

# KK SCADA

*A SCADA System dedicated to wind power to ensure seamless integration and turbine optimization*

*专注于风电的SCADA系统，以保证无缝整合和风机优化*

# Agenda 目录

## 1. KK Customer Solutions

KK客户端解决方案

## 2. KK SCADA Overview

KK SCADA 简介

## 3. KK SCADA Packages and Offerings

KK SCADA 提供的业务

## 4. Terms and Conditions

条款和条件

# KK Wind Solutions in Brief 公司简介



>35

**years experience in electrical systems for wind**  
超过35年风电行业电控系统的经验

>18,000

**control systems installed world wide**  
全球装机量超过18000台

>60%

**of the entire installed offshore capacity has KK controls**  
超过60%的全球海上风机的控制系统是由KK提供

# Locations 地理位置

Global setup with a strong presence in three regions: USA, Europe and Asia  
国际化公司分布在3个主要地区: 美国, 欧洲和亚洲



# Customer Solutions 客户解决方案



Built on more than 35 years of experience in electrical systems for wind  
超过35年风电领域电控系统经验

- >18,000 control systems installed world wide (up to 6.5 MW)  
世界范围内超过18,000台电控系统的安装量(达到6.5MW)
- >800 dedicated people  
800多工作人员
- A trusted system integrator  
可信赖的系统集成商
- A global partner  
全球的合作伙伴



专注成本和质量的供应链管理

# Products & Services 产品和服务



Solutions to match any customer need in electrical systems for wind  
在风机电控领域提供符合客户需求的解决方案



Wind Turbine  
Controls



Wind Turbine  
Subsystems



Wind Turbine  
Management



Manufacturing  
and Supply Chain



Operation and  
Maintenance

## 风机控制：

我们为客户定制能够无缝整合并提高风机性能的控制系統。

## 风机子系统：

我们利用现有技术为客户定制能够快捷可靠整合风机其他部分的子系统。

## 风机管理：

监控及管理系统能够传输高质量的数据，以保证信息透明及风机的连续优化。

## 生产及供应链：

通过精细生产及灵活高效的供应链方式为客户简化流程降低成本。

## 运营及维护：

通过丰富的经验及专业的知识为客户提供现场运维及备件服务。

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- |                                    |                    |
|------------------------------------|--------------------|
| 1. KK Customer Solutions           | KK客户端解决方案          |
| 2. <b>KK SCADA Overview</b>        | <b>KK SCADA 简介</b> |
| 3. KK SCADA Packages and Offerings | KK SCADA 提供的业务     |
| 4. Terms and Conditions            | 条款和条件              |

# KK Wind Solutions and SCADA



## SCADA history

## SCADA 历史

1986: First wind turbine monitoring system

1986年，第一台风机监控系统

2000: First web-based SCADA system

2000年，第一台基于网络构架的SCADA系统

2012: 4<sup>th</sup> generation SCADA platform

2012年，第四代SCADA平台





# KK SCADA Features KK SCADA特性



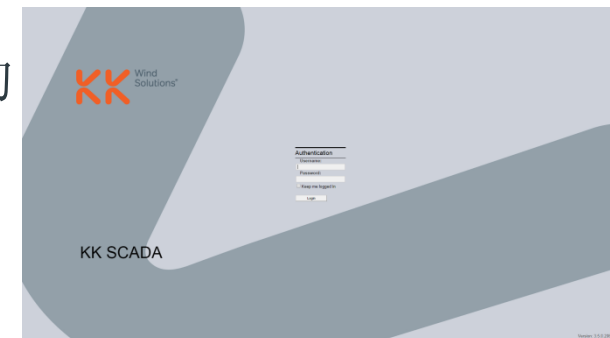
## Seamless integration and turbine optimization

### 无缝整合和风机优化

- **Level 1 SCADA system** dedicated to wind turbines  
专注于风机的第一级别SCADA系统
- **Data access** to all data from turbines including fast log data  
可从风机获取所有数据，包括快速采集数据
- **Flexibility** to customize the system for the individual user  
为客户量身定制的灵活性
- **Open system** allowing the customer to develop own software modules  
开放式系统允许用户开发自己的软件模块

KK also offers a full range of possibilities to upgrade turbines with new control system and/or SCADA related hardware

KK 提供一系列风机升级和优化的可能性，包括新的控制系统和/或SCADA相关软件



# KK SCADA Software Solutions

## KK SCADA软件解决方案

A flexible systems that easily integrates and enables access to high quality data  
简易集成和高质量数据获取的灵活系统

### Data Transfer

- Transfer data from turbine to level 2 SCADA system
- Better utilization of existing systems

### 数据传输

- 向第二级别系统传输数据
- 更好的利用现有系统

### Turbine Optimization

- Fast log data
- Set up automatic transfer of data around alarms
- Advanced simulation tool

### 风机优化

- 快速采集数据
- 设置自动转移数据
- 高级的模拟工具

### Park Monitoring

- Full flexibility to customize system
- Analysis of scientific and alarm data
- Optimize operations and maintenance

### 风场监控

- 客户定制的灵活性
- 科学和报警数据分析
- 运营和维护优化

### SCADA Hosting

- One overview of all turbines including mobile access
- Access to live data
- Low complexity as KK is responsible for hosting and maintenance

### SCADA 托管

- 风机全面了解
- 实时数据获取
- 低复杂度，因为KK托管和维护系统

## Park Optimization

Fully customizable SCADA system with open software allowing customers to further develop the system.

### 风场优化

拥有开放式软件的客户定制SCADA系统，允许客户进一步研发系统。

# SCADA Expertise SCADA专家



KK has a long and successful track record with SCADA systems  
KK在SCADA系统领域有着长期和成功的经验

+ 25 years of experience with SCADA systems

超过25年的SCADA系统研发经验

+ 5.000 turbines connected to SCADA systems from KK

超过5000台风机连接的SCADA系统  
是由KK提供的

Onshore and offshore turbines across the globe have been connected to SCADA systems from KK

全球范围，海上和陆上风机已使用  
KK提供的SCADA系统



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- |   |                       |
|---|-----------------------|
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# Data Transfer 数据传输

Get full utilization of existing assets and systems

对现有设备和系统的最大化利用

## Why? 为什么？

Utilize existing assets and systems

利用现有设备和系统

## What? 是什么？

- Access to all data from turbine controller  
从风机控制器里获取所有数据
- Transfer directly from turbine to level 2 SCADA  
直接从风机传输到第二级别SCADA系统

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Easy access to new SCADA features

简易获取新的SCADA特性

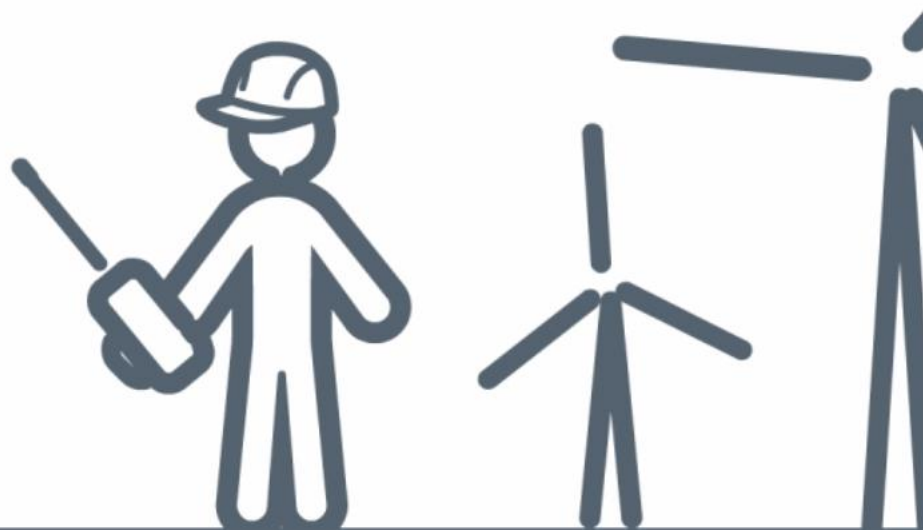
- KK SCADA just needs to be activated  
只需激活SCADA系统
- Get access to new features with selected KK SCADA modules  
利用选取的SCADA模块，获取新的特性

# Data Transfer 数据传输

Utilizing your existing system and assets 利用现有设备和系统

I just want data from my level 1  
SCADA system to my level 2  
SCADA system...

我只想把数据从第一级别SCADA  
系统传输到第二级别SCADA系统



# Turbine Optimization 风机优化



The developer extension - tools and data for optimization of turbines

研发的延伸 – 风机优化的工具和数据

## Why? 为什么?

Fast log data

快速采集数据

## What? 是什么?

- Access to 10ms/100hz data  
获取10ms/100hz数据
- 60 GB storage capacity (1 week) on the KK Ibox  
60 GB存储容量(1周)在KK Ibox里
- Export directly to CSV or Matlab  
直接输出到CSV或Matlab

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Understand and improve turbine performance

了解和提高风机性能

- Event triggered batch execution – save data for later use  
基于事件触发的批量处理 – 保存数据供以后使用
- Allows for root cause analysis  
分析根本原因
- Optimise turbine configuration  
优化风机设置

# Turbine Optimization 风机优化

It's all about high frequency data 高频率数据

Fast log Graph - Park/Station 1

► Thursday, 2014-09-18 19:00:00 — Thursday, 2014-09-18 19:59:59

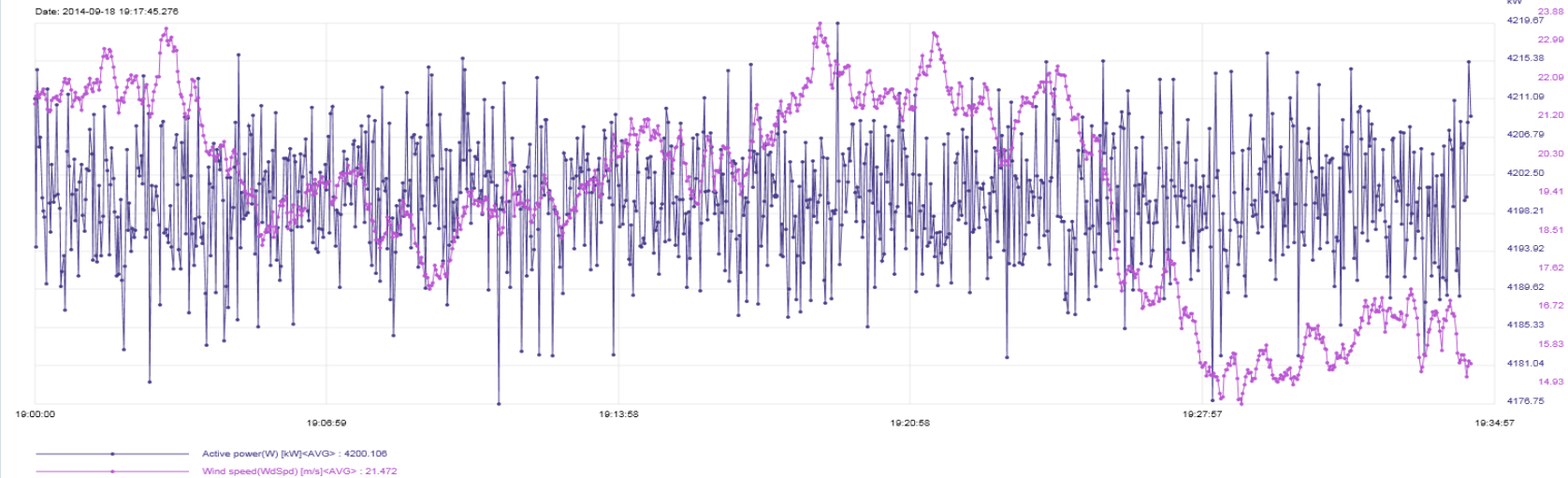
Fast Log

Download

Graph Table



Points : 1970





# Park Monitoring 风场监控



Customizable SCADA system focused on data and analytical tools

客户定制的SCADA系统专注于数据和分析工具

## Why? 为什么?

Customizable system

客户定制系统

All the data and tools you need

客户需要的所有数据和工具

Optimised O&M

优化的运营和维护

## What? 是什么?

- User defined tabs 用户定义标签
- Choose freely between variables, time and turbines in the modules  
在模块中自由选择变量，时间和风机
- Simple representation mapping of variables  
变量映射的简易表示
- Availability calculation according to IEC 61400-26-2 standards  
根据IEC 61400-26-2标准的可用性计算
- Downtime analysis tool 停机分析工具
- See data as you like with XY graphs  
XY图演示数据
- Remote reset of alarms 远程报警设置
- Monitor deviations from average  
观测偏差
- Understand and compare parameter settings across turbines  
了解并比较风机的参数设置

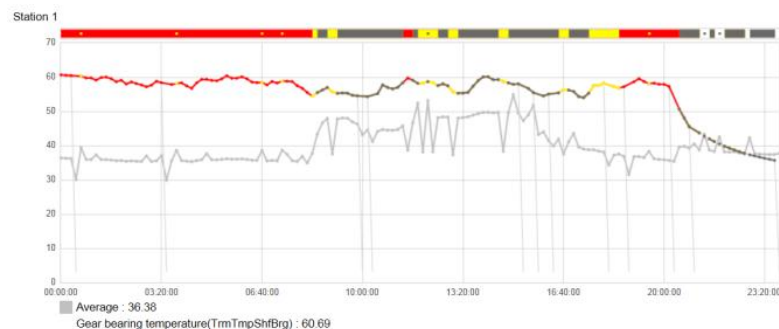
# Park Monitoring 风场监控

## A selection of modules from KK SCADA 从KK SCADA选取的模块

### Monitor deviations 观测偏差

Configurable Park Monitoring - 5 stations selected

Monday, 2014-07-07 00:00:00 — Monday, 2014-07-07 23:59:59



### Reset alarms remotely 远程重设报警

Alarms - Park

Friday, 2014-08-01 00:00:00 — Sunday, 2014-08-31 23:59:59

Filtering:

Urgent: ☒ Hide acknowledged alarms: ☐

Normal: ☒ Show only alarms which stopped the turbine: ☐

Low: ☒ Show only alarms with Service Mode: ☐

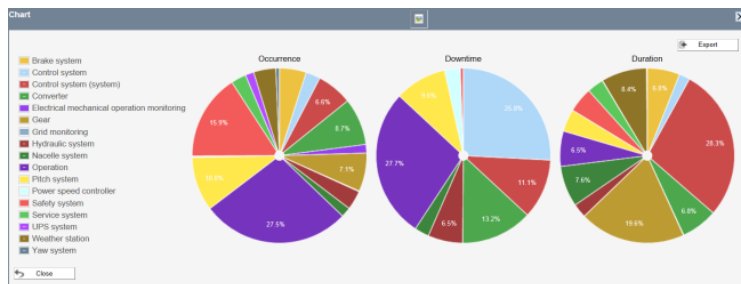
Alarm Suppression: 0 seconds

Total Items: 4491

Number	Alarm Name	Time On	Time Off	Station	SM	UL	Reset
19004	Generator cut-in	2014-08-31 23:32:12	2014-08-31 23:32:12	Station 3			
19005	Generator cut-out	2014-08-31 23:17:42	2014-08-31 23:17:42	Station 3			
12002	Hydraulic oil temperature high warning	2014-08-31 23:16:00	2014-09-01 02:43:50	Station 2			
19004	Generator cut-in	2014-08-31 22:47:49	2014-08-31 22:47:49	Station 3			
19005	Generator cut-out	2014-08-31 22:21:18	2014-08-31 22:21:18	Station 3			
19004	Generator cut-in	2014-08-31 22:11:18	2014-08-31 22:11:18	Station 3			
19005	Generator cut-out	2014-08-31 21:31:07	2014-08-31 21:31:07	Station 3			
19011	Generator mechanical speed low	2014-08-31 21:31:07	2014-08-31 21:31:07	Station 3			
19004	Generator cut-in	2014-08-31 21:25:39	2014-08-31 21:25:39	Station 3			
1008	Gear oil bypass filter pressure switch warning	2014-08-31 20:00:47	2014-09-01 10:24:45	Station 3			

Items per page: 10

### Distribution of downtime 停机分布



### Parameter settings 参数设置

Turbine Parameter Management - Park

Show only not default

Total Items: 738

Name	Units	Default Value	Limit	Park/Station 1	Park/Station 2	Park/Station 3	Park/Station 4	Park/Station 5
Active power derating converter heat sink temperature	%	20	1 - 25	N/A	20	20	20	20
Active power derating converter heat sink temperature hysteresis	°C	2	0.5 - 10	N/A	2	2	2	2
Active power derating converter heat sink temperature integration gain	-	0.02	0.005 - 0.5	N/A	0.02	0.02	0.02	0.02
Active power derating converter heat sink temperature reference	°C	77	50 - 80	77	77	77	77	77
Active power derating hysteresis control	-	TRUE	FALSE - TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Active power derating negative slope converter heat sink temperature	-	0.05	0.001 - 1	0.05	0.05	0.05	0.05	0.05
Active power derating positive slope converter heat sink temperature	-	0.05	0.001 - 1	0.05	0.05	0.05	0.05	0.05
Ambient max temperature	°C	40	0 - 40	40	40	40	40	40
Ambient min temperature	°C	-20	-30 - 20	N/A	N/A	N/A	N/A	N/A
Ambient temperature hysteresis	°C	5	1 - 20	N/A	N/A	N/A	N/A	N/A

Items per page: 10

# Park Optimization 风场优化



Advanced SCADA system for wind, with full flexibility to customize and further develop the system according to your needs

高级SCADA系统，拥有客户定制的灵活性和进一步根据客户需求研发的可能性

## Why? 为什么?

Get full benefit from all packages

获取收益

Develop your own modules

研发自己的模块

Extra value-adding features

额外的附加特性

## What? 是什么?

- Get access to all modules from other packages  
获取所有模块
- Strong price when combining packages  
价格优化
- Create own modules with simple Java and HTML programming  
用简易的Java和HTML语言创建模块
- Integrate external data into KK SCADA  
集成外部的数据到KK SCADA
- Use iframe to embed external sites  
使用iframe嵌入外部链接
- Chat with service technicians  
与维护人员对话
- Different language versions  
不同语言版本，包括中文
- Better support agreements  
更好的支持协议

# SCADA Hosting SCADA托管



Simple and cost efficient solution with SCADA Hosting from KK  
KK的SCADA托管是简易和有成本效益的解决方案

## Why? 为什么?

Store data with no worries

存储数据

Cost efficient SCADA solution

有成本收益的SCADA解决方案

## What? 是什么?

- Professional server setup  
专业的服务器设立
- KK is responsible for server maintenance  
服务器维护
- Historical data is saved and accessible in SCADA system  
历史数据存储和获取
- Tools and data to constantly be in control of turbine performance  
控制风机性能的工具和数据
- Access to system on all devices  
连接所有设备的系统
- Possibility to add advanced SCADA features  
增添高级SCADA特性的可能

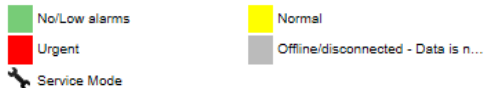
# SCADA Hosting SCADA托管

Easy access to turbine monitoring with SCADA hosting from KK  
使用KK的SCADA托管方式可以方便的进行风机监控

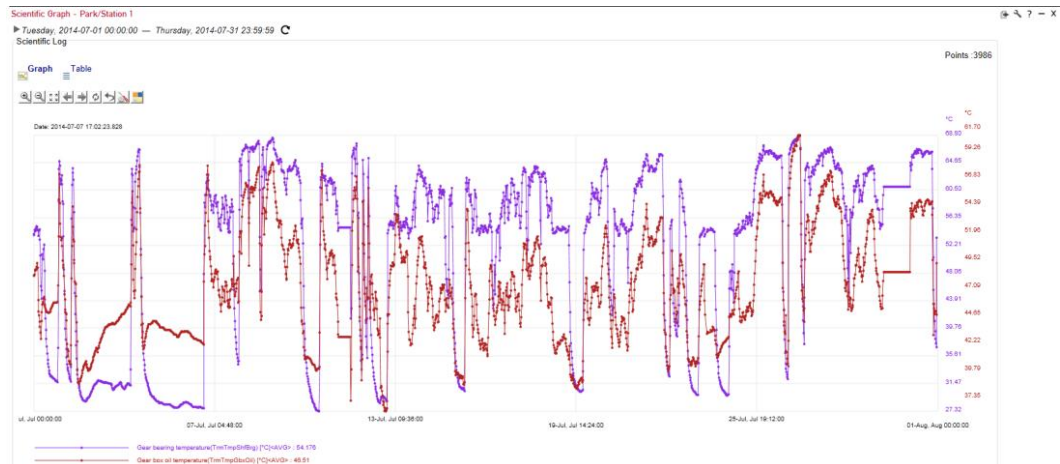
## Live turbine status 实时状态

Surveillance table - Park

Station Name	Station 1			Station 2			Station 3			Station 4			Station 5		
Alarms (Active)	Urgent	Normal	Low	Urgent	Normal	Low	Urgent	Normal	Low	Urgent	Normal	Low	Urgent	Normal	Low
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Active power(W)	4187.26			4201.04			4014.79			4205.77			1641.52		
Reactive power(VAr)	118.84			122.21			129.20			41.30			133.01		
Wind speed(WdSpd)	16.88			22.27			12.63			17.69			6.91		



## Monitor performance 监测性能





- ✓ A SCADA system for the wind industry ensuring high quality data.

专注于风电行业的SCADA系统保证高质量数据。

- ✓ The data enables optimization with a flexible system that is easy to use and integrates with other systems; allowing for great analysis, monitoring and control functionalities.

操作简单，方便集成的灵活性系统，优化数据的功能使分析和监控更高效。

- ✓ The solutions are fitted the specific customer – but we suggest five software package matching different needs: Data Transfer, Turbine Optimization, Park Monitoring, SCADA Hosting and Park optimization.

面向客户的解决方案 – 我们建议 5 个软件包以适应不同需求：数据传输，风机优化，风场监控，SCADA托管和风场优化。

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- |                                    |                |
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# Terms & Conditions



## 条款和条件

All deliveries of products and services from KK Wind Solutions A/S or its Group Companies are pursuant to KK Wind Solutions A/S' General Terms and Conditions of Sale and Delivery as indicated in Appendix A, regardless of any inconsistencies between these Terms and any order/order confirmation.

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We innovate to integrate®  
追求创新，优化集成

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