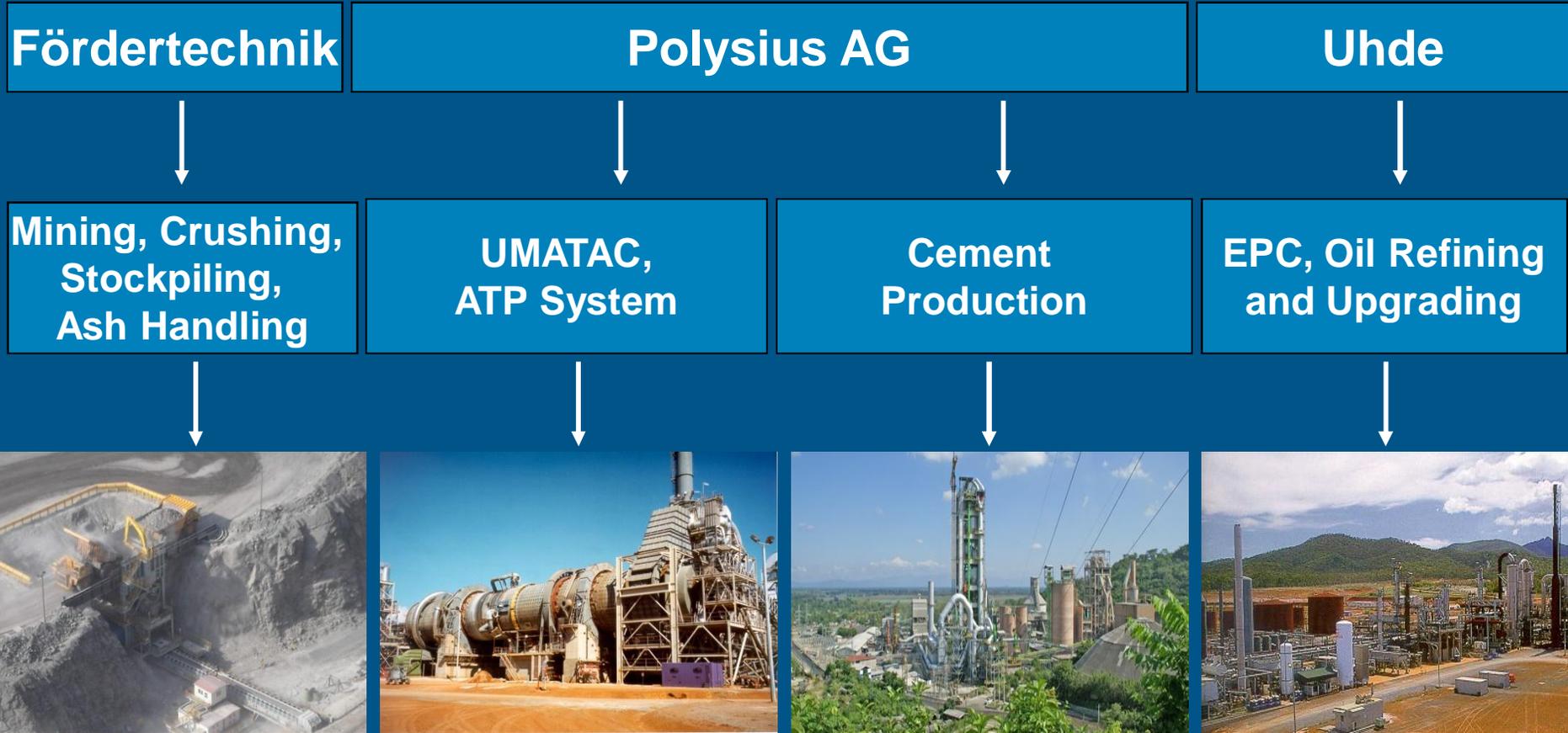
Oil Shale Processing – Scope of Services

ATP Technology Services

- Supply of ATP technology.
- Evaluation of oil shale and oil sand ores.
- Engineering studies and services.
- ATP pilot plant testing.
- Testing of shale ashes for use in cement production.
- Supply of ATP plants.

ThyssenKrupp Technologies Group (TKG) for Oil Shale

TKG – Plant Technology





谢谢 Thank You شكرا
Vielen Dank

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