

## **Innovative tools and techniques and new O&M practices**

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Uniper Kraftwerke GmbH (Uniper)

### **1. About Uniper**

Uniper is an international energy company with around 40 GWs of installed generating capacity, approximately 13,000 employees and operations in more than 40 countries. Our portfolio comprises of industrial-scale plants, trading activities and service provision. In recent years, almost all the markets we are operating have been through or are undergoing a transition towards high levels of renewable generation. This has led to dramatic changes in how Uniper utilises and operates its generation assets within these markets. Especially in Europe, Uniper has successfully been through this transition whilst refining and also developing numerous innovative tools and techniques for effectively running its generation assets.

Our strengths are based on our experience, expertise and curiosity.

- We combine technical and commercial expertise and offer solutions for challenging questions
- We build and operate large power plants
- We produce, buy and sell large quantities of energy. In these processes, we ensure that we minimise risk and get the best out of our plants and agreements
- We maintain long-standing partnerships with commercial customers, public utility companies, grid operators and our suppliers. All of these stakeholders gain mutual benefits from one another

Our highly flexible and adjustable power plants ensure a sufficient and reliable power supply. Our diverse storage options help to ensure successful energy transition. Our trading activities create links across international raw materials markets. We are a trustworthy partner to our major customers in times of fundamental market change. Project developers and the owners of power plants and supply grids benefit from our diverse expertise. We maintain, repair and optimise generating facilities and CHP units all over the world. We coordinate downtimes, negotiate with equipment manufacturers and design bespoke solutions. We support our customers in project management, quality assurance and control, as well as in the areas of health, safety and environmental protection. We develop customised concepts for all types of power generation, for both large investment projects and smaller, distributed-generation plants or large infrastructure projects, including cross-border gas transportation. As an independent partner in plant restoration and due diligence projects, we draw from extensive experience in building new plants, evaluating damage to systems and components, and using different technologies. Our innovation services

include tracking emerging technologies, testing customers' solutions, and developing next-generation energy product and systems.

Our Assets, our experience, our expertise, our people and our absolute determination to overcome whatever challenge we face, epitomise the service that our customers and business partners expect and receive from us. We call it the Uniper Way and through India Uniper Power Services, our Joint Venture in India, we offer these services and experience to the Indian power sector.

## **2. Need for innovation and approach**

The challenges faced by Power Plants are many. In short, Plants need to deliver safe, compliant and commercial operations whilst maintaining a low sustainable cost of operations to maintain competitiveness in the market. So, everything that we have traditionally delivered as Power Plant Owners and Operators is up for challenge and change. And the challenge is how to find areas of advantage in everything that we do that will help keep us in the game now and remain competitive in the future. Some of our key achievements so far demonstrate the effectiveness of our capabilities., examples of which are:

- Running a 900MW super critical unit at 12% stable export load
- Flexibly operating a 50-year-old 2000 MW plant in an increasingly volatile market that is strongly impacted by load swings from Renewable Generation
- Maintaining safe, compliant and low cost commercial operation of our fleet with historically low resource levels

We understand that rapidly evolving power markets put pressure on power plants in a variety of ways. This necessitates not only understanding your current market conditions but also effectively mapping future scenarios or alternatives. However, when we look at what can be done, we are faced with a multitude of choices of what to improve and how to do so. So, should we do it all, or should we take a clear look at what our businesses need to improve upon and then prioritise our efforts in those areas that will help us improve capacity, availability, reliability, flexibility efficiency and cost as is most appropriate to our own plants. Then when we have decided what we need to improve, we have to make the right choice on the tools and techniques and supportive products that are going to help us maintain our advantage going forward. The positive experiences we have in Uniper enable us to tell a story of how innovation and best practice in the operation and maintenance of our power plants have helped us maintain such an advantage.

## **3. Deep dive into the key topic - Innovative O&M practices**

### **a. Operational excellence at power plants**

Given the dynamic market conditions, power plants have to go beyond the traditional, conventional business practices. Operational excellence is a technique, Uniper has mastered

to challenge the status quo and transform itself into a more agile organisation. At Uniper, Operational Excellence is visible in many aspects of business. Whether it is procurement, operations, outage management or in the daily morning plant meetings. All our assets have been through transformation projects, which has not only helped us gain process efficiency but also mature into a world class portfolio.

In undergoing this transformation, we have developed a culture, where everyone is encouraged to look for out of the box solutions. Through our structured transformation programs, our colleagues have been trained to ask the right questions to define the right problem. Over the years, we have mastered on how to effectively implement Lean and Six Sigma driven change programs at power plants. Using the same experience, we can also help our clients improve the performance of both plant and business processes to move operations towards world class levels.

#### **b. Cross utilisation of man power**

Human Resource is one the most critical components when it comes to power plant O&M. The challenges are productivity, finding the right people, developing and retaining them and also how to make your work force flexible. Work force flexibility becomes more and more crucial when the plants are not operating in base load conditions and as owners and operators we do not have clear visibility on the expected demand profile in the future. Through utilisation of resources and know how across our fleets we are able to initially challenge OEMs and move our operating models away from LTSAs without impact on performance.

#### **c. Digitisation of power stations**

“Data” and “digitisation” will play a key role in determining which power plants will survive and for how long. Data driven decision making in power plants is no longer a thing of the future. At Uniper we have developed our own digital platform called Enerlytics ® which provides visibility to help plants operate effectively and outperform competitors. Digital tools like Enerlytics ® also help improve the efficiency of power plants and make them more reliable through inbuilt AI enabled predictive, condition monitoring system.

#### **e. Benchmarking, maturity assessment and peer to peer learning**

What helps us always remain ahead in the game in continuous improvement through benchmarking. The purpose of the Uniper Performance Benchmarking is to provide a user-friendly tool to identify value-enhancing opportunities based on fact and to monitor the progress towards the aspirational performance and, at the same time, provide the management with an analysis tool to be used to leverage further improvements. We perform this in a way that is fair, transparent, consistent, timely, efficient and enables fact based challenge. Our goal is to seek a sustainable positive effect on the performance not only from the operational but from the costs and staffing perspective. Uniper’s expertise in benchmarking fossil assets dates from 2008. We

benchmark assets across KPI categories such as Safety, Environment, Availability, Efficiency, Utilisation, Reliability, Costs, People and Normalised Maintenance Costs. This exercise also fosters peer to peer learning across plants and continuous improvement. Another area where Uniper excels is to accurately assess the overall maturity of power plant. We have developed an integrated, overarching and streamlined framework using 15 different subject areas. This detailed assessment helps analyse the maturity level which is scored and then clearly articulate the strengths and weakness of the power plant. Operational Maturity Assessment is something that we have also done in India.

#### **d. Flexibility**

One other area, which is already questioning a lot of traditional O&M practices is increasing renewable penetration which on particular days can completely change the energy pattern and operating requirements of conventional plant. This requires power plants to innovate across several areas including O&M practices, training of staff, interaction model with internal and external stakeholders etc. Power plants need to develop a turnkey, holistic model like to Uniper's Economic Flexible Operations (EFO) to focus on economic operation, maximising income and reducing risks. As we say in Uniper – "No Sun, No Wind – No Problem".

Based on decades of experience and expertise as an owner/operator of both coal-fired and gas-fired generation plant, our Economic Flexible Operation solution enables us to meet the challenges of operating power plants flexibly, efficiently and profitably in a rapidly changing energy market. Uniper's engineers have developed leading operational expertise from decades of working on power plants all across the world. Our focus on operational results has ensured our success. Uniper's Economic Flexible Operation is a cost-effective commercial solution which offers a unique range of expert flexibility support in a single package. We take a holistic approach, addressing flexibility issues which will affect plant on an immediate, mid-term and long-term basis. The component services have been developed and demonstrated over decades, focusing on economic operation, maximizing income and reducing risk.

#### **4. Summary**

Changing market requirements and an increasing portfolio mix of different power generation plant places continually evolving demands onto existing power plant operators. Our goal is to find and deliver the right mix of capacity, availability, reliability, flexibility, and efficiency at the lowest sustainable cost whilst remaining safe and compliant and we have a track record of demonstrating success in doing this. In Uniper we have the requisite experiences and expertise which coupled with our innovative tools and practices enables us to help you maintain a competitive edge in your power plant operations.

## 5. Profile of the speaker

**Paul Askew**

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### Profile

A highly motivated and results driven Energy Industry Professional with extensive experience in Leadership, Functional and Engineering roles across diverse geographic and business areas.

Adept at leading high performing teams and with a solid history of achievement in successful delivery of challenging business targets, change programs and performance enhancement. Driven by the need for delivering sustainable excellence throughout the business organization by empowering people to maximise their potential.

Possessing a flexible attitude and approach to work and seeking demanding and exciting roles that utilise current experience and present a significant further stretch of capabilities.

### Employment Chronology

#### January 2018 to date.

##### Head of O&M Development & Delivery – Uniper Asset Operations

Retaining a role on the Board of Holford Gas Storage and reporting to the Senior Vice President of Uniper Asset Operations. I am accountable for the successful development and delivery of operation and maintenance service provision to global energy industry clients.

#### March 2017 – December 2017.

##### Operations UK Manager – Uniper Energy Storage

Continuing as Operations Manager for Holford Gas Storage, I am further accountable for all aspects of UK Operations including Financial and Commercial performance. My role now includes Directorial responsibilities as a Board Member of Holford Gas Storage Ltd.

**Key Achievements:** Consistently meeting and exceeding business targets in a challenging market period for gas storage; including achieving zero harm and cost reduction targets whilst maintaining compliant operations and delivering major work plans.

#### November 2010 - July 2012.

##### Head of Driving Improvement – E.ON Global Steam Fleet - Germany

Working from Hannover, accountable for driving added value from the technical performance of generation plants by the development and implementation of a Continual Improvement culture across the European fleet.

**Key Achievements:** To continually improve performance in challenging markets and with aging plant, the Global Generation Business needed to identify, share and transfer best practices across its fleet. In response to this, I developed and led the implementation of a standard approach to Continual Improvement across 7 European Countries and 4 Generation Fleets

resulting in a significant increase in co-operation across boundaries leading to best practice sharing and implementation across all fleets.

**April 2007 - November 2010.**

**Executive Roles at E.ON Ratcliffe on Soar Power Station**

Having initially joined the Executive Team at Ratcliffe Power Station as SHE Manager, I was challenged to broaden my influence to include accountabilities for Safety, Health, Environment, Site & Business Services, and Business Excellence.

**Key Achievements:** Embedding sustainable increase in all areas of business performance, I led through increased engagement, clear target setting and an innovative approach to deliver year on year improvements. The focus on business excellence through implementation of a Lean Six Sigma approach led to £1M improvement in EBIT in a single year as well as recognition via the Lean Six Sigma Academy.

**March 2009 - October 2009.**

**Engineering Manager - E.ON TriGas (secondment from Ratcliffe)**

Responding to an opportunity for a short term secondment, I took the position of Engineering & Maintenance Manager at E.ON TriGas, with accountabilities for ensuring the ongoing engineering health of the assets of 2 x CCGT Power Stations and Gas Supply Pipelines.

**Key Achievements:** Development and delivery of a business plan to focus the Engineering & Maintenance team on the needs and challenges of continually improving performance against difficult market conditions. This led to effective re-organisation of the engineering teams across 3 locations into a single focused team.

**April 2006 - April 2007.**

**Safety & Health Manager - E.ON Connah's Quay Power Station**

**March 2003 - April 2006.**

**Head of Technical Audit - E.ON UK Finance**

Based in Westwood as a direct report to the Head of Internal Audit, I was accountable for providing assurance that the risks due to safety, health, environment and engineering were being adequately managed across the entire UK Business.

**Key Achievements:** Changing the approach to audit allocation by engagement of the business in developing a risk based audit program, resulting in a more efficient use of audit resource focusing on the key risks to E.ON and delivered to a smaller budget. Further change was implemented by realigning the Technical Audit philosophy to being supportive of business units and assisting them in delivering and demonstrating compliance.

**June 1990 - March 2003.**

**Quality / Project Engineer – Powergen / E.ON Technology Centre.**

Based initially in Procurement and latterly in the E.ON Technology Centre, the role involved supplier chain management and audit of UK and International manufacturers and suppliers to key Power Plant projects. I led audit and inspection teams and developed new supplier relationships with organisations in UK, Europe, Canada, Asia & the Far East.

**Key Achievements:** Avoidance of risks to legislative compliance and technical performance from the supply of non-compliant plant and equipment by representation of our interests at the point of work. Additionally, added value was secured by developing quality arrangements with low cost suppliers in emerging economies to enable realization of cost savings.

**March 1996 - November 1996.**

**London Underground PFI Bid team (Secondment from Technology Centre)**

Based in London as part of a joint venture Private Finance Initiative Bid Team, I was charged with providing technical due diligence and the development of quality management systems and reliability modeling in support of the bid to operate and maintain the London Underground power supply and distribution system.

**Key Achievements:** Compliant and highly commended PFI bid produced.

**December 1985 - June 1990.**

**Electrical Engineer. C.E.G.B. Cottam Power Station**

Based initially in Shift Operations and latterly in the Electrical Engineering Team, I was accountable for the long term integrity of Electrical Plant and development and delivery of updated control systems.

**Key Achievements:** Safe delivery of technical projects such as replacement of OEM relay based control systems with bespoke PLC systems and successful contract management during overhauls of key items of heavy electrical plant.

**September 1981 - December 1985.**

**Student Apprentice. C.E.G.B. West Burton Power Station**

Power Plant Engineering Apprenticeship based at West Burton Power Station, Derby College of Further Education and Derby College of Higher Education.

**Key Achievements:** CEGB Midlands Award for Outstanding Development during Training.

**Education and Professional Development / Professional Memberships**

2017	The role of a Company Director – UK Training
2016	Uniper Leadership Essentials Program
2013	E.ON Talent Development Program
2012	E.ON Lean Six Sigma Silver, Green & Black Belt Programs
2010	E.ON Leadership Essentials Program
2009	E.ON Plant Leadership Development Program
2006	E.ON Leadership Program – Call to Arms
2005	NEBOSH Diploma in Occupational Health & Safety
2003	Institute of Occupational Safety & Health
2003	NEBOSH General Certificate in Health & Safety
1997	BA (Hons) Business Studies (2:1) - Sheffield Hallam University
1985	HND Electrical Power Plant Engineering, Derby College of Higher Education
1983	OND Electrical Power Plant Engineering, Derby College of Further Education
1981	King Edward VI Grammar School, Retford

**Language Capabilities / Interests**

Basic German & French language capability.

Interests include Motorcycle riding, extensive travel and music.