

Managing the cost of decision making A 'platform' for well integrity The case for 'integrated engineering' A structure for engineering data How analytics can help Collating your electronic information How wrong information causes accidents Real time structural monitoring

Event Report, Doing More with Offshore Engineering Data, Oct 6, 2015, Kuala Lumpur



Special report Doing more with Offshore Engineering Data

October 6, 2015, Kuala Lumpur

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Doing more with engineering data

Better engineering data can help you make faster decisions and reduce the likelihood of accidents – we discussed better ways to do it at our Kuala Lumpur conference on October 6, "Doing More with Offshore Engineering Data"

Better engineering data can provide data in many ways, if it can help you make decisions faster, reduce accidents, get a better understanding of the current structural condition, and make sure you are compliant with ever changing regulations.

A range of technological methods can help you achieve this, including bringing together multiple software systems to form a 'platform', using integrated operations, having a better master data structure, managing the data better when the asset is handed over from the construction / project team to operations, structuring your data better, and making use of laser scanning and 3D models. We heard that oil and gas companies are still besieged with too many documents to manage – a purchase of the simplest possible piece of equipment, say a 1m3 tank, will come together with volumes of documents and CD-ROMs which hardly anyone ever looks at – and if you do look at it, you'll find that the data in it isn't consistent, let alone accurate.

But there are techniques for improving the situation – you can use computer methods to integrate the data together and spot errors, you can use fast improving laser scanning techniques, and you can specify better requirements for what you want in the first place. There is a fast evolving discipline of 'integrated engineering', which is not specifically about software but involves a large amount of software, managing your engineering project (and associated data) as an integrated system. This means it is much easier to answer a question like 'how will an upcoming regulatory change affect me'.

The event agenda, and access to presentations and videos (where permission has been granted by speakers) is online at http://www.digitalenergyjournal.com/event/9932 c.aspx





This special edition of Digital Energy Journal is an Event Report from our forum in Kuala Lumpur on Oct 6, 2015, "Doing more with Offshore Engineering Data".



Event website

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PETRONAS IO – managing cost of decision making

PETRONAS has recently launched the Integrated Operations (IO) Centre at PETRONAS, Kuala Lumpur in conjunction with the Operational Excellence Division. It should help manage the cost of decision making in the current difficult economic market. Encik Ghaffar Dawam, Head of Integrated Operations with PETRONAS Operational Excellence Division, shared the latest news.



As with everyone else in the oil and gas industry, the low oil price has brought challenging times to PETRONAS.

"We must improve by changing the way we work, to remain competitive and relevant in the current market place" said Ghaffar Dawam, Head of Integrated Operations with PETRONAS Operational Excellence Division, speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

"Operational Excellence is a central imperative to drive through fundamental improvements in the way operations function, striking down costs through efficiency and simplifying the way we do business; exemplifying a world-class working culture and integration across business and support functions," he said.

"As we head into prolonged tough times, operational excellence is key to the organization to address these set of challenges."

The PETRONAS IO Centre was developed with the objective of promoting a collaborative working environment to enable integration of multi-disciplinary and cross-functional expertise from various domains to deliver improved production performance through quicker, transparent and more informed decision-making.

The centre provides complete collaboration facilities and advanced networking visualization equipment supported by latest technology and systems, promoting the most effective way of collaboration across business value streams through learn, share and act together.

There are four fundamental themes driving corporate aspirations for the PETRONAS IO Centre, he said: advantage, integration, collaboration and continuous improvement.

PETRONAS IO Centre employs an enterprise-wide standardized operating model that embodies upstream Operational Excellence themes, and also serves as a catalyst for change.

Advantage

"We develop advantage in our decisionmaking by understanding how the people, process, and technology pieces fit together," Mr Ghaffar said.

"As an example in the business workflow for Opportunity Management system, we complete from registration of the opportunity to realizing the gain."

"The important thing to note here is the mapping out of processes and technologies. This gives us a view of how these are interrelated across the workflow."

"Opportunity Identification is an example of where applying LEAN principles has enabled bringing together people, process and technology as well as unlocking business value to optimize execution. The approach to performance management and common metrics secures business adoption and standard terminology across business units in how the company manages its business."

Measuring business performance and looking for opportunities to improve is a key advantage to operations, he said. Providing a common set of metrics for measuring business performance also enables an enhanced ability to secure opportunities, improve process and ways of working.

Business Transformation is like turning a ship: the people at the front can see the change but the people at the back may not notice for a while, he said.

The goal is therefore to instil common ways of working and practices into the corporate culture to make this a reality.

Integration

This subject area is looked at differently than just standard IT integration, it is multidimensional covering the five elements of Integration Opportunities; Business and Operational; Cross functional value; Integrated teams, leadership and effort; Enterprise wide process workflows, he said.

Operational linkages are the key to bring these elements into alignment, he said. Understanding how disciplines and domains are interrelated in the upstream value chain presents opportunities for integration.

Collaboration

A shared common understanding and awareness introduces many opportunities for collaboration within the context of an approach driven by standardization.

The first point of awareness in the PETRONAS IO Centre is the information provided on the screens, which is a new opportunity within the organization for crossfunctional teams. Using these information sources we were able to demonstrate opportunities for collaboration and encourage different departments to engage into a new approach of working against a common objective linked to shared business metrics.

Continuous Improvement

"Continuous improvement in our case is striving to move our decision-making activities earlier in the month, leveraging information availability and technology to become proactive rather than reactive," he said.

"By decreasing the timeframe to influence change, operations can leverage the capability to move from a reactive position to proactive ways of working." Moving to a proactive position allows improved team utilization and a shift of effort more evenly across the months.

A small increase of activity earlier in the month will significantly decrease the 'firefighting' activities at the end of the month.

Conclusion

Operational Excellence, through IO, delivers value by impacting both the top and the bottom lines of an organization, he said.

However, this value has to be quantified for the organization to show the specific impact that will be made.

The PETRONAS IO Centre will bring together the subject matter experts, along with the necessary data as well as technical and business workflows, to enable better, timelier decisions. As the single point of consolidation for PETRONAS' production operations both domestically and internationally -- it is the place where IO will become very tangible for the organization -and where the value impact of the integration of people, process and technology will be most visible.

In other words, the PETRONAS IO Centre helps in managing the cost of decisionmaking, more so in these difficult times of economic downturn.





Colin Williams – the case for better integrated engineering

Better 'integrated engineering' in greenfield projects could lead to big improvements in efficiency and safety, said Colin Williams from IBM



Better 'integrated engineering' for greenfield projects could help produce assets which are much easier to operate and manage, and keep in compliance with regulations, said Colin Williams from IBM.

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

Companies are putting a lot of effort in 'integrated operations' but not so much in 'integrated engineering operations', he said.

A greenfield project development starts with an oil company communicating its requirements to an engineering, procurement and construction company.

The work starts simply, but the need for 'integrated engineering' starts to arise when any changes need to be made. They need to be carefully tracked, including the 'ripple effect' of everything they impact, he said. A more structured communication between operators and EPCs would help.

The end result of most new build processes is that "We have fragmented pieces of data defining what needs to be built. We create an asset specification and say we will go to different suppliers for different parts of it. Then we find that different parts don't interoperate," he said.

Documents in boxes

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When a newly built item is 'handed over' to the operator, the usual way to do it is supply an enormous volume of documents in boxes.

These documents, along with the e-mails and documents created while the asset was being

built, contain the information which the operator must use to make sure the asset is compliant with changing regulation for the next 60 or so years it is in operation.

"I've asked asset owners, where are your technical requirements for this asset? They take me to a little room, there's boxes of documents. What happens if there's a change? How do I find out what I need to do to be compliant?"

Systems engineering

The 'integrated engineering' approach, which is sometimes known as 'systems engineering', means you take a system wide view of what needs to be designed and how it should be operated.

From this system wide view, you can create design specifications and other types of attributes, and a model of data and information which is needed.

"So when you come to inspection, commissioning, shipyards, it actually works as one, not as many different parts," he said.

Each new requirement can be confirmed with an inspection. "It keeps us compliant through the lifecycle of the asset," he said.

When you sign something off, you can say with confidence, it met the requirements for the development, and conformed to industry standards, he said.

"We can make sure the asset we're going to develop is aligned to industry standards. The various modules, including topside, subsea, moorings and wells, all work together properly.

Oil and gas engineers are starting to study systems engineering in university, he said. "It will become a core competence within industry for years to come."

"A fragmented design, standing on its own, will not work in an integrated picture," he said. That's why systems engineering is so important."

"It's not just about the tools, it's about the mindset of the individuals within the organisation to drive the transforming to make major improvements, the will to succeed," he said.

Digital view

A systems engineering approach will lead to you having an accurate 'digital view' of how the asset is specified, designed, built and maintained, he said.

If you want to do modifications, you can use this 'digital view' to do an 'impact analysis' to work out what might be affected, he said.

If you want to make a change to a platform, for example increasing operating pressure from 15,000 psi to 20,000 psi, you need to understand what the change is and what components you need to change," he said.

If there are changes to legislation, you can use the data to work out if the asset will be compliant to new rules.

If you have the data in a database rather than on documents, this can be done in a few seconds, rather than taking months, he said.

You can also use this data to review any changes in the design. "Operators can keep control of what is being built, and help EPCs keep control of their costs. There is one single truth of data. Everybody can discuss and make approvals."

Re-using data

The industry could be much better at building knowledge. "How many times in this industry do we start from scratch when we build a new platform? A lot," he said.

"80 per cent of current engineering assets can be re-used again in a structured manner."

"Being able to re-use engineering design over and over again, and standardise the way we build things, will mean a huge impact on the cost. We don't have to re-engineer again, we don't have to think again. The quality will be a lot better. Reuse is a major component of operational efficiency."

Download Colin's slides at http://www.digitalenergyjournal.com/event/9932c.a spx



Datum360 – creating a structure for engineering data

One of the biggest challenges for getting better engineering data is defining the requirement for it. It helps if you can get the structure right from the start, said Lin Whitworth of Datum360



We often hear that many engineers spend 70 per cent of their time verifying or 'sanitising' information before they can start work on it, said Lin Whitworth, Director Client Services with Datum360.

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

For this reason, many engineers also prefer to build their personal information stores which they personally trust, rather than work with data stored on corporate information stores, he said.

They keep data on their personal computer's hard drive, and aim to update it when the physical asset is changed.

So if you want to improve the company's engineering data system, one important step is to improve people's trust in it.

Gaining trust in engineering data is one of the most important cultural steps, he said.

Engineering handover standard

The work to gain good engineering data for an asset in operations starts with the specification which the oil company gives to its EPC (engineering, procurement and construction) company, and its vendors, specifying what data is required for a new asset. This can be called the "Engineering Handover Standard" (EHS), or a 'class library'.

There is often misunderstanding between the project staff (in charge of developing the new equipment) and operations staff (who will run it), which leads to a poor EHS, Mr Whitworth said.

For example, project staff may not believe that operations know what information they need, or are able to specify what they need. Operations staff mat not believe that the project staff will listen to them, and see will creating good data as an additional burden, so they just plan to take whatever they are given and try to work with it.

It would be better if both operations and project staff could both agree on the same engineering handover standard, and there would be dedicated information management staff to help define it and maintain it, he said.

Mr Whitworth's company, Datum360, produces a software as a service (SAAS) solution called PIM360 which can be used to build the engineering handover standard (EHS). This can be given to suppliers so they know what data the company needs.

The PIM360 is web hosted, so you can easily make it accessible to anyone who needs to see it without worrying about corporate firewalls, and you can apply 'management of change' to the engineering data when you need to change it.

The PIM360 service is offered as a subscription, which you can subscribe to on a monthly basis.

Engineering data warehouse (PIM360)

As PIM360 is auto configured by the EHS it can report compliance and completeness without any further configuration.

By reporting the gap between delivered data and the EHS an organisation can decide to take action in order to avoid delays to startup.

Once you have an organised engineering data warehouse, it is easy to see if any new data you add is complete, and any new equipment you add is compliant with regulations.

You can have a structured process for updating the master information via change functionality in PIM360, thus creating a "for life" audit trail.

How operations data should be stored can be "an enormous cultural discussion," Mr Whitworth said.

Data maintenance

Once the asset is in operation, the next challenge is how the engineering data should be maintained or updated, every time there is a change. Otherwise, the quality will gradually degrade.

A typical challenge could be when you change one pump for a slightly different one.

There needs to be a way of specifying the proposed change and showing that as published information once the change has been implemented. There also needs to be an audit trail showing who made the change and who approved it.

This audit trail supports the provenance of the engineering data. Mr. Whitworth believes that as PIM360 allows engineers to find data and documents very quickly and presents the provenance of that data to an engineer, that over time engineers stop maintaining their silos and start using the engineering data warehouse.



Teradata – how rail analytics could help oil and gas

Analytics company Teradata recently helped 2 rail operators massively improve their reliability. The same methodologies could be applicable to oil and gas



Analytics company Teradata recently helped US rail operator Union Pacific reduce the number of derailments, in a project which might have some useful lessons for the oil and gas industry, said Clive Ackerman, Industry Consultant, Oil & Gas and Utilities with Teradata.

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

Teradata's analytics with Union Pacific showed that one of the biggest causes or derailments was axle bearings, which start heating up if they don't have enough grease.

By using sensor data, together with this insight, the engineers could make a real time decision about whether a certain train should be slowed down in speed (to reduce the likelihood of a derailment), or brought out of action to do maintenance.

The company also installed microphones next to the track, which could listen for 'flat spots' on the wheels, which can lead to increased wear on the track and increased fuel usage.

Put all together, the company can work out what maintenance is required and the best time to do it, and make sure it has the right spare parts and right personnel in the right place to do the maintenance, he said. Teradata also helped another rail equipment manufacturer, Siemens, who wanted to find a way to improve the reliability of a train service between Madrid and Barcelona. Business travellers were preferring to fly, not because it was faster, but because the perceived reliability was higher, he said.

Teradata did a data study, looking in particular at wheel bearings. It aimed to make better predictions of when failures would occur, so the company could have the right crews and spare parts in place, and do maintenance at the right time.

"Teradata data scientists were able to predict 85 out of 100 failures before they occur," Mr Ackerman said.

The Siemens staff, by contrast, "said they could only predict 40 out of 100 derailments," he said.

Now Siemens is so confident in its reliability that it offers to refund a passenger's ticket if there is a delay of over 15 minutes.

Oil and gas

Oil and gas companies might want to use analytics in similar ways, so they can see how they can 'sweat their assets' more effectively,

They may be able to find ways they can operate

at '110 per cent' without any risk to operations, he said.

Oil and gas operations are similar to how they were 50 years ago in terms of vessels and platforms, he said. But what has changed is the amount of data the industry has to deal with and try to gain value from.

Oil major ConocoPhillips did an analytics project in 2011, to try to solve problems of idle wells on an onshore field, where the oil was transported away from the well by tank truck.

The tanks next to the wells were filing up, because the trucks were not carrying the oil away fast enough, he said.

ConocoPhillips talked to parcel delivery company UPS, which had used analytics to develop ways to get more value from its vehicle fleet. This included calculating the optimum time to make deliveries, based on a predicted traffic on the roads in different regions at different times.

Analytics can also be used to give you insights about what is working. You can understand who your best suppliers are, which equipment is most reliable, and which equipment has the most critical reliability. You can also see where there have been useful learnings in one part of the company, which another part of the company might be able to take advantage of.

The value often comes from combining different types of data, for example combining production data with cash flow data, or combining interest rates and spare part data to work out the cost of cash tied up in inventory. You can answer complex questions like "do I need to do repairs on these components now".

Mr Ackerman warned against trying to get value just from sensor data. "Sensors can tell us a lot of the story, but it needs to be integrated with various other sources of data," he said.

"Temperature, pressure, vibration, fuel consumption is great, but it is not telling us how the data is affected by other influences on your process."



Intergraph – collating your electronic documentation

Engineering software company Intergraph provides tools which can be used to bring your electronic documentation together, and check it is all consistent and correct



If you are buying a new piece of equipment, even something as simple as a one cubic metre tank, you can expect to receive enormous quantities of paper and electronic documentation, said Faizal Sohaimi, Sales Account Manager Intergraph process power and marine.

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

This data is hardly ever fully checked, to see if different pieces of documentation are consistent with each other, and if they are consistent with what has actually been built.

If the data is wrong, then you are already in a 'brownfield' environment – dealing with lots of old data – before you have started.

Intergraph provides software which can enable you to bring all of the documents from different sources together into a single system. "We organise it, we extract the content, so you know what is there, what is missing," he said.

"Once we have all this, it makes our whole life slightly easier. We reach a point where we can start to sort things out, we can search for things," he said.

From this point on, any new data and documents can be validated, to check it is consistent with the data the company already has.

You can link equipment images to the equipment documentation, so you can click on the images to view the documents.

Old data

For old plants, sometimes the only available data is on hand drawn documents. "I have seen the set of data from a platform built in 1968," he said. "You go to the document controller and ask for some documents, they have five sheets of P+IDs [piping and instrumentation diagrams], that's it."

There are further changes during the plant's life, and nobody manages the documentation.

Some documents are stored on people's laptops, others on the company servers. "You have to sort through this and find something you can use," he said.

On one platform, "we had to spend up to 4 weeks digging up all this information finding out where clients keep the data, what the systems are just to understand what they do with things," he said.

Sometimes all of the data is available but it has inconsistencies.

If you want to organise old data, the workload is often too much to tackle it all at once. You could start by working out what are the minimum documents required for operations and maintenance, he said.

"You have to look at the quality of documents, are they written, legible, are they scanned pdfs and so on."

3D modelling

Mr Faizal is sceptical about the value of 3D modelling for offshore assets, which "is very expensive and time consuming," he said. "It always takes one day of scanning at least".

"From the project side, once they hand over the 3D model, [sometimes] no-one really opens it," he said.

There was a case in Malaysia where there was an explosion on an offshore asset. "The company had a 3D model which was very nice looking, and a laser scan, but they both turned out to be absolutely useless. The only way is to go back to the data source. Everybody started to scramble for the drawings," he said.



AVEVA – what you can do with better engineering information

When incidents happen, often "it is not operators doing the wrong thing, it is operators doing the right thing with wrong information," said AVEVA's Dave Coppin. Improved safety is one of the many benefits of associated with better access to engineering information

When incidents happen, often "it is not operators doing the wrong thing, it is operators doing the right thing with wrong information," said Dave Coppin, EVP Malaysia, with AVEVA Solutions Ltd.

"They are doing what the document tells them to do but they've got the wrong data and the wrong version of the document."

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data". One oil company, an AVEVA customer, is now demanding that its facilities engineering staff "must have access to all data and all documents about any item of any plant within 3 minutes," he said. "This is the requirement they are making us meet."

Digital asset

AVEVA encourages the development of a 'digital asset', or a set of a digitised information which reflects what is happening in your real, or 'physical' asset.



Doing more with Offshore Engineering Data

This means bringing together all of your data, from different sources, into a single system, which people can easily work with, and keeping it up to date.

Doing this as a one-off project is probably prohibitively expensive, so it has to be something you approach in small chunks, or build up as you go along.

As an example, in 2000, one Australian oil and gas company had a plan to create a 'digital asset' for all of its brownfield physical assets in one part of the world. Building this would have cost AUD 20m (USD 15m), consequently the expenditure was not approved by the company's board.

So two years later, the company worked together with AVEVA to break the task up. "We showed them, you don't have to eat the elephant at once," Mr Coppin said.

AVEVA advised that the company should start with making a digital asset for process and safety critical equipment, then gradually expand across the remainder of the asset over time. Key to this is understanding what data and documents are required for regulatory compliance, then start planning how the data should be stored, what data formats it should use, and what should be in the master data records. "Then you start regaining control of your information," he said.

It should include all of the documents and information needed for the company's safety initiatives and operational excellence initiatives, he said.

"If you try to do too much at once, you have a high probability of failure," he said. "Start with understanding the quality of your existing information for consistency across different information silos, and compliance with your corporate standards. More importantly utilise the digital asset to give you an understanding of what key data and documents you don't have.

Laser scanning

Laser scanning is the "fastest and most effective way" to create a 3D visual image of your asset, he said.

"Laser scanning today has taken a vast leap forward," he said. "The scanners have come down in both size and cost and provide a very efficient way to capture FPSOs, and other assets."

Once an asset has been scanned the laser image needs to be maintained otherwise the value of the scanned image will decay over time. Today we are seeing organisations capturing all brownfield modifications with hand-held laser scanners and using this data and synchronising the modifications with the original scanned image; thereby enabling the owner operator to maintain an evergreen view of their asset", he said.

Today laser scanned images can be overlaid onto photographs, and AVEVA is providing capability to seamlessly walk through these photorealistic images, he said.

While 'walking through', you have the ability to tag objects, do measurements, make comments, and zoom in. This latest technology now challenges the need for creating a fully intelligent 3D model from the laser data, it provides an environment where you can have a hybrid of laser scans and intelligent 3D models coexisting. This allows you to only model what is absolutely necessary to support brownfield modifications, whilst retaining a fully interactive 3D visual experience of the asset, he said.

Do we need 3D?

Many owner operators are questioning why they should be thinking about 3D, when they have a challenge getting their '1D' and 2D data right, Mr Coppin said, such as their 'Process Safety Registers', Line Lists, and piping and instrumentation diagrams. "Asset visualisation is not just about 3D."

"Do we really need the 3D model, is it worth the investment to have this level of interaction?" he asked. "The priority needs to be given to 1D and 2D first, as this is the information which will directly improve both safety and reliability, while also providing the vehicle to prove regulatory compliance.

3D

Once the decision has been made to deliver a fully intelligent 3D model from the laser scans, then there are many benefits of having a 3D model to support the offshore asset.

It can be used for to support immersive training and simulation in a world of avatars. You can have teams working and collaborating together in the 3D environment. This can include learning about how to isolate equipment safely, what to do when a safety incident occurs, and also simulating doing inspections. Working in the 3D virtual world also enable you to test the proficiency of your staff, and make sure they can follow operating or maintenance procedures in the right sequence.

"You can train them, not until they get it right, but until they don't get it wrong. This is key to instinctively doing the right thing when an unforeseen event occurs," he said. One oil major is deploying 3D models in its incident response rooms, so shore based staff can have a better understanding of the physical, thereby improving communications with the platform.

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Another company uses the 3D model for training personnel before they go to remote unmanned platforms, ensuring that anybody going offshore is familiar with the asset and escape routes, he said.

One oil major uses it as a basis to support paperless Risk Based Inspection and provide a visual image of where there are corrosion problems on the asset. "It allows them to do 40% more inspections and surveying than they were able to do with their traditional paper based system," he said.

AVEVA's 3D modelling technology is widely used in the offshore industry including one of the largest offshore platforms in the North Sea and a floating LNG (FLNG) assets.

On One Screen - AVEVA Engage

AVEVA Engage is a Decision Support solution which enables all of the 1D, 2D and 3D information to be brought together on a large touch screen. "When using the power of the touch screen you must have very high performance and response from the graphics, the user experience must be similar to using your smart phone or tablet device", he said.

"When making key decisions to support construction, operations, and maintenance we sometimes want to simultaneously look at something in a 2D view and a 3D view and have both views dynamically interacting with each other," he said.

"This decision support environment brings together all of your maintenance, commissioning, construction, and engineering data. You can access all document, and large scale 3D models with the touch of a finger," he said.

You can search for objects and have them immediately brought into focus, or items from specific vendors. "Once we touch an object inside the model, we are automatically presented with all of the data, documents, and drawings associated with that object".

"The new generation of engineers, operators, and maintenance personnel are growing up with touch screens as an interface to react with information, we must support this generation with the tools they expect and AVEVA Engage does exactly that", he said.



Real time structural monitoring

Can techniques for structural monitoring aeroplanes be used for monitoring offshore oil platforms? Caidmark believes that it can



Malaysian company Caidmark provides continuous structural monitoring services for the Malaysian Air Force. Ir. Abdul Malik Hussein bin Abdul Jalil, Sr Mechanical Engineering Consultant with Caidmark, believes that the offshore oil and gas industry might be able to benefit from this technology, doing continuous monitoring of offshore structures.

He was speaking at Digital Energy Journal's conference in Kuala Lumpur on October 6, 2015, "Doing More with Engineering Data".

Problems can occur through structural failures, material fatigue, errors in the design, he said.

The Caidmark technology collects data using sensors, and then makes an assessment of the strength of the structure using computer simulation, including finite element analysis monitoring.

This data can then be used to better detect or avoid structural failures, he said.

The challenge is using the data to help make better decisions about reliability. "That's what I believe the future challenge is," he said.

"We are interested in performance of structures and components," he said. "Our main aim is to maximise usage and to maximise life."

"With all the engineering data that we have, we can predict the life of equipment," he said.

You can use simulations to predict a product's life, looking at some of the fatigue the materials are under.

Caidmark offers a 'finite model analysis' approach, which can be used to analyse available data, to make a prediction about the expected lifetime of a structure.

It provides structural monitoring services for the Malaysian air force, monitoring the structural health of the aircraft.

It collects data such as temperature, pressure vibration. The data is downloaded when the aircraft lands, and added into the computer software for analysis.

For example, if there has been a sudden spike in vibration, the analysis can compare it to historical vibration data, and see if it is something which regularly happens or a new trend, he said.

You can view Malik's talk on video and download slides at http://www.digitalenergyjournal.com/video/1615. aspx





List of attendees 'Doing more with Offshore Engineering Data, Oct 6, 2015

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Jess Kozman, Regional Representative, PPDM

Johnny Ong, Senior Manager Engineering, Sapura Kencana

Dzulaidin Othman, General Manager, Sapura Kencana

Mohd Akmal, Network engineer, Sapura Kencana

Lina Tong, Principal Solutions Consultant, SAS Institute Sdn Bhd

Steven Yew, Business Development Manager, Senergy

Clive Ackerman, Oil and Gas Industry Consultant, Teradata

What did you enjoy most about the event?

Well organised, run smoothly and stuck to the times stipulated.

It covers new information for me as I come from background other that data management and IO. Topics / subjects and refreshments.

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