ENERTRAG
One energy ahead

OperationsNews

Operation

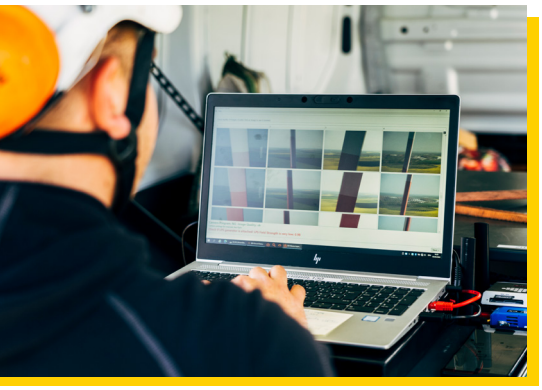
Issue **2/2022**

CONTENTS

Convincing not only on paper: First inspections of our drones carried out successfully

They are now an integral part of our team at ENERTRAG Operation: our new colleagues, the drones. Since May 2022, they have been doing what used to require time-consuming rope-climbing work, performing non-contact rotor blade inspections and lighting protection system (LPS) measurements on wind turbines.

The advantages of the new technology are obvious: Higher work safety and enormous time savings, which result in less downtime, speak for themselves. In addition, the procedure meets all relevant industry standards and the quality has been externally confirmed by TÜV NORD.



Viewing images of the drone inspection on site in the wind field

So far, so good – in theory. In practice, however, our digital helpers first had to prove themselves, and so they have been under special observation since May. During this time, they were observed not only by our expert colleagues from ENERTRAG Operation, but also by the first customers who wanted to get a live impression of the drone inspection. At the beginning of May at a wind farm near Halle (Saale, Germany), things got serious: **Matthes Schachtner**, Head of Technical Services at ENERTRAG Operation, and **Nils Schreiner**, Head of Technical Due Diligence at our customer Blue Elephant Energy AG, share the experiences they made during the day in the wind field. →

Innovation, quality & people in harmony

"Higher, faster, further" seems to be the motto of today's society. Thus, not losing the balance between innovation, quality and people is a major challenge for companies nowadays. In this issue of our OperationsNews, we would like to point out: The symbiosis of all three topics makes it. ENERTRAG Operation combines innovation and occupational safety thanks to modern drone technology. Further, in this issue you get comprehensive information on the subject of risk assessments – in Germany and France. In addition, our sister companies ENERTRAG Systemtechnik and Dark Sky provide an insight into their quality management.

We hope you enjoy reading!

Michael Dahm
Managing Director

How was the mood on site?

"Of course you're tensed up when the customer is live on site and we're performing a service that we haven't been offering for that long," admits **Matthes Schachtner**. He adds, "It was comforting that the weather cooperated right from the start. Our drones fly even in stronger winds of up to 10 m/s, but in the event of rain or other bad weather, even our drones wouldn't have been able to do anything." For **Nils Schreiner**, the expectations of the meeting were quite clear: "We wanted to get an idea of the new process on site and check whether it delivers what it promises. For us, it was of course also exciting to follow the drone operation live, but certainly we as customers were much more relaxed about the situation than the colleagues at ENERTRAG Operation."

> *From our side, there is nothing to complain about. The drone inspection went smoothly and the colleagues – both, human and machine – did their job quickly and competently.*
>
> Nils Schreiner,
> Head of Technical Due Diligence
> Blue Elephant Energy AG

What impression did our drones make in the field?

Nils Schreiner is convinced by the performance of our new team members: "It's impressive how quickly the drone completed the flights and how quickly we got the first images of the rotor blades. The time saved at the plant is enormous." **Matthes Schachtner** is also satisfied with the process and the result: "The operation went really smoothly, there's nothing to complain about. Of course, we owe this not least to our inspectors on site, who quickly and competently ensured that the rotor blades were in the right position and confidently aligned, launched and landed the drone."

What is the personal conclusion after the day?

"From our side, there is nothing to complain about. The drone inspection went smoothly and the colleagues – both, human and machine – did their job quickly and competently," says **Nils Schreiner** summing up the day from the customer's point of view. **Matthes Schachtner** draws a similar conclusion: "I am happy that we were able to present ourselves so well and that our technology performed well under the strict eyes of everyone. The visit of the wind field was an absolute success from ENERTRAG Operation's point of view!"

> *I am happy that we were able to present ourselves so well and that our technology performed well under the strict eyes of everyone. The visit of the wind field was an absolute success from ENERTRAG Operation's point of view!*
>
> Matthes Schachtner,
> Head of Technical Services
> ENERTRAG Operation

Nils Schreiner adds another aspect that for him is an absolute plus point about the new technology: "For us, the factor of increased occupational safety was one of the deciding factors in choosing the new technology. With equally high-quality results of inspections by drone that we have received, it goes without saying that we want to minimize the risk for everyone involved in our plants."

Conclusion: customer happy, ENERTRAG Operation happy. We are looking forward to further operations with our drones! →

Pleased looks: Representatives of ENERTRAG Operation and Blue Elephant Energy are convinced by the drone inspection. From left to right: Matthes Schachtner (Head of Technical Services) and Robert Gall (Inspector, both ENERTRAG Operation), Sascha Wirth (Technical Director) and Nils Schreiner (Head of Technical Due Diligence, both Blue Elephant Energy AG), Anne Sommer (Sales, ENERTRAG Operation). © ENERTRAG Betrieb GmbH, Photographer: Jewgeni Roppel

This is how a drone inspection works: 6 steps to meaningful results

The rotor blade inspection by drone is currently performed in three flight phases, one for each rotor blade. In each of these phases, the drone takes off from the ground, flies autonomously over the rotor blade from different angles, documents its flight and is then safely landed by an experienced drone pilot. In parallel, the LPS is checked using a field strength meter attached to the drone. If the LPS is not intact, this conclusion is not the only one that we can draw: The faulty spot in the rotor blade can be precisely located, thus facilitating the upcoming repair.

ENERTRAG Operation is currently working on improving the use of drones even further. For example, it is planned that the drone inspection can also be carried out in a single flight phase in the near future. This further increases time savings and minimizes downtime. Work is also underway to use drones to fly over the towers of wind turbines. All current developments will be published in the next issues of our OperationsNews. Stay tuned!

By the way: In France operators have to prove the functionality of the lightning protection system too by **January 1st, 2024**. Our colleagues from France also have a solution.

Contact for more information:

Marceau Lequeux-Sauvage
+49 39854 6459 186
marceau.lequeux-sauvage@enertrag.com

FIND MORE INFORMATION AT

betrieb.enertrag.com/inspektionen-und-pruefungen/drohneninspektion

About Blue Elephant Energy

Blue Elephant Energy AG develops, acquires and operates solar parks and wind farms in eight countries with a focus on Western Europe. Founded in 2016, BEE currently operates a renewable energy portfolio of 1,282 MW, of whicht parts are currently under construction. BEE's renewable energy assets contribute to sustainable energy supply: in 2021, they saved 506,000 tons of CO_2 and provided clean energy to 359,000 homes. As part of its ESG strategy, BEE contributes directly to social projects at the local level, particularly in Chile and the Dominican Republic. BEE has secured approximately 1,500 MW of additional solar farm capacity under (Co-) Development Agreements with a limited number of developers, based on long-standing relationships and mutual respect. With the equity and profit participation capital provided by BEE shareholders and medium-sized insurance companies, well over EUR 1.2 billion has been invested since the company was founded.

BLUE ELEPHANT ENERGY

WE ARE INTERESTED IN YOUR

FEEDBACK!

How do you like the topics of the **current OperationsNews**? What do you wish for the **next issue**? Is there anything else you would like to tell us about our newsletter?

Take part in our survey **anonymously** and help us to constantly improve our offer for you. Thank you in advance and we look forward to your feedback!

PARTICIPATION LINK:

ENERTRAG Operation in action – at trade fairs and industry events, on and offline

Our colleagues are regularly on the road for you, analog and digital. Get an insight into our events so far and those that will follow this year. We look forward to meeting you in person!

Review: Here's what's been going on so far in 2022

March 9-10	PL	**Wind Farm Operators Forum**, Sopot | Gdansk
April 25	GER	**HaseWind regulars' table**, Rampendahl | Osnabrück
May 3-5	GER	**BWE-Seminar** "Technical Management of Wind Parcs" – Incl. a presentation by Peter Baulig | ENERTRAG Operation
May 5	GER	**Wind branch day**, Schleswig-Holstein, Husum
June 10	FR	**FootÉolien** (by FRANCE ENERGIE EOLIENNE, FEE) – Football tournament, organized by the French Wind Energy Association
June 15-16	FR	**Regate EnR**, Renewable Energies Regatta
July 6	GER	**Summer party** of the Federal Association of Renewable Energies (BEE)
	FR	Opening of the **new ENERTRAG office** in Neuville-sur-Oise
July 21	GER	**BWE Webinar** „Rotor blade inspection & lightning protection measurement with drone: field report & innovative data analysis“ ★ → **HERE** you can rewatch the webinar (German only)! **register.gotowebinar.com/recording**
August 10-11	DE	**Wind branch day North Rhine Westphalia** – Workshop by & with ENERTRAG Operation

David Müller, Head of Sales at ENERTRAG Operation, informs at the **HaseWind regulars' table** about the new drone technology, among other things.

Opening of the **new ENERTRAG office** in Neuville-sur-Oise, where also colleagues from ENERTRAG Operation are working

Outlook: Look forward to these upcoming events

September 1-2	GER	**Conference "Service, maintenance, operation"** (by BWE), Hamburg
September 14	GER	**Branch day renewable energies 2022** (LEE), Hanover
September 27-30	GER	**WindEnergy**, Hamburg – Hall 4, Booth A4.237 ★ Highlight
October 10	GER	**HaseWind regular's table,** Rampendahl | Osnabrück
October 12-13	FR	**12ème Colloque National Éolien** – by the French Wind Energy Association, Parc floral de Paris (Booth 90) ★ Highlight
November 8-10	GER	**30th Wind energy days** (Spreewindtage), Linstow ★ Highlight
November 17-18	GER	**Wind energy days North Rhine Westphalia**, Bad Driburg
November 29 – December 1	GER	**BWE-Seminar** "Technical Management of Wind Parcs“ – Incl. a presentation by Peter Baulig | ENERTRAG Operation
December 7-8	FR	**Energaïa, le forum des énergies renouvelables** – Renewable Energy Forum, Montpellier

WindEnergy Hamburg
The global on & offshore event

NOTE: It can always happen that participation in an event has to be cancelled (at short notice). You would like to exchange ideas personally with a colleague from ENERTRAG Operation and make sure that someone is present?
Please contact us and we will clarify this in advance: **betrieb@enertrag.com** or **+49 39854 6459-200**

Lighting and aircraft detection lighting system (ADLS) at a high quality level

The topic of quality is given a high priority throughout the ENERTRAG world – this also applies to the two subsidiaries ENERTRAG Systemtechnik and Dark Sky, of course. We shed some light on the subject: How exactly do both companies deal with the issue, what measures do they take and what does the future look like?

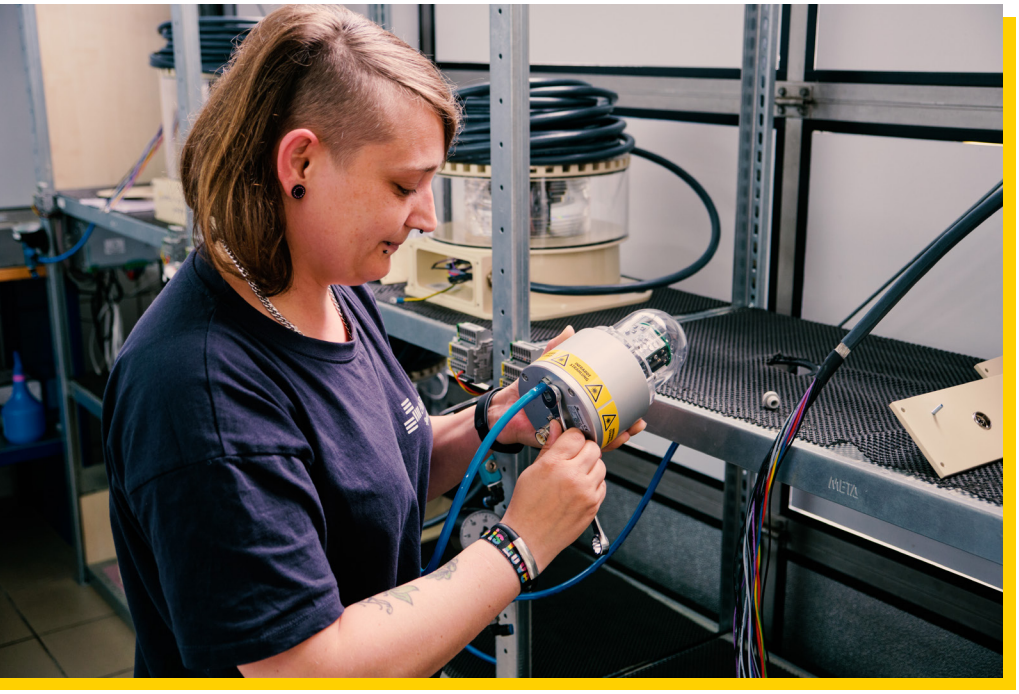
Quality management (QM) always plays a special role in the supply of products and services. Therefore, different QM systems are maintained at ENERTRAG, depending on the area of application.

As an OEM supplier for lighting technology, ENERTRAG Systemtechnik has already implemented a system for quality management since 2013. ADLS supplier Dark Sky – also part of the ENERTRAG Group – has maintained a comprehensive quality management system since 2020: here, it was a requirement from the new administrative regulation on aircraft marking that all ADLS suppliers must demonstrate a quality management system according to ISO 9001 in order to obtain certification.

In June, both systems were again checked by DEKRA as part of annual audits and the effectiveness of the systems was once again confirmed.

But what does this mean in practice? In practice, it is particularly important that all processes in the company are described in detail and that all employees work according to them. Furthermore, comprehensive processes are defined for the handling of problems and the measures to be concluded from them. An example of ENERTRAG Systemtechnik: By means of the defined processes, it is ensured, among other things, that every LED light is manufactured and tested according to the same high requirements and that every customer receives a consistently high quality with every delivery. Particularly relevant parameters are tested on each individual light, such as the function of all seals. For this purpose, ENRTRAG has developed a special test stand with which a pressure test can be performed on LED lights.

Test drive through the wind farm to check the functionality of the ADLS



ENERTRAG employee **Jacqueline Georgi** during the pressure test

At Dark Sky, the quality processes particularly focus on the planning and approval of ADLS installations, because different rules apply in each region for their commissioning. A central role is played by the so-called type examination for the ADLS, which also includes a site inspection. Tilman Herweg, project developer at Dark Sky, prepares these tests. As one of only a few ADLS providers, Dark Sky creates site inspections directly in-house, without the involvement of external experts. This not only requires extensive documentation: at the end of each site check, there is a test drive with the service vehicle, carrying a transponder that represents a very low-flying aircraft and simulates its signal – these are the most difficult for an ADLS to detect. This →

allows realistic testing of whether the systems are functioning properly and whether they meet the required quality standards. In conjunction with the company's ISO certification, the Dark Sky site tests have a high level of acceptance among aviation authorities and have already led to approval for ADLS operations in more than 200 cases.

In the future, product development and product qualification will also be given more attention within the framework of QM. To this end, the aim is for more and more parts of ENERTRAG to qualify in accordance with the APQP4Wind program. This quality standard, which is supported by well-known wind turbine manufacturers, is intended to standardize the provision of documents at an early stage of service provision.

Dark Sky department manager Thomas Herrholz has already successfully completed the management awareness training for APQP4Wind: "Even if the program leads to additional work in the short term, it will support us in new product developments and facilitate cooperation with manufacturers. In the future, we will have to consider lighting and ADLS as a unit and integrate them into the manufacturing process at an early stage; our decentralized ADLS is ideal for this."

Thomas Herrholz and his employees are looking expectantly to the near future. For example, new guidelines for lighting are expected in some markets and the topic of ADLS is becoming increasingly important internationally. With a professional quality management according to international standards, ENERTRAG Systemtechnik and Dark Sky are well positioned. ▪

"In the future, we will have to consider lighting and ADLS as a unit and integrate them into the manufacturing process at an early stage; our decentralized ADLS is ideal for this."

Thomas Herrholz,
Department Manager at Dark Sky

Safety First: Avoiding dangers around, in and on a wind turbine

It is well known that safety is important when working at wind turbines – not only because of the necessary work at dizzying heights. In this article, we take a look at regulations and standards around the topic of risks and risk prevention in our two core markets, Germany and France, and present first-hand insights into the country-specific procedures and regulations – from our experts at ENERTRAG Operation!

RA & PdP: For maximum safety when working on wind turbines

In order to identify and eliminate or, at least, contain sources of danger that can inevitably lurk around, in and on a wind turbine, there are procedures in Germany and France that are required by law and the branch and that are intended to lead to a high level of safety in the workplace: The **risk assessment** (RA, german: Gefährdungsbeurteilung) in Germany and the **Plan de Prevention** (PdP) in France. How do RA and PdP differ, what are the requirements in the different markets, and what are typical findings that often emerge from the assessments?

Our experts clarify:
→ **Abdul Fattah**, 41 years old, project manager and with ENERTRAG Operation since June 2014
→ **Didier Eledut**, 53 years old, HSE Manager and with ENERTRAG France since November 2017 →

Must be able to rely on on-site safety: Inspectors at wind turbines

Risk assessment

The aim of an RA is to identify possible risks around the work on a wind turbine and to make them transparent in order to inform and protect the workers on site in the best possible way. With the help of measures according to the STOP principle (substitution or technical, organizational or personal measures), the aim is to reduce the identified risks or, if possible, to eliminate them completely. RAs carried out by ENERTRAG Operation are usually site-, object- and plant-related. In detail this means:

- → **Site-related** – refers to the location of a wind turbine, e.g. a specific wind field.
- → **Turbine-related** – refers to a specific turbine type of a specific manufacturer.
- → **Object-related** – refers to an object, e.g. a wind turbine

Plan de Prevention

The aim of a PdP is to identify and make transparent possible risks that can occur when activities, equipment or materials used by different companies/service providers at a wind turbine overlap in time and/or space (so-called interference risks). The PdP contains all preventive measures to be taken in relation to the identified interference risks – work can only be started or equipment/materials used once the described measures for risk avoidance or mitigation have been implemented.

Due to the slightly different approach of both documents, the RA and its details will be considered first, followed by a comprehensive discussion of the PdP. →

Risk assessment

What steps are required to create an RA?

Abdul Fattah: When we prepare an RA, the first steps are a review of existing documents, followed by an inspection of the surroundings on site at the wind farm, including the access roads, for example. In addition, for each turbine type and wind farm, a representative wind turbine is inspected from the basement to the nacelle, and if there is an adjacent transformer station, this is usually also inspected. This gives us a 360° impression of all relevant conditions and thus possible danger spots.

How are the results of these inspections and assessments documented?

All findings from the on-site inspections are documented in detail, combined with other data relating to the wind farm and additional information from the operator or, if applicable, the plant manager. First of all, there are **reports from the site inspections**, on the basis of which an **assessment of possible risks** (the actual RA) is then prepared for each turbine type. Based on the risks identified, **technical, organizational and/or personal measures** are then defined to eliminate or, at least, reduce identified risks. In addition, there is usually a **hazardous substances register** for each type of turbine and an **operating manual** for each single turbine. The operating manual contains instructions and information from the operator to all those who work in the wind turbine in order to avoid possible dangers, accidents and health risks. For the sake of simplicity, we refer to the entirety of these documents as an RA. A separate RA is prepared for each turbine type in the wind farm.

In addition to the listed services, which are part of an RA as standard at ENERTRAG Operation, there are optional services within the scope of our documentation package, e.g. the delivery of information signs or the preparation of situation, emergency, alarm and rescue plans or evacuation instructions.

Is there an obligation to carry out an RA in Germany?

The obligation to prepare an RA results from various ordinances, laws and guidelines. To be precise: ArbSchG §3, §5 & §8 (=German occupational health and safety act), BetrSichV §3 (=German ordinance on industrial safety and health), DGUV V1 §6

Not only present at height: Occupational risks around wind turbines

(=Ordinance of the German Statutory Accident Insurance) as well as FGW TR7 A1, paragraph 5.1 (=Technical guidelines of the German *Fördergesellschaft Windenergie*). From this list it should already be clear that the preparation of RAs should be taken seriously.

Is it also checked whether the site-, object- and plant-related RA is actually available on-site?

The described obligation is usually monitored, controlled and, if necessary, sanctioned by the respective trade supervisory office or the respective office for →

occupational safety. They are authorized to carry out unannounced inspections at any time, to impose fines in the event of non-compliance with occupational health and safety legislation, and to shut down plants in the event of imminent danger.

Is there a standard on how to structure an RA?

Even if there is an obligation to prepare an RA in Germany as described above – there is no real standard for the preparation and structure. Of course, it is important that it at least contains and evaluates all possible risks and includes suitable measures to eliminate or mitigate the risks. In addition, the RA identifies and defines all the necessary inspections and inspection intervals relating to occupational health and safety, as well as the prerequisites that competent persons must fulfill for inspectional operations (i.e., recurring annual inspections, expert inspections, ZÜS inspections, DGUV V3 inspections, for example).

And who is responsible for ensuring that the identified, necessary measures are implemented?

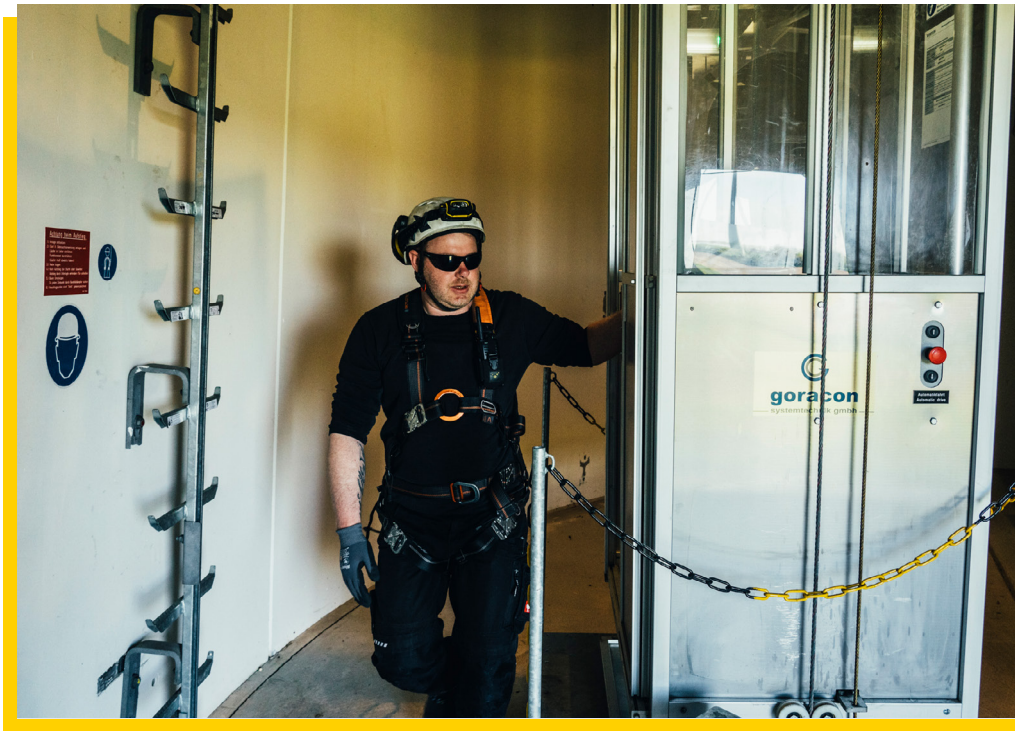
The managing director of the wind farm/plant is responsible for implementing the defined measures. Of course, we at ENERTRAG Operation are happy to provide support at this point if required. The implementation of the measures is a classic task of a technical operations manager.

From your experience: Are there any insights that you repeatedly gain during an RA that you would describe as typical?

It is particularly noticeable that there does not seem to be any uniform occupational safety equipment in the wind industry in Germany. There are wind farms where the wind turbines are equipped with first-aid boxes, fire extinguishers, eye wash bottles and rescue equipment, and in yet other wind farms there are not even fire extinguishers stored in the wind turbines. An RA is worthwhile in any case!

What would be your final conclusion on the subject, Abdul?

It is important to understand: An RA is never conclusive. It must be regularly checked to ensure that it is up to date. Of course, the state of the art must always be taken into account - if necessary, the assessment must be updated immediately. If the review of an existing RA shows no need for updating, this must be noted in the documentation, stating the date of the review. →



Caution is advised – also in the tower of a wind turbine

Plan de Prevention

Didier, why should one create a PdP?

Didier Eledut: As described in the introduction, a PdP must be drawn up in particular if the personnel of different companies, such as the operator and a service provider, work at the same time at one location, for example in a wind farm. This is due to the fact that the parallel activity and the associated presence of various workers and work equipment can naturally give rise to new potential risks that may not occur in other day-to-day business.

Who is responsible for the preparation of a PdP?

The preparation of a PdP is in the responsibility of all companies working at the wind turbine at the same time as well as the operator – the latter is in charge of the preparation. They are required to conduct a joint site visit and identify potential risks. If it is determined that risks may arise due to parallel or successive work, all parties involved are obliged to analyze them within the framework of a PdP and to derive suitable measures. The results of these analyses must be made available to all parties involved and can usually be accessed in the wind turbine itself as well as digitally.

Is there a standard that describes what information a PdP must contain? And if so, who defined it?

The wind industry in France is represented by the association France Energie Eolienne (FEE). And within the FEE, there is a dedicated working group to define what a PdP must contain. This initially includes very rudimentary information, i.e. the names of the companies involved as well as →

the coordinates of the wind turbine(s) under consideration and the existing access routes. In addition, there is the definition of the tasks and the time schedule of these tasks of all companies involved. Of course, information directly related to possible hazardous situations must also be included: An overview of first aid measures in case of emergency is also included in the PdP, as well as instruction on how to behave in emergency situations, e.g. in the event of a storm, fire or earthquake. Also part of the PdP is the definition of the dangerous operating phases and the prevention means to be used, in other words the risk analysis with recommendations for action based on it, as well as an overview of the materials, systems and devices to be adapted depending on the activity and their maintenance conditions.

Is there a legal obligation to prepare a PdP, or is it voluntary?

As in Germany, there is a legal obligation to prepare a PdP in France. The basis for this is provided by the French Labor Code (French: Code du travail) in Articles R.4511-1 and seq. Article R. 4512-6 of the law clearly states, for example, that all companies involved must jointly inspect the workplaces concerned, the equipment located there and any materials provided by external companies before services are performed in order to identify potential risks.

Who controls whether there is a PdP?

Usually, once the PdP has been completed, it is signed jointly by the responsible managers of the companies involved. In addition, it is intended that all employees working on site also sign the document to assure that they have been informed about potential danger points and resulting safety regulations. If, despite all precautionary measures, an accident should nevertheless occur, the competent authority, the Direction Générale du Travail (DGT), will also check whether a PdP existed before the activity was carried out during which the accident occurred, whether the cause of the accident was foreseeable, whether recognized measures were communicated, and whether preventive measures were taken to eliminate or reduce the risk of the accident.

At what intervals does a PdP have to be drawn up? Are there any requirements?

In principle, the document is valid for the duration of the contract between the companies concerned and there is no general interval at which a PdP must be renewed. In the case of long-term contracts, the PdP is nevertheless generally reviewed once a year and updated if necessary; if the conditions change, it is of course also updated outside the interval. →

Summary

Whether in Germany or France, whether on, in or around a wind turbine: The safety of everyone involved in work on a wind turbine must always be given the utmost attention. Not only because of common sense, but also because of legal regulations that explicitly require risk analyses and safety protocols.

For this reason, ENERTRAG Operation offers the preparation of risk assessments and Plan de Preventions: For maximum safety at your plants. ▪

↘ WOULD YOU LIKE MORE INFORMATION ON THIS TOPIC? PLEASE CONTACT US!

→ **GERMANY:**
David Müller
+49 39854 6459-200
betrieb@enertrag.com

→ **FRANCE:**
Marceau Lequeux-Sauvage
+49 39854 6459 186
marceau.lequeux-sauvage@enertrag.com

↘ **IT'S TRADE FAIR TIME AGAIN SAVE THE DATE!**

Visit us at **WindEnergy in Hamburg** from **27 – 30 September** and learn more about the contents of this issue of our OperationsNews and other exciting topics!
Hall 4, Booth A4.237

Imprint:

ENERTRAG Betrieb GmbH | Gut Dauerthal | 17291 Dauerthal | Office: Eddesser Str. 8 | 31234 Edemissen
Phone +49 (0) 39854 6459 200 | Mail: betrieb@enertrag.com | betrieb.enertrag.com

Trade register: Neuruppin HRB 9293 | Managing directors: Matthias König, Michael Dahm
VAT identification number DE814477632

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