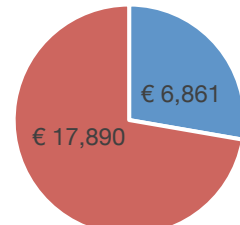


Project	€ 25k/ year revenue increase on wind turbines
Industry / Asset	2.3MW Wind Turbines
Country	Europe
Year	2017

The Context	Pictures / Graphs												
How can I optimize the power production?	<p style="text-align: center;">Context</p> <table border="1"> <tr> <td>WTG nominal power</td> <td>2.3 MW</td> </tr> <tr> <td>Yearly nominal production</td> <td>5 133 MWh</td> </tr> <tr> <td>Average electricity price</td> <td>65 €/MWh</td> </tr> <tr> <td>Labour cost</td> <td>100 €/man/day</td> </tr> <tr> <td>WTG average age</td> <td>10 years</td> </tr> <tr> <td>WTG lifetime</td> <td>20 years</td> </tr> </table>	WTG nominal power	2.3 MW	Yearly nominal production	5 133 MWh	Average electricity price	65 €/MWh	Labour cost	100 €/man/day	WTG average age	10 years	WTG lifetime	20 years
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Our Solution	<p style="text-align: center;">ROI</p> <p style="text-align: center;">Average P4A gain/turbine/year</p>  <p style="text-align: center;">■ Performance Care ■ Health Care</p>												
<p>1. <u>Detection of anomaly</u></p> <ul style="list-style-type: none"> - Compare operational data with OEM standards - Underperformance and unavailability to be assessed 													
<p>2. <u>Diagnosis</u></p> <ul style="list-style-type: none"> - Analyse underperformance: 17% of turbines have a large yaw misalignment of +10° and 27% are affected by blade misadjustment of +1° - Analyse unavailability: FMEA and failure rate analysis 													
<p>3. <u>Prognosis</u></p> <ul style="list-style-type: none"> - Average possible increase of revenue thanks to production gain: € 6,8K / year - Prediction of remaining life time of parts based on current vibration and operating conditions 													
<p>4. <u>Intelligence: Performance Optimization</u></p> <ul style="list-style-type: none"> - Short term action: Correction of the underperformance (e.g. misalignment) - Mid term action: Predictive maintenance 													
The Benefits													
<ul style="list-style-type: none"> - Increased revenues - Lifetime extension & safe operations - Better planning thanks to predictive maintenance 													
The ROI													
Up to € 25k/turbine/year													