evs 27

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SKF®

How simulation can help defining necessary speed sensor-bearing performance for asynchronous motor control

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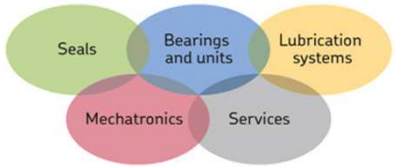
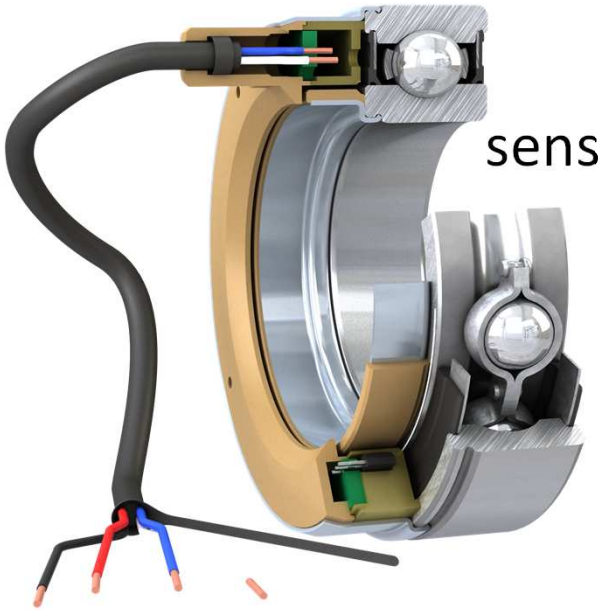
Introduction

mechatronics

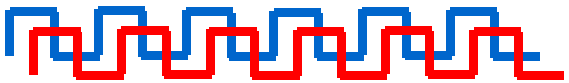


induction motor



sensor-bearings

speed and direction



simulation

modeling

SKF Six Sigma

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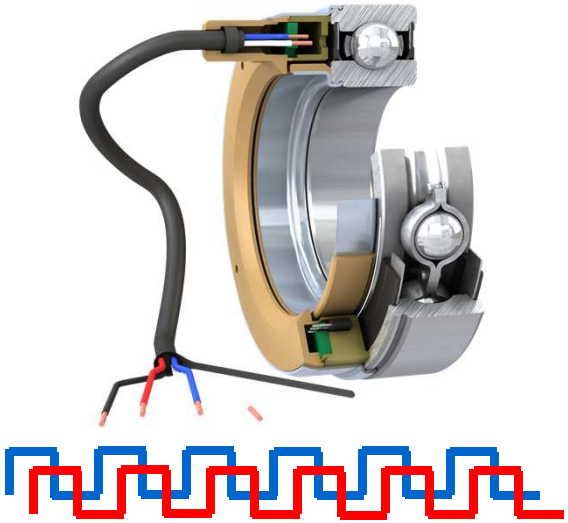
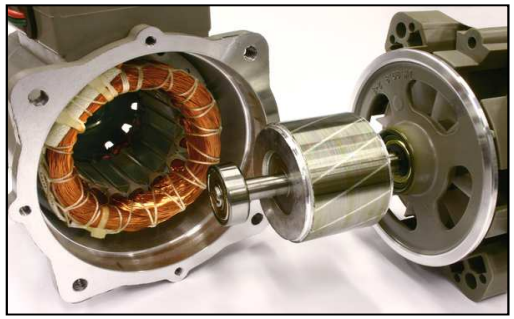
Main question



Sensor-bearing performance

$\eta = f$ (sensor, algorithm, motor)

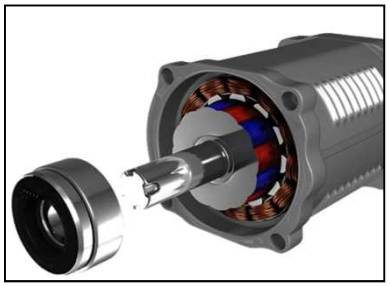
SKF Six Sigma

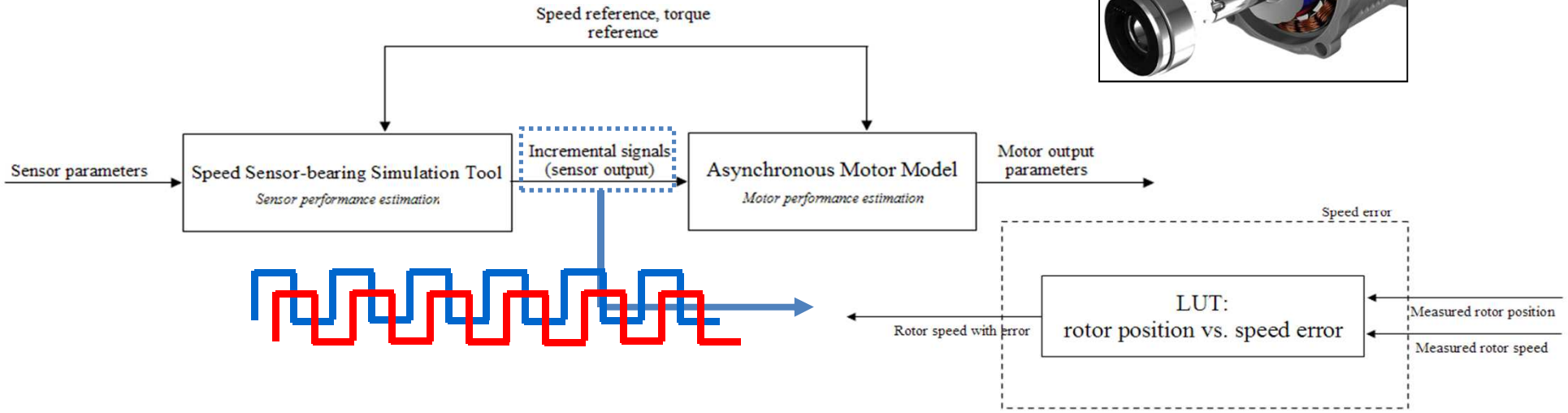


Induction motor performance

Project

- Modeling at component level
- Simulation in application

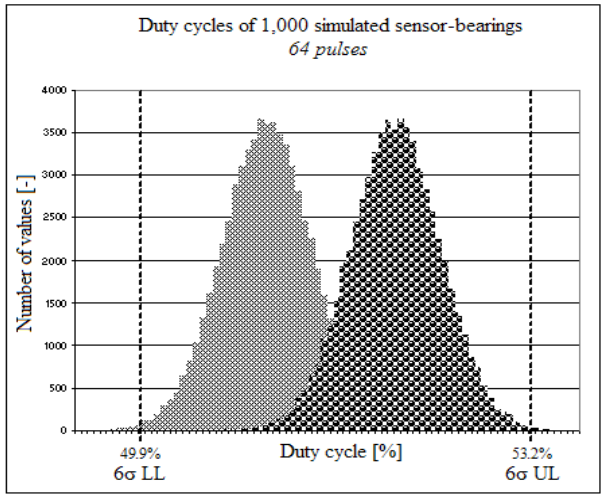




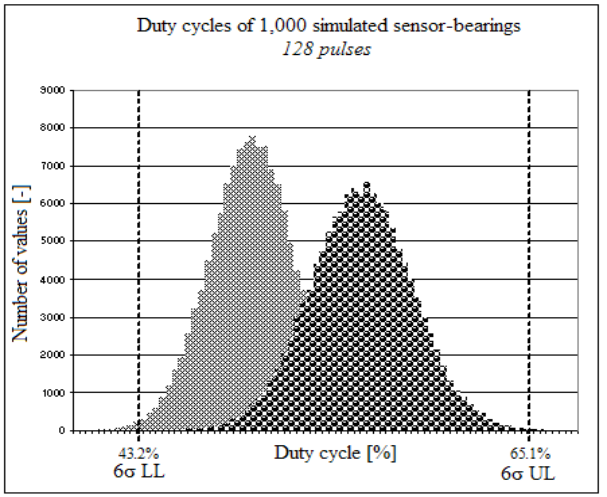
Objective: assessment of motor performance versus different sensor-bearing configurations

Sensor-bearing

- Two sensor-bearing configurations:



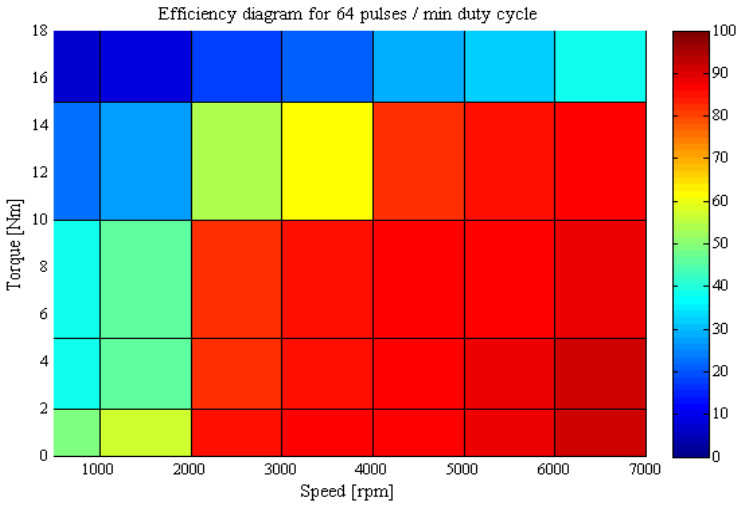
64 pulses



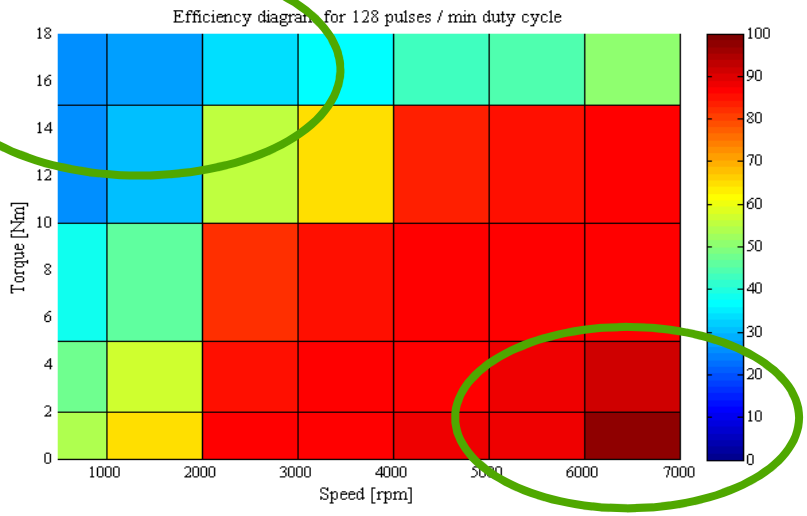
128 pulses

Duty cycle, phase shift, period accuracy are better for 64 pulses

Sensor-bearing in application



64 pulses



128 pulses

For the given motor and speed algorithm, the higher resolution sensor-bearing gives better motor performance at limits

Conclusion

Project:

- Influence of sensor-bearing design can be translated to system performance
- DoE permits to select suitable sensor-bearing design for selected motor

General:

- SKF is able to model accurately its sensor-bearings
- Assessment of system performance possible as well

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