TWO-DAY PROGRAMME - LYON - THURSDAY 8 AND FRIDAY 9 APRIL 2027

# Chemical EOR, to the Point

From screening to a go/no-go decision, in two days

## The two days at a glance

Two days to take a chemical EOR idea from “worth a look” to a go/no-go decision. Thursday is about deciding what is worth testing. Friday is about deciding and deploying.

25 participants maximum, one room. About half of each day is spent working on numbers, on your own field or on a dataset we provide. Friday starts with a 30-minute summary of Thursday, for those joining on Day 2.

| Day | Session | Question | You leave with |
|---|---|---|---|
| **1** | 1. Why EOR lags | Polymer flooding works. Why is it still not applied on your field? | The obstacles that apply to your asset |
| **1** | 2. Diagnosis and conformance | Is the water coming from the flood or from a thief zone? | A diagnosis path from production plots to treatment type |
| **1** | 3. Screening with updated criteria | Which fields were rejected for the wrong reasons? | A screening verdict on four fields, and a step-by-step workflow |
| **1** | 4. Build your lab from the field | Which field data do you need before starting lab work? | The field values that set your lab conditions |
| **1** | 5. Lab tests: what is relevant | Which lab tests change the decision? | The tests that matter for your case, and their limits |
| **2** | Day 1 in 30 minutes | Summary of Thursday | The same starting point for everyone |
| **2** | 6. Go or no-go with economics | At what cost per barrel does the project stop paying? | A simplified break-even you can rerun with your own numbers |
| **2** | 7. Pilot design | How do you design a pilot that gives a clear answer? | Guidelines for KPIs, well selection, statistics and control |
| **2** | 8. Simulation and injectivity | How do lab results get into the simulator, and where does it go wrong? | An overview of the simulation workflow and its weak points |
| **2** | 9. Field deployment, monitoring and reservoir response | Injection has started. What do you measure, and when? How does polymer affect production? | What to measure, when, and what each result means for the decision |
| **2** | 10. Using AI to ease your analysis | How can AI speed up your analysis without replacing engineering judgment? | A reusable AI workflow and prompt library for screening, data interpretation and decision support |
| **2** | Closing call | Go, pilot or no-go? | A decision on the capstone field |

# Day 1, Thursday 8 April: decide what is worth testing

By the end of Thursday, you have a waterflood diagnosis, a screening verdict and a lab plan for your own asset.

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| **08:30** | Arrival and coffee |
| **09:00** | **Welcome and opening (15 min)** |
| **09:15** | **Session 1. Why EOR lags (60 min)** |
| **10:15** | Break (20 min) |
| **10:35** | **Session 2. Diagnosis and conformance (85 min)** |
| **12:00** | Lunch (60 min) |
| **13:00** | **Session 3. Screening with updated criteria (90 min)** |
| **14:30** | Break (20 min) |
| **14:50** | **Session 4. Build your lab from the field (60 min)** |
| **15:50** | **Session 5. Lab tests: what is relevant (70 min)** |
| **17:00** | **Wrap-up and preview of Day 2 (15 min)** |
| **17:15** | Close |
| **19:30** | Networking dinner, included with two-day tickets |

## Session 1. Why EOR lags

Polymer flooding has worked at field scale for decades, yet most fields that could use it have never had a pilot. The reasons are rarely technical.

- **Primary, secondary, tertiary.** EOR is still seen as the third step, started once the waterflood is over. By then the water cut is high, the facilities are old and the budget has gone elsewhere. Polymer gives more when it starts earlier.
- **Value for money.** Cost per incremental barrel, polymer use in kg per incremental barrel, and what the project must earn compared with other uses of the same budget.
- **Organization.** EOR sits between reservoir, production, facilities and procurement. A pilot without a clear owner does not move forward.
- **Where it works.** China, Oman, Argentina, Alaska and others: what these places have in common.

## Session 2. Diagnosis and conformance

Most excess water problems are misdiagnosed. Diagnosis comes before any treatment, and before any polymer project.

- **Diagnosis.** Water-oil ratio plots and Chan plots to tell channelling, coning and layered breakthrough apart.
- **Problem types.** Sorted by whether the answer is a mechanical fix, a gel or a change in flood design.
- **Treatments.** Mechanical shut-off, near-wellbore gels, preformed particle gels for fractures and channels, and the cases where the right answer is to do nothing.
- **Link to polymer flooding.** When a thief zone defeats a polymer flood, and when the flood itself is the conformance treatment.

## Session 3. Screening with updated criteria

Screening goes wrong in two ways: the criteria, and the workflow.

- **Criteria.** The classic tables were built on the projects of their time. Field results have moved the limits since, and many fields were rejected on rules that no longer apply.

- **Workflow.** Going to simulation too early, with unchecked inputs and a poor understanding of how the polymer behaves in the reservoir, leads to wrong conclusions in both directions.
- **Where polymer helps.** When there is a contrast: an unfavorable mobility ratio between water and oil, or a permeability contrast between layers. Without a contrast, the gain from polymer is small.
- **A step-by-step workflow.** Reservoir and fluid data, then mobility and permeability contrast, then target viscosity, then injectivity check, then polymer stability (temperature, salinity, hardness, oxygen), then a first economic estimate. Each step can either stop the project or send it to the next stage.

## Session 4. Build your lab from the field

Start from the field and work back to what the lab has to reproduce.

- Field data first: injection water analysis at the wellhead, reservoir temperature, permeability range, injection rate per well.
- From rate and completion, calculate velocity and shear rate at the sand face and deep in the reservoir, then the viscosity the polymer needs in the reservoir.
- From that viscosity, choose polymer type, molecular weight and concentration.

Bring your own field data if you can. If not, we provide a dataset.

## Session 5. Lab tests: what is relevant

Which tests matter, and what each one can and cannot tell you.

- **Tests that matter.** Rheology at reservoir temperature and salinity, filterability, coreflood injectivity at field rates, retention and inaccessible pore volume, mechanical and long-term thermal stability.
- **Residual resistance factor.** Only meaningful with the right protocol. Read as damage during injection, which changes how injectivity is interpreted.
- **Limitations.** Lab cores, rates, pressures and test durations are far from field conditions. Some effects only appear near the wellbore or after months of injection. What lab results can be used for, and where to be careful.

# Day 2, Friday 9 April: decide and deploy

Friday takes a project that passed screening through the economics, the pilot design, the simulation approach and the monitoring plan, and shows where AI can save time along the way.

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|---|---|
| 08:30 | Arrival and coffee |
| 09:00 | **Day 1 in 30 minutes** |
| 09:30 | **Session 6. Go or no-go with economics (75 min)** |
| 10:45 | Break (20 min) |
| 11:05 | **Session 7. Pilot design (75 min)** |
| 12:20 | Lunch (60 min) |
| 13:20 | **Session 8. Simulation and injectivity (60 min)** |
| 14:20 | **Session 9. Field deployment, monitoring and reservoir response (75 min)** |
| 15:35 | Break (20 min) |
| 15:55 | **Session 10. Using AI to ease your analysis (40 min)** |
| 16:35 | **Closing call on the capstone field (30 min)** |
| 17:05 | **Feedback and close (15 min)** |
| 17:20 | End |

## Day 1 in 30 minutes

A one-page summary of each Thursday session, so participants joining on Friday start from the same base as everyone else.

## Session 6. Go or no-go with economics

Three numbers drive the decision: polymer utilization (kg per incremental barrel), delivered polymer price and oil price.

- **Cost per barrel.** Polymer cost per incremental barrel, plus injection, water handling and treatment of produced polymer.
- **Optimization.** What brings the cost per barrel down: conformance treatment before polymer, concentration and slug size, injection strategy, pattern choice.
- **Carbon and water.** Less water injected and handled per barrel of oil, and lower CO2 per barrel. How to include both in the economics.
- **The decision tree.** No-go, go to pilot, or go to field scale, with the pilot priced as the cost of information.

## Session 7. Pilot design: KPI, selection, statistics, control

Decide before injection what success looks like: which KPIs, which thresholds, and how long to wait. All of it fits on one (big) page.

- **KPI.** Injectivity index, polymer viscosity at the wellhead and at the sand face, water cut and oil rate versus the baseline, polymer in the produced water.
- **Well selection.** An isolated pattern or fault block with a known connectivity or waterflood history.
- **Statistics.** How big the oil response must be to stand out from normal production variations, and how many wells and months that takes.
- **Control.** A control pattern or a pre-pilot trend, plus a tracer baseline.
- **Geology.** Separate a polymer problem from a reservoir problem, so a poor result is not blamed on the chemical when the geology is the cause.

## Session 8. Simulation and injectivity

An overview of how lab results go into a simulation model, and why polymer injectivity is often under-predicted.

- **Workflow.** From lab data to model inputs (viscosity, shear behavior, adsorption, inaccessible pore volume, residual resistance factor, degradation), then a near-wellbore model, a match on injectivity, and the field model.
- **Where the error comes from.** The lab, the near-wellbore region and the simulator itself.
- **Simulators.** What the main commercial simulators can and cannot represent for polymer.

## Session 9. Field deployment, monitoring and reservoir response

What to measure in the first week, the first quarter and the first year, and what each measurement means for the decision to continue.

- **Start-up.** Wellhead quality control, viscosity at the wellhead versus the sand face, shear at chokes and pumps, oxygen and iron.
- **Injection side.** Injection pressure versus fracture pressure, step-rate and fall-off tests, injectivity index trend.
- **Reservoir response.** Tracers and capacitance-resistance models for connectivity, then the usual order of events: pressure first, then water cut, then oil rate.
- **Early signs.** Which signals show that the polymer is working before the oil response is visible, and how to tell a polymer effect from a reservoir effect.
- **Impact of polymer on production.** What happens when polymer is produced, and the impact on separation and water treatment facilities.
- **Recent field news.**

## Session 10. Using AI to ease your analysis

Where AI tools save time in an EOR study, and where they should not be trusted.

- **Data.** Extracting and organizing production, injection and lab data from reports and spreadsheets.
- **Screening and interpretation.** Running a first screening, preparing diagnostic plots and drafting an interpretation for the engineer to check.
- **Limits.** AI does not replace engineering judgment.
- **Prompt library.** A workflow and a set of prompts you can reuse on your own projects.

## Take-home kit, and what to bring

You keep the tools used during the two days.

**Excel**

- Screening sheet
- Injectivity calculator based on Darcy's law
- Step-by-step workflow, from screening to lab plan
- Simplified break-even
- And more

**PDF**

- Conformance diagnosis guide
- Pilot design guidelines
- AI workflow

**What to bring.** A laptop with Excel. Your own field data if you want to use it, otherwise we provide a dataset. Nothing is collected or kept after the seminar.

## Who it is for

Reservoir, production and project engineers, and the managers who approve EOR budgets. Mixed level: every session has a main track, plus more advanced material for engineers who already run polymer projects. 25 seats, so every table gets time with the instructor.

| | Day 1 only (Thursday) | Day 2 only (Friday) | Both days |
|---|---|---|---|
| **Who** | Teams deciding whether a field deserves a pilot | Teams with a candidate project that need the economics, pilot design, simulation and monitoring | Teams starting from scratch, or wanting the full chain |
| **You leave with** | Waterflood diagnosis, screening verdict, lab plan | Simplified break-even, pilot guidelines, simulation overview, monitoring plan, AI workflow | All of the above, plus the closing call on the capstone field |
| **Entry** | No prerequisite | Day 1 in 30 minutes brings you up to speed | Networking dinner on Thursday included |