

# Dust monitoring after the ESP

专为静电除尘器设计的特殊静电  
粉尘仪  
型号：ESPY

# Why to use Sintrol ESPY? 为什么要使用辛创ESPY粉尘仪?



Electrostatic Precipitators

- Dust removing and dust monitoring
- 静电除尘之后的粉尘监测

- 节能减排

- Regulations
- 产品系列化和规范化

- Loss of (expensive) product
- 防止(贵重)产品的流失

# Why to use Sintrol ESPY? 为什么要使用辛创ESPY?



## Need for dust information 为何需要测量粉尘浓度?

- Control the ESP  
控制静电除尘器
- Optimise electricity usage  
-减少电能消耗
- Optimise hammering  
-优化振打方式
- See and understand how changing process conditions influence on ESP operation  
-提高除尘器效率
- Loss of produced material**  
-防止贵重材料的损失
- Emission monitoring  
-排放监测

# Why to use Sintrol ESPY?为什么要使用辛创ESPY?



## Problems with dust monitors

### 光学粉尘监测仪会出现的问题

- Optical dust monitors have been used after ESPs
- 光学粉尘仪已被用于静电除尘器后的粉尘监测
- High maintenance costs
- 高昂的维护成本
- Replacement of the light-source even twice a year
- 一年多达两次的光源更换
- Vibration: optics & electronics
- 振动对光学粉尘仪测量影响较大
- Clean dry air for purging: compressed air not available & ambient air too dirty
- 需使用清洁干燥气体吹扫:不能使用高压气体,直接使用空气又太脏



# Why to use Sintrol ESPY?



**E-SPY – solution to the problem**  
**E-SPY能够解决上述问题**

## **Target of project:**

目的:

- Reduce investment costs to a minimum
- 投资成本最小化
- Reduce maintenance costs to a minimum
- 维护成本最小化
- Reliable measurement – availability 365 days
- 不间断持续可靠测量

# Why to use Sintrol ESPY?



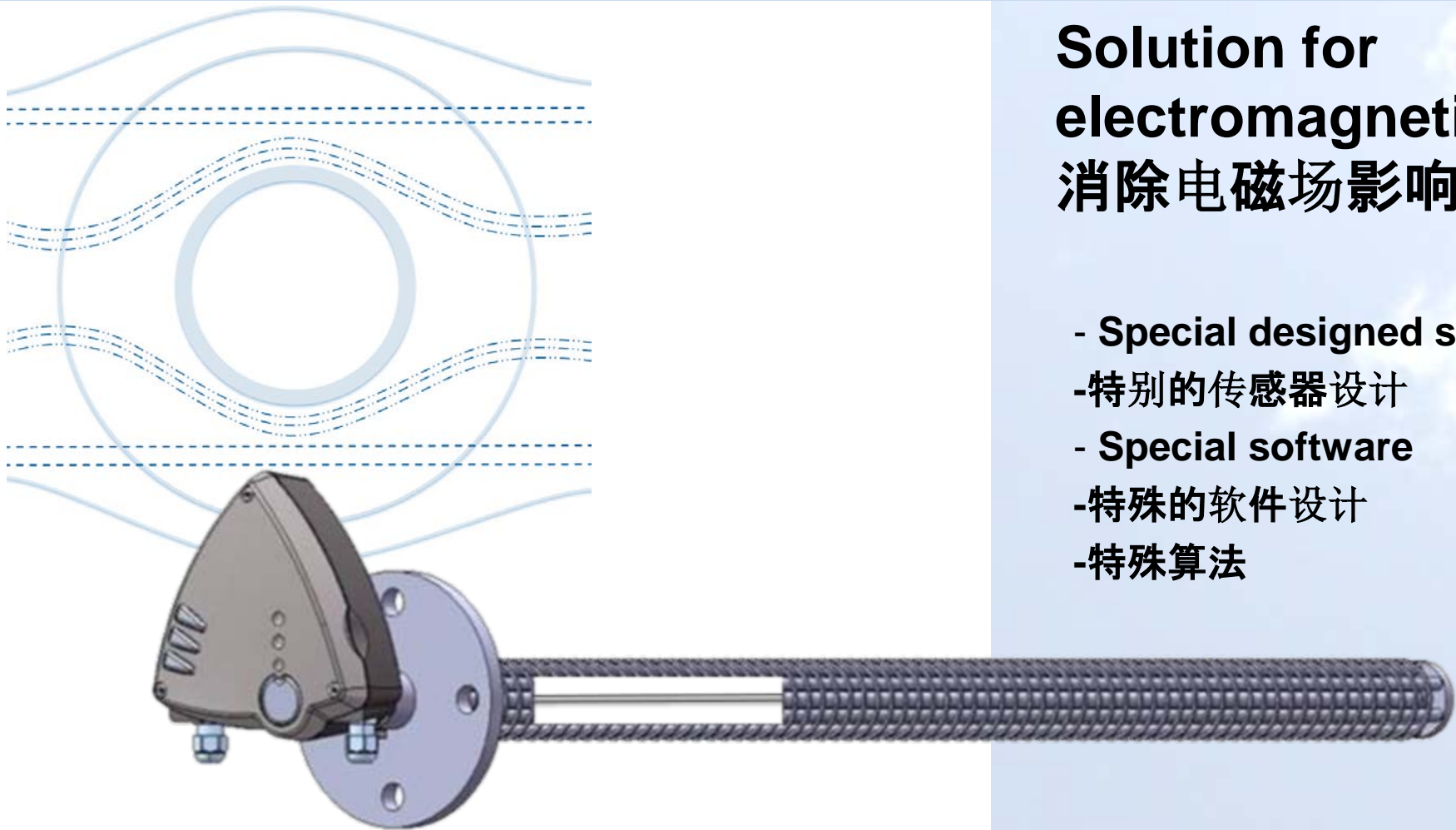
## Triboelectric technology 静电感应技术

以下问题导致这种技术无法应用于测量静电除尘器后的粉尘浓度：

- Influence of the electromagnetic field
- 电磁场的影响
- Influence of the dust build-up on the probe
- 粉尘堆积对探头的影响
- Influence of the charged particles
- 粉尘荷电量变化的影响

而辛创ESPY已攻克以上问题，  
并在中国市场得到大量应用

# Why to use Sintrol ESPY?



## Solution for electromagnetic field 消除电磁场影响的办法

- Special designed sensor
- 特别的传感器设计
- Special software
- 特殊的软件设计
- Special algorithm
- 特殊算法



# Why to use Sintrol ESPY?



## Reduce maintenance costs 降低维护费用

- Dust build up on the probe and drift compensation:
  - 解决了探头粉尘堆积问题和增加漂移补偿功能
- coating the probe
  - 探杆特殊处理
- separating the signal into AC and DC components
  - 分离交流和直流信号
- Remove process related factors causing drift
  - 去除引起漂移的相关因素



# Why to use Sintrol ESPY?

## Optical 光学技术

## Triboelectric / electrodynamic 静电技术

High investment costs  
高昂的投资成本

Less expensive  
较少的投资费用

High maintenance costs  
高昂的维护成本

Maintenance costs in  
some cases high  
维护成本较少

Unreliable measurement  
due to lack of  
maintenance  
缺少维护情况下就不能准确测量

Unreliable measurement –  
non-working  
基本免维护

## Benefits of triboelectric dust monitors 静电粉尘仪的优势

# Why to use Sintrol ESPY?

## Optical 光学技术

## Sintrol ESPY 辛创ESPY

>6000€ + several days  
>6000€ + 几天安装时间

3000€ + 1 hour  
3000€ + 1小时安装时间

Maintenance interval even  
a few days  
短至几天就需要维护

Maintenance interval 1  
year  
维护周期：1年

Availability 300 – 365  
days  
每年的使用时间是300-365  
天

Availability 365 days  
全年365天不间断监测

## Benefits of triboelectric dust monitors

静电粉尘仪的优势  
Summary from over 100  
installations  
大量应用得出的数据

# Application examples – case 1 应用案例1

## Coal fired power plant 1 in Hebei 河北某火力发电厂

### Process parameters:

工艺参数

$T = 130\text{ }^{\circ}\text{C}$

$p = 530\text{ Pa}$

Dust = 83mg/m<sup>3</sup>

L = 500 mm

Dia = 5m 直径=5m

Distance = 6 m from ESP

位置=距静电除尘器6米

After the fan 安装在风扇后

One ESP supplier supplied four Sintrol E-SPY to this coal fired power plant. All four units have operated without a problem since installation.

一个静电除尘器供应商为该厂提供了四台辛创ESPY，所有四台ESPY从安装运行后没有出现任何问题。





# Application examples – case 2 应用案例2



## Coal fired power plant 2 in Henan

河南某火力发电厂

### Process conditions:

工艺条件

$T = 95\text{ C}$

$p = -180\text{ Pa}$

Dust = 70 mg/m<sup>3</sup>

$L = 500\text{ mm}$

Dia=4.25 m

Distance = 10 m after ESP

位置=距静电除尘器10米

After the fan 安装在风扇后

They used optical monitors before which did not work. They replaced them with ESPY dust monitors which have worked without problems since installation.

该厂之前使用的光学粉尘仪不能正常工作，他们于是改用**ESPY**替换掉这些光学粉尘仪，这些**ESPY**从安装运行后没有出现任何问题。

# Application examples – case 3 应用案例3



## Coal fired power plant 3 in Jiangxi

江西某火力发电厂

### Process parameters:

工艺参数

T = 120 C P = -220 Pa

Dust = 65 mg/m<sup>3</sup> L = 500 mm

Dia = 5 m Distance = 4m after ESP

位置=距静电除尘器10米

In front of the fan

安装在风扇前

The customer bought optical monitors in the beginning. But after a short time, they stopped working. So the customer installed Sintról ESPY and has not had any problems since installation.

客户购买的光学粉尘仪使用不久就停止了工作，于是该客户用**ESPY**替换掉这些光学粉尘仪，这些**ESPY**从安装运行后没有出现任何问题。



# Application examples – case 4 应用案例4



## Yuzhong power station 裕中火电厂

### Maintenance problem:

维护问题:

- Optical monitor maintenance interval was 3 days
- 光学粉尘监测仪维护期为3天
- After customer bought Sintrol monitor he has not got any such problems.
- 自从客户购买辛创粉尘监测仪后，免维护。



# Why to use Sintrol ESPY?



## ESPY – a unique solution ESPY——独一无二的解决方案

**South China University of Technology:**  
华南理工大学研究结果:

**Using the Optimization Program together with Sintrol ESPY could save up to 20% in the electrical power consumption of the ESP**

在静电除尘器上使用辛创ESPY后可以节约20%的用电量

**The dust emissions could be decreased by 50%**

减少50%的粉尘排放

**So, the power plant could save:**

所以，该电厂能够节约:

**540 000 RMB + 187 000 RMB = 727 000 RMB → 82 000 €**

RMB54万元+RMB18.7万元=RMB72.7万元(8.2万欧元)

# Why to use Sintrol ESPY?



## **ESPY – a unique solution**

**And the power plant will enjoy an environmentally-friendly image and a good reputation among the surrounding residents and neighbors!**

现在，这个电厂正在享受节能减排带来的变化，并且得到当地居民和周边企业的交口称赞。

# Why to use Sintrol ESPY? 为什么使用辛创 ESPY?



## Conclusion 结论

- Reduce the investments by >50%
- 减少50%以上的投资成本
- Reduce the maintenance costs by up to 95%
- 减少95%以上的维护费用
- Know your process 365 days!
- 全年365天掌握工艺过程
- Example of cost savings:
- 节约成本案例:
- Reduction of used electricity 540.000 RMB → 61 000 €
- 减少用电人民币54万元(6.1万欧元)
- Reduction of emission fees 187.000 RMB → 21 000 €
- 降低排放费用人民币18.7万元(2.1万欧元)



# Why to use Sintrol ESPY?



**Thank you!**  
**谢谢！**