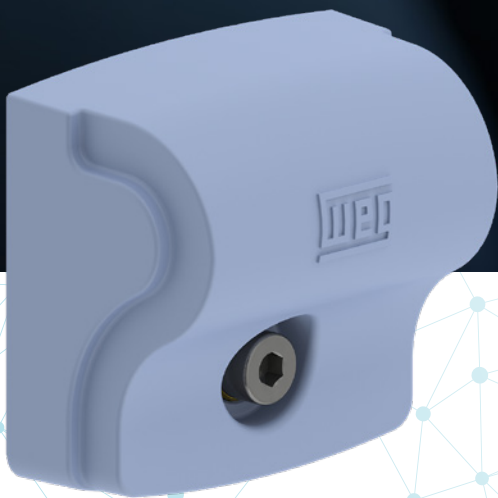


**Motors** | Automation | Energy | Transmission & Distribution | Coatings



# WEG MOTOR SCAN

WHITEPAPER



# INDUSTRY

will never

# BE THE SAME AGAIN

The start has been made for a technological revolution that will overcome the barriers between what is physical and digital. Everything that can be connected will be connected. And this transformation has begun. Industry 4.0 brings with it a trend toward total automation of plants, raising the concept of efficiency to a level that never seen before.

This integration between machines that can make decentralized decisions and cooperate with each other and with humans, is possible thanks to tools such as big data, cloud computing and Internet of Things (IoT). The latter, combined with automated systems, allows you to connect the Internet with objects, beyond smartphones, tablets and computers.

With IIoT, the Industrial Internet of Things, so-called intelligent factories emerge, making the connection between sensors and other devices, to collect information in real time, analyze them and create response actions. The industry thus gains in efficiency, result of the economy of resources, increase of productivity and reduction of the time of inactivity, through the predictive maintenance of machines and equipment.

In the case of electric motors, the monitoring through an intelligent device allows preventive actions and avoids unwanted stops in the production, increasing its effectiveness. WEG applied this technology by developing **WEG Motor Scan**, a monitoring solution to control motors installed in the most diverse applications of the industrial plant.

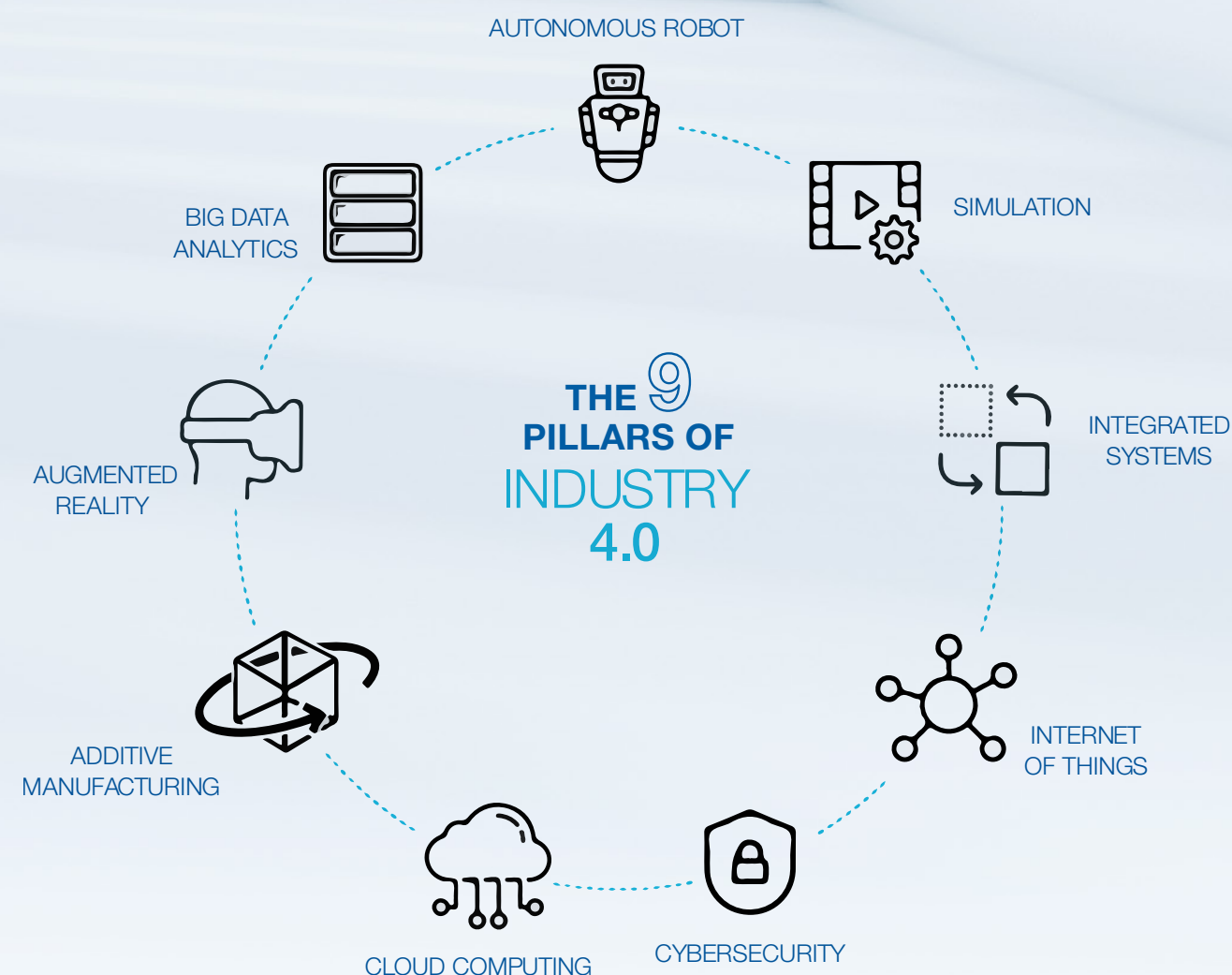
Based on data captured and sent to the cloud, it is possible to make faster and more assertive decisions, especially in cases of predictive maintenance, ensuring greater efficiency and longer engine life.

In this material, you can deepen knowledge about the concepts of industry 4.0 and WEG Motor Scan, drawing the benefits of technology for an innovative and much more competitive industry.

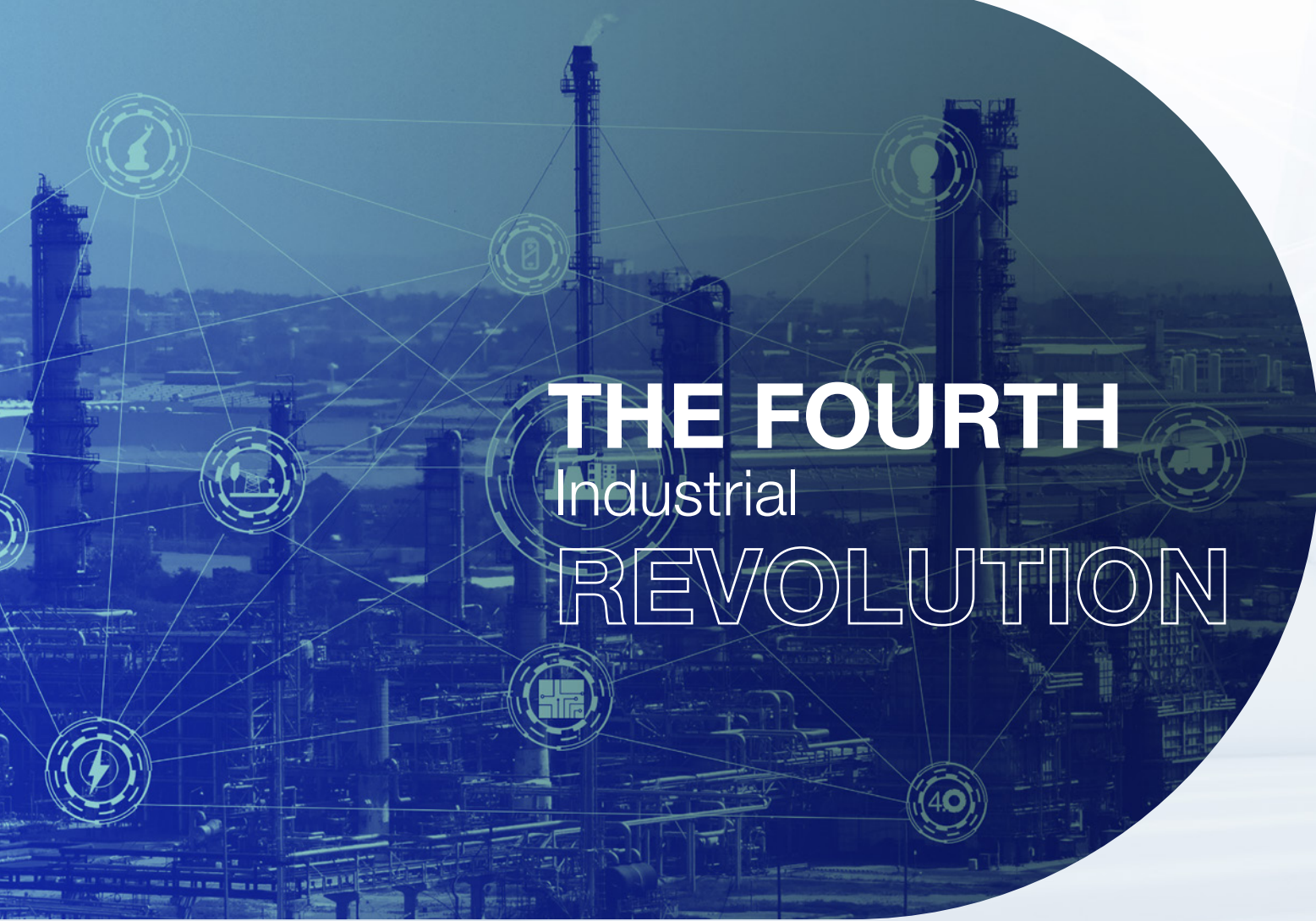
## AN INTRODUCTION TO INDUSTRY 4.0

The concept of Industry 4.0 was first used at the Hannover Fair in 2011, due a high-tech strategy project of the German government, a reference when it comes to **innovation**. The project involved several spheres of society to modernize and further refine local industries.

The industry 4.0 model created in the country is based on the understanding that investments in innovation studies and projects should be focused on the technological content and its benefits to society, not just in the financial sphere.







# EXPERT ESTIMATES FOR THE COMING YEARS

**The economic projections from smart factories are shocking.** The consultant Accenture estimates that it could add \$ 14.2 billion to the world economy over the next 15 years.

According to Gartner, by the end of 2017 were 8.4 billion devices online, volume 31% higher than in 2016. The account is conservative compared to the estimate of another consultancy, IDC, which points to **14.9 billion connected handsets**. By 2025, the number should reach 82 billion. They are devices of the most different types, ranging from smartphones and notebooks to power

generators and equipment used in various applications, such as transport solutions and even in doctors' offices. At the largest US telecom carrier, for example, the connections of Internet of things from factories grew 84 percent in 2017.

The Global Innovation Barometer, a survey that compiles views of more than 4,000 leaders and people interested in transformations in 23 countries, points out that **70% of entrepreneurs have positive expectations about the fourth industrial revolution.**

**A growing number of manufacturers report substantial progress, especially when moving beyond Industry 4.0 buzzwords and focusing on valuable, business-specific applications.**

This new revolution was also the subject of a major global study by Deloitte, a UK-based consulting firm. With more than 1,600 executives from 19 countries, the survey sought to understand whether companies and leaders are ready to tap the full potential of the **Industry 4.0**.



Marked by the convergence of digital, physical and biological technologies, **Industry 4.0** is also called the **fourth industrial revolution**, as a sequence to three historical processes of transformation:

The **first** marked the rhythm of manual production to mechanized, between 1760 and 1830.

The **second**, around 1850, brought electricity and allowed mass manufacturing.

And the **third** happened in the mid-20th century, with the emergence of electronics, information technology and telecommunications.



Mechanization  
**1**



Electricity  
**2**



Computing  
**3**



Collaboration  
**4**





# THE SMART FACTORIES OF INDUSTRY 4.0

Fully integrated production lines, decentralized decisions, autonomy to schedule maintenance. With intelligent plants, the efficiency in the industry is raised to the maximum power, allowing results never before seen with the technological revolution promoted by Industry 4.0.



## STRATEGY



## TECHNOLOGY

Bringing the concept into the factories, the Industrial Internet of Things (IIoT) leverages the advantages of technology for greater productive efficiency. It allows real-time measurement of machine productivity and indicates which sectors of the plant need more equipment and supplies, for example. Another advantage is the reduction of stops with the predictive analysis.

**Information that was previously generated but not processed makes new sense with the connectivity of the Internet of Things.**

The data is stored and analyzed in a precise, automated way, making objects simple in instruments for more efficiency and new functionalities, in industry and in everyday life.

Intelligent factories of Industry 4.0 have, in principle, the control of the production through Cyber-Physical System (CPS). They are control and monitoring mechanisms based on computational algorithms, in which the physical and software components are deeply intertwined.

Through these systems, industries from different market segments will experience an expansion in their service networks, incorporating the entire value chain.

# TRANSFORMATION BASED ON THE INTERNET OF THINGS

**SO USING DATA ANALYSIS, INTERNET OF THINGS AND CLOUD COMPUTING, THE PRODUCTION LINE ITSELF CAN SCHEDULE MAINTENANCE, PREDICT PROCESS FAILURES, AND ADAPT WHEN NEEDED.**

The Internet of Things (IoT) is one of the protagonists of this technological revolution because, as the name itself, it makes connectivity a real possibility in virtually all objects.

These “things” begin to communicate with each other and with the user, as a great nervous system for exchanging information between two or more points, in an intelligent and more responsive way.



IT IS  
ESTIMATED  
THAT BY **2021**,  
**25** BILLION  
DEVICES  
be  
connected  
to **IOT**



Bringing the concept into the factories, the so-called IIoT, or **Industrial Internet of Things**, leverages the advantages of technology for greater productive efficiency.

In this regard, predictive analysis is a central and determining point in anticipating problems and thus correcting them before compromising results.

By using data, statistical algorithms and machine learning techniques, the predictive analysis allows to identify the probability of future results based on historical data.

Predictive maintenance in the case of machines and equipment offers other advantages, in addition to anticipating the need for equipment maintenance services, such as:

-  Eliminate the chance of unnecessary disassembly
-  Increase equipment availability time
-  Reduce emergency stops

-  Increase the utilization of equipment life and reliability of performance
-  Determine previously manufacturing outages

## CONNECTING INDUSTRY TO RESULT

**Maintenance is critical to the life of electric motors, directly affecting industrial productivity and operating costs.**

Hence the importance of implanting **preventive** processes, and not only corrective ones, after all, the motor hardly breaks without warning.

With **WEG Motor Scan**, these “symptoms” can be previously identified through periodic monitoring of the equipment.

Vibration, temperature and operating hours are among the information that can be captured and monitored via the WEG Motor Scan, which is coupled to the motor.

The tracking is done through a smart device (App available for Android and iOS) and the **WEG IoT Platform**.

## SENSORS ARE EASILY INSTALLED IN ELECTRIC MOTORS

The sensor can be adjusted to trigger alerts based on the data obtained and to facilitate the management of several motors in the factory plant, it is possible to monitor all those that are equipped with **WEG Motor Scan** on the same screen as the **WEG IoT Platform**.

One of the characteristics of the development is its compatibility to also monitor the older motors.

**THE ADVANTAGES OF THE INDUSTRIAL INTERNET OF THINGS, SUCH AS THE USE OF WEG MOTOR SCAN, CAN ALSO BE TRANSFERRED TO OLDER MACHINES THROUGH OF RETROFIT.**



**The new technology is mainly focused on maintenance, which has the task of monitoring the integrity of the installed motors in order to ensure process efficiency and avoid the risk of downtime.**

An important ally for engineers and maintenance professionals.

Based on data captured and sent to the cloud, it is possible to make faster and more assertive decisions, especially in cases of predictive maintenance, ensuring greater efficiency and longer motor life. WEG Motor Scan is certified for use in Brazil, the United States, Australia, South Africa, Canada, Chile, Colombia, Malaysia and several countries of the European Union.



- Downtime reduction
- Maintenance routine optimization
- Increases equipment efficiency
- Reduction in spare parts
- Ready for Industry 4.0
- Add value to the product (OEM's)
- Add value to the service (maintenance companies)

## WITH WEG MOTOR SCAN YOU CAN

## CONNECT ALL FACTORY SENSORS

SYNCHRONIZE DATA  
THROUGH THE  
WEG IOT PLATFORM

NAME AND  
MONITOR  
HOW MANY  
MOTORS  
YOU NEED

ANALYZE DATA  
UPLOADED TO  
THE CLOUD

## SET THE MOTOR LOCATION

## QUICK AND SIMPLE INSTALLATION

Developed for WEG motors on frame 63 to 450, after easy installation, the **WEG Motor Scan** must be configured through a smart device (App available for Android and iOS). Installation is quick and simple without any electrical connection to the motor, and the entire process is guided directly into the application during sensor setup. The information is uploaded to the cloud via smartphone or Gateway. The data can be analyzed on the smartphone screen and an in-depth way on the WEG IoT Platform.

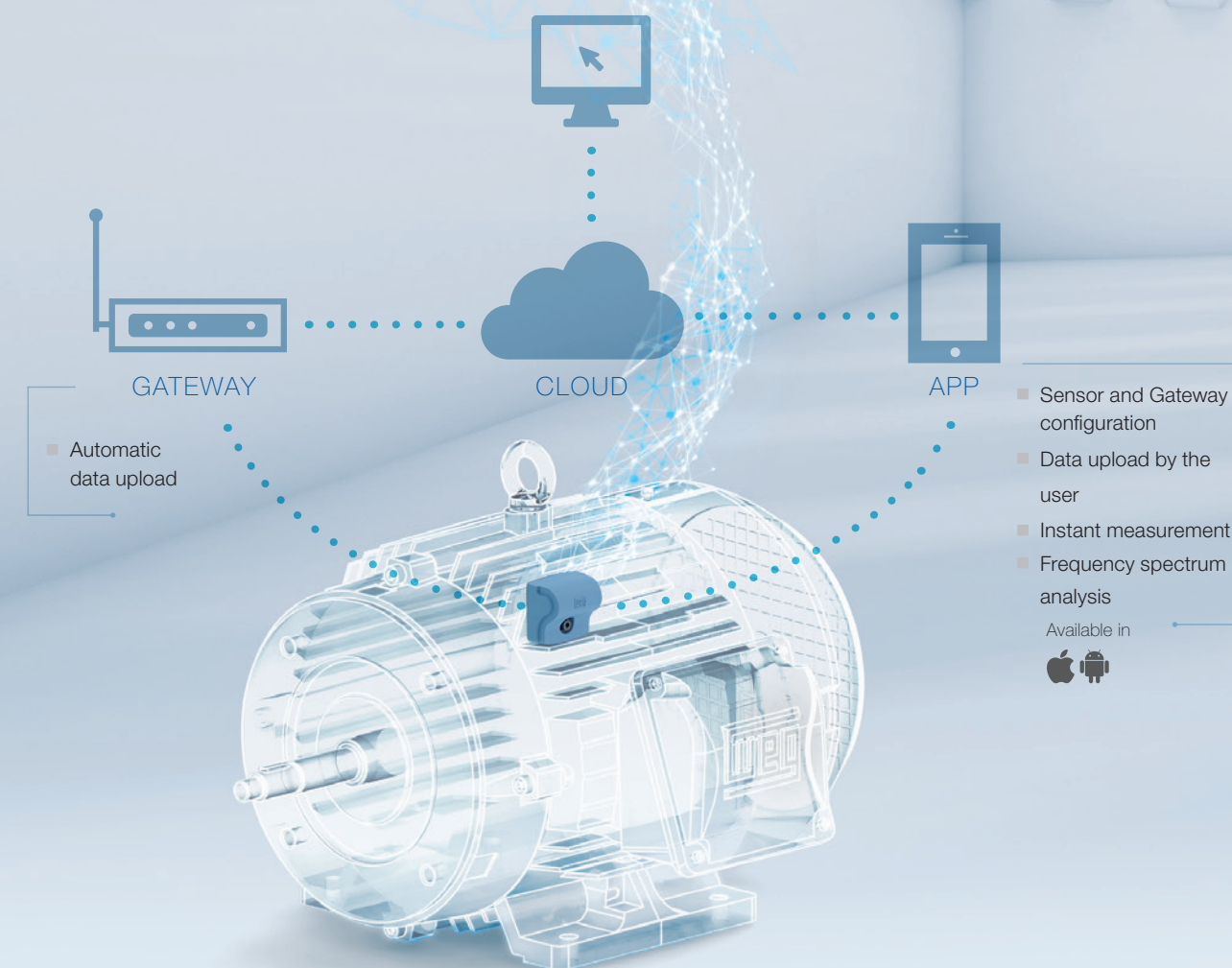


## FULL MONITORING

# WELCOME TO THE INDUSTRY 4.0

## WEG IOT PLATFORM

- Full view of stored data
- Failure diagnosis
- Warnings configuration
- Configuration of plants for easier management
- User options



THE INDUSTRY WILL NEVER BE THE SAME AGAIN.





## REFERENCES

Industry 4.0: The Future of Productivity and Growth in Manufacturing Industries

<https://www.bcg.com>

ZDNet - IoT devices will outnumber the world's population this year for the first time

<https://www.zdnet.com/article/iot-devices-will-outnumber-the-worlds-population-this-year-for-the-first-time/>

BBC Brasil - O que é a 4ª revolução industrial - e como ela deve afetar nossas vidas

<https://www.bbc.com/portuguese/geral-37658309>

G1 - 4ª revolução industrial: Como robôs conversando com robôs pela internet vão mudar sua vida

<https://g1.globo.com/economia/tecnologia/noticia/4-revolucao-industrial-como-robos-conversando-com-robos-pela-internet-vao-mudar-sua-vida.ghtml>

Valor – Conteúdo de Marca – Indústria 4.0: a jornada já começou

<http://conteudodemarca.valor.com.br/deloitte/materias/industria-4-0-a-jornada-ja-comecou/>

i9tec - Panorama do mercado de análise de dados para os próximos anos

<https://blog.i9tec.com.br/panorama-do-mercado-de-analise-de-dados-para-os-proximos-anos/>

Logique - Indústria 4.0: A revolução dos dados na sua indústria

<http://www.logiquesistemas.com.br/blog/industria-4-0/>

Deloitte - Indústria 4.0: você está preparado?

<https://www2.deloitte.com/br/pt/pages/technology-media-and-telecommunications/articles/industria-4-0-estudo-da-deloitte.html>

SAS The power to know – Análises Preditivas - O que é e por que é importante?

[https://www.sas.com/pt\\_br/insights/analytics\\_msm\\_moved/analise-preditiva.html](https://www.sas.com/pt_br/insights/analytics_msm_moved/analise-preditiva.html)

Salesforce Einstein – Entenda os Principais Conceitos e o que é Inteligência Artificial

<https://www.salesforce.com/br/products/einstein/ai-deep-dive/>

Templum - O que é manutenção preditiva?

<https://certificacaoiso.com.br/e-manutencao-preditiva-2/>

Hannover Messe – Motor Scan gets old electric motors ready for IIoT

<http://www.hannovermesse.de/en/news/motor-scan-gets-old-electric-motors-ready-for-iiot-88512.xhtml>

Guia Off Shore – App da WEG monitora por smartphone integridade e ciclo de manutenção de motores

<http://guiaoffshore.com.br/?p=902>



Grupo WEG - Motors

Jaraguá do Sul - SC - Brasil

+55 47 3276 4000

[wegmotorscan@weg.net](mailto:wegmotorscan@weg.net)

[www.weg.net/wegmotorscan](http://www.weg.net/wegmotorscan)