



Production Optimisation – do (a lot) more tomorrow with what you already have today

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You need to produce as much as you physically can. But don't just 'sweat' your assets or upgrade your technology for today. Build the capability of the operation for tomorrow. There are proven routes to sustainably increasing production without capital investment. And there are traps to avoid along the way.

Overview

International Oil Companies - IOCs - are finding that even this most buoyant of market environments brings challenges. Taking full advantage of a period of unprecedented and growing global demand means, above all, maximising production.

In fact, this is proving to be an increasingly problematic issue. IOCs are concerned about how they increase their production. Most would traditionally have turned to acquisition of new reserves as the main driver of increased output. But with around 90% of reserves now in the hands of the National Oil Companies - NOCs - this is no longer practical or even possible as a strategy.

Consequently, many IOCs are looking to maximise production from their existing assets. The main focus is on applying technology based solutions. Light well intervention, enhanced oil recovery (EOR), digital oil fields – all these techniques certainly offer the potential to boost production. But there are greater rewards to be gained from optimising the organisation's existing assets, both technical and human.

This paper explores four key areas to improve before you consider making any major new technical investment:

- Understand your true reservoir and facility capacity
- Make sure you have the right data to base targets and assumptions on, and that everyone understands the data you have
- Set targets based on 'improvements' that are real and measurable from an accurately calibrated base
- Adopt 'joined-up' work patterns that allow optimised production to move from theory to reality

Complications with investments

New technology is expensive. Implementing it to work effectively depends on having a stable, efficient organisation, with the right people in the right jobs. These are tough criteria to meet right now. There is an acute shortage of highly qualified offshore personnel – the very people needed to make the new technology work. And many IOCs are struggling to contain the impact of soaring costs. Any future downturn in demand would burden companies with dwindling returns on the costly capital investments they made to drive production up.

Even when new technology is implemented, it tends to be under-exploited. High staff turnover leads to operational disruption and creates skill gaps in key positions. This is problematic because, to deliver its true value, complex new technology needs continuity of users, so that experience can be built up.

Another complication lies in the fact that many of the key issues impacting current production efficiency are obscured either by unreliable data, or by lack of real understanding of the data being used. Senior management often miss the underlying issues because their people do not really understand the Key Performance Indicators - KPIs - used to measure production. Data is often inaccurate. Sometimes it is even changed deliberately to match prior expectations. The reality of the situation is concealed and decisions are taken on the wrong basis.

A way forward

There are a number of key levers that will help to boost production. They will also enhance the value of existing technology. By optimising production through more effective and efficient use of the existing asset and the resources already in place, there is less need, or even no need, to contemplate expensive technology acquisitions and capital expenditure.

So what are these levers?

Performance management

Effective performance management relies on accurate measurement of the right data. In practice, this means choosing the right KPIs, which in turn promotes productive operational behaviours. Accurate baselining of a facility's actual production is an indispensable first step to optimising production. 'Improvement' needs to be defined in the first place. And a meaningful definition requires a true baseline.

Targets are also critical here. Setting targets that reflect the true capacity of the reservoir and facilities, and that recognise the capabilities of the people running the installation, is a critical process step. It needs to be conducted in a way that encourages buy-in across the organisation. This is the foundation of any loss management process, which lies at the heart of production optimisation

It is crucial to allow individuals to report reality, however bad, and then to provide teams with the framework to mitigate any issues identified in the future. A simple system for capturing and reviewing losses, for example, will help the organisation to focus on root causes and take timely action to prevent recurrence. But it is critical that the system is set up the right way, so that everyone has a common understanding of loss categories.

This enables the workforce to take short-term actions while simultaneously working on more costly longer-term operational modifications that can be delivered at a later and more convenient date.

Organisational alignment

Once transparent and accurate data is being recorded, the next step is to implement clearly-defined processes, roles and responsibilities – aligning the scale and structure of the operation to new and shared production goals, in order to get the most out of everyone's work. But this will only succeed if it is approached on a 'whole operation' basis.

Offshore? You still need to be hands-on

When the goal is optimised production, there is no substitute for a full-time improvement team based at the asset – wherever it is located. Real improvement starts with building productive, long-term relationships between management and the people at the heart of the process – gathering end-user requirements, capturing feedback, and helping to implement practical solutions based on real needs.

The relationship between on and offshore teams requires considerable focus; distance and a phone line often lead to finger pointing. Don't underestimate the power of video conferencing to enhance teamwork and to establish accountabilities.

Integrated planning

A fully integrated approach to planning ensures that production, maintenance and logistics functions are all working to the same common objectives. The right decisions are therefore taken at the right time, and by the right people. Integrated planning also prevents unnecessary downtime, freeing up maintenance staff, for example, to focus on work with a genuine component of added value.

With skilled resources at a premium, the key is to ensure that all work, production or otherwise, is prioritised so that teams can focus on delivering what's required, when it's needed.

The bigger picture

Taking a holistic view of the operation helps to identify and remove inherent inefficiencies. These often arise as a result of focusing historically on one or two isolated functions at the expense of the others. By looking at the bigger picture, it becomes possible to break down individual function silos and to see the key end-to-end processes which (should) underpin the operation.

Being able to look at your operation this way depends on a thorough analysis of transparent and reliable data. This will help you understand the strengths and weaknesses of your operation, your data-gathering processes and your management systems, as well as allowing you to assess the organisation's readiness for change. It raises and answers the important questions at the heart of production optimisation. Do existing processes yield meaningful outputs which support accurate decision-making and effective action? Are key operational 'dashboard' indicators clearly visible? Is best practice shared, for example, effectively between onshore and offshore functions?

Driving a sustainable culture of constant improvement depends on implementing standardised procedures across all production assets, including integrating operations between onshore and offshore functions. It means securing compliance with clearly-defined business processes – each with its own reliable metrics to facilitate the constant monitoring of performance and identification of opportunities for improvement.

A diligent focus on Asset Management, Process Excellence, Planning and Programme Management can then keep the business on track, as it works towards meeting newly defined targets through continuous performance improvement.

The human factor

So much for the theory. What happens in practice depends greatly on the people who actually do the work. There is understandable scepticism in the face of external ‘interference’ and ‘initiatives’ which seek to ‘tell’ skilled people how to do their jobs ‘better’. Yet without the commitment of the people on the ground – or on the platform – even the very best production optimisation theory will fail in practical application.

The only viable approach is to work alongside key operational people until they are as convinced as senior management of the value of change. Advisors and other external specialists who never venture out of the boardroom are unlikely to acquire a true understanding and appreciation of the issues that matter at the work face. Sustainable optimisation begins by looking at the issues through the same lens as the people who deal with them every day.

Managing complexity

Managing change across a range of functions is inevitably a complex undertaking. The way in which a change programme is structured is all-important. Each function requires its own dedicated workstream, but it is important also to establish cross-functional work streams, such as Integrated Planning, that facilitate decision-making on critical issues across departments.

It is unrealistic to impose a single, prescriptive and rigid ‘project plan’ complete with critical paths and interfaces. Setting up the right project management system, with regular meetings to highlight integration requirements, encourage collaboration and focus on delivery of outcomes, is critical to success.

It is also critical to establish tangible business benefit targets for each work stream wherever possible. This not only ensures that value is delivered from the programme, thus avoiding the trap of becoming an abstract exercise. It also drives ownership for the change within the project team and the business.

Individual teams benefit from developing their own, fit-for-purpose management systems (MCRS[®]), which can then be linked together into a single, overarching Business MCRS[®] for the whole operation. This is invaluable in helping an organisation to understand how its various components fit together, and what needs to be done to manage performance effectively.

Summary

The approaches to optimised production described in this paper have already demonstrated their value in a number of onshore and offshore contexts.

There are tried and tested approaches to production optimisation that yield quantifiable results in areas as diverse as Operations, Maintenance, Well Intervention, Drilling, Logistics and Contract Management.

Implemented effectively, production optimisation not only secures the all-important increase in production output. It does so while creating a renewed cultural environment in which continuous improvement can flourish – in all market conditions and without the need for expensive external technologies.

Future proofing – whatever the future holds

Today, the industry is experiencing a cycle of significant growth. But economic cycles are, by their very nature, cyclical. A concerted approach to production optimisation amounts, in effect, to ‘future-proofing’ against leaner times. It creates an optimised production ‘template’ for any market context.

And most important of all, it leaves a living legacy of improved skills and working practices. This ‘investment’ for the future is the foundation of real and lasting competitive advantage.



About the Author

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Over his thirty years in business development in professional services, David has led the development of a significant number of client relationships across the globe – from the North Sea to the North Slope – and across the full span of energy industry operations. David’s relationships with clients – at super majors and independents alike – have been the platform for the delivery of significant, measurable value to Celerant’s clients in the industry over the past two decades totalling in excess of \$1 billion.



About the Author

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James Albert is a Senior Project Manager at Celerant Consulting. During his nine years in consultancy, James has managed projects around the world, mostly in the oil and gas industry. James also leads Celerant’s Asset Management capability in Europe, which focuses on developing innovative ways to increase the return on investment from clients’ capital assets by unlocking the value hidden in their people, business processes and management systems.

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