AUTOMATE EROSION DETECTION USING BLADE DATA

Main factors for leading edge erosion
RISØ – 22nd of February 2018
PROBLEMS AND CHALLENGES

- Erosion, lightning strikes and fatigue
- Big data amounts generated
- Limited blade expertise available
CONCEPT OF MACHINE LEARNING

True positive
True negative
False negative
False positive
True negative

Example
A. Images are augmented by current A.I. system

B. Augmentation validated to generate reports

C. Validated data grows training data

D. Increasingly sophisticated models are developed
   1. binary classification on crop
   2. multi-label classification
   3. image segmentation, multi-label

E. Continuous deployment via hold-out benchmark
PREDICTION BETWEEN DIFFERENT LEVELS OF EROSION

EROSION PAINT  EROSION FILLER  EROSION SURFACE MAT  EROSION LAMINATE  EROSION CORE

SEVERITY
Improve OPEX, Control Erosion Development

Uniform your inspection data to understand your erosion conditions and development rates.

Use your data to develop and maintenance strategy that gives you control of erosion development and lower your opex cost.

Avoid surface erosion becoming structural, increasing your OPEX costs.
PROCESS

CLIENT

BLADE INSPECTION DATA ACQUISITION BY WPL OR CLIENT

WPL

BLADE DEFECT AND INTEGRITY ASSESSMENT REPORT

ANALYSIS AND ASSESSMENT OF BLADES

REPAIR RECOMMENDATIONS BY BLADE EXPERT

REPAIR OF BLADE DEFECTS

PRODUCING WIND TURBINE