



The Hydrogen Question:
Embracing the Journey
vs. Chasing the Target

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Focus Article DEKRA Organisational & Process Safety

DEKRA On the safe side

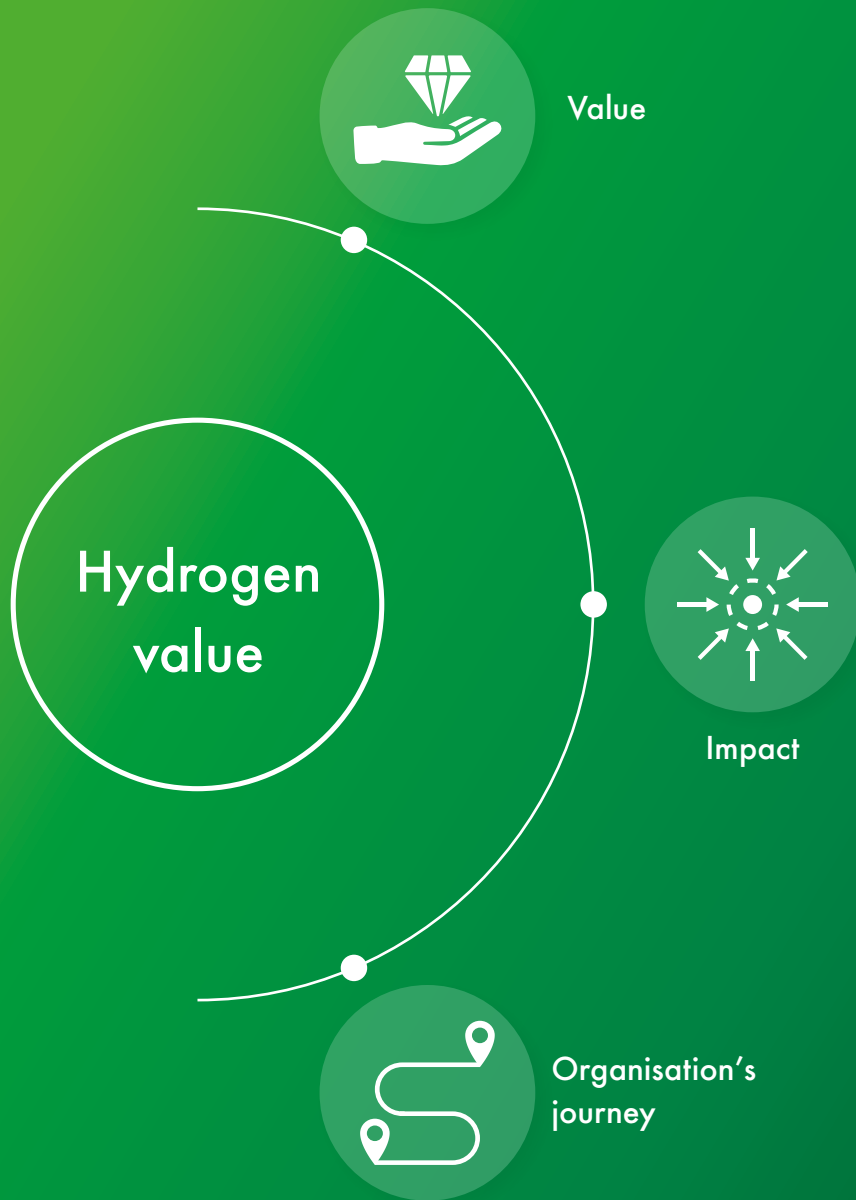
While both government and industry have acknowledged hydrogen's potential to help meet emissions targets and fight climate change, it is important to realise that hydrogen is not a magic bullet or a single, simple solution to every emissions challenge. Taking a step back to understand what hydrogen can mean for your particular asset and organisation is a critical precursor to making informed decisions on how to safely and sustainably make the transition.

Take a Step Back to Move Forward

The urgency of climate change has spurred public and private organisations around the world to make commitments to meet environmental and sustainability targets, especially as relates to carbon emissions. Conversion to hydrogen as a fuel source is one way to achieve significant reductions, and some organisations have achieved good results with this approach. For asset owners and managers looking on and trying to decide whether it is the right path for their plant, it can be tempting to just "get on the H₂ bandwagon". But blindly running after this technology option without first understanding how hydrogen fits into the energy mix of your organisation, why it's right for you and how it can support you toward decarbonisation, is a gamble that may not payoff... so let's embrace the journey and take a step back to carefully assess.

A trusted advisor can help you understand the impact of adopting a hydrogen-based approach to carbon footprint reduction. And in fact, effective asset management recommends that organisations understand the value of any proposed changes and the reasons for making them





before taking a decision. Your successful hydrogen journey starts with a systemic, structured review of your motivations as well as where and how hydrogen can actually deliver what it seems to promise. Before making a move, it's crucial to understand the value hydrogen can bring, the impact it will have and how your organisation's journey is unique.

Understand the Value

Adoption of hydrogen as a fuel source is a recognised means of potentially decarbonising carbon-intensive industries so that progress can be made toward combatting climate change. From an organisation's point of view, the value of hydrogen must be understood in terms of that ultimate objective. A carbon-intensive cement producer or petrochemical company that substitutes some of its carbon intensive fuel sources for hydrogen might experience a rapid and impressive drop in carbon emissions. Less carbon intensive industries (e.g. water treatment) on the other hand, might find that other measures are more beneficial in terms of carbon emissions and reaching climate goals, even if they seem more subtle and less flashy. A company's level of maturity also comes into play when adopting and integrating new technologies. How well does your organisation manage change which may involve safety, environmental and operational impacts? Can you point to successful past transitions that could serve as a template? If not, it may be more sensible to start with measures on a smaller scale with a more long-term horizon keeping sight of the intended benefit: utilising hydrogen is not the objective; cutting emissions to protect our planet is.

Understand the Impact

Whenever an asset or organisation changes or dismantles existing structures, physical and otherwise, to introduce something new, the impact on how things are done must be clear. In the case of introducing hydrogen, the impact is wide ranging, affecting, for example:

- > Safety: hydrogen has specific characteristics which may impact current approaches to safety
- > Technology: the equipment utilising the new substance will have to be compatible and capable of doing what the organisation requires
- > Operations: the procedures used when operating the plant require rethinking
- > Decision-making: investment decisions, for example, will now have to consider hydrogen as part of the mix
- > Organisational culture: the workforce from top to bottom has to understand the impact of the change

With the help of experts, you can more accurately assess these impacts and either confirm that hydrogen conversion is worthwhile for your circumstances or begin to consider other options.

Understand Your Own Journey

Once you understand the value you are trying to achieve and can define the potential impact of the transition, you can begin creating a roadmap to take you from this initial understanding to the realization of that benefit you want to achieve. You can start asking key questions: what do you have that can be reused? What needs to be updated and who needs to be upskilled? What is the scope of your adoption of new technologies



and reuse of existing assets? Fundamentally, the change management cycle that moves you from knowing what you want and why, to making it a reality involves every aspect of your organisation, from risk management to operational and **behavioural culture**, decision making, asset integrity and **process safety**.

Fortunately, DEKRA has the capacity and capability to be the trusted advisor you need when understanding and defining the impact a transition to hydrogen might have for your company as well as the technical expertise to assist you in mapping out the details and implementing your plan. DEKRA's knowledge is as solid when dealing with pipe and vessels as it is when working with people and their skills. Our **organisational reliability** specialists can advise and even construct programs to promote improved decision making, cultural transformation and workforce upskilling through collaboration. We have process safety expertise for engineering and installations, extensive testing capabilities and a long history of hazardous substance experience. We can provide comprehensive support for your decarbonisation efforts... even if it doesn't involve hydrogen adoption.

Making the Most of the Hydrogen Transition

The opportunities inherent to hydrogen adoption are quite wide-ranging, not just in terms of decarbonisation but also regarding the optimisation of certain systems within assets and how assets as a whole operate. But in order to reap these benefits, the transition must be managed in a structured, methodical way, recognising the unique characteristics not only of hydrogen itself but of your organisation as whole. In this case, you'll experience a much more balanced, clearly managed return, i.e. the decarbonisation efforts associated with climate change impact. DEKRA understands the hydrogen journey is unique for each organisation and can translate its broader impact on systems, people and decision-making into a more fingerprinted approach to adopting hydrogen and achieving your targets.



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Chartered Engineer (CEng) with more than 15 years' experience in asset management and safety applications, Paulo has split his experience in project, maintenance and safety roles in hazardous and non-hazardous industries, such as chemical, steel and FMCG, as well as consultancy to multiple sectors in the fields of process safety, functional safety and asset management for all lifecycle phases of assets.

Paulo is currently the chair of the IET Safety Systems Technical Network, a member of British Standard Institute (BSI) committees for System safety (GEL065/1) and Asset Management (AMS1) and member of the International Electrotechnical Committee (IEC) technical committee TC65X for system safety (working groups WG14 and WG17).

DEKRA Organisational & Process Safety

DEKRA Organisational and Process Safety are a behavioural change and process safety consultancy company. Working in collaboration with our clients, our approach is to assess the process safety and influence the safety culture with the aim of 'making a difference'.

In terms of behavioural change, we deliver the skills, methods, and motivation to change leadership attitudes, behaviours and decision-making among employees; supporting our clients in creating a culture of care and measurable sustainable improvement of safety outcomes is our goal.

The breadth and depth of expertise in process safety makes us globally recognised specialists and trusted advisors. We help our clients to understand and evaluate their risks, and work together to develop pragmatic solutions. Our value-adding and practical approach integrates specialist process safety management, engineering and testing. We seek to educate and grow client competence to provide sustainable performance improvement; partnering with our clients we combine technical expertise with a passion for life preservation, harm reduction and asset protection.

We are a service unit of DEKRA SE, a global leader in safety since 1925 with over 45,000 employees in 60 countries and 5 continent. As a part of the world's leading expert organisation DEKRA, we are the global partner for a safe world.

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