



Workshop

Industry 4.0: Extension of machinery life-cycle, component re-use and servitization”

2016.09.15

ULMA GROUP

Extended maintenance & reliability services at machine tools

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The company

- FIDIA S.p.A. was founded in 1974. For more than twenty years FIDIA has been designing and producing Numerical Controls for the management of sophisticated machine tools for mould machining.
- In the early nineties FIDIA expanded its activity by developing the first high speed milling machine.
- Fidia is world leader in production and sale of CNC machine tools for the realization of complex shapes and operates in two leading sectors, automotive and aerospace.

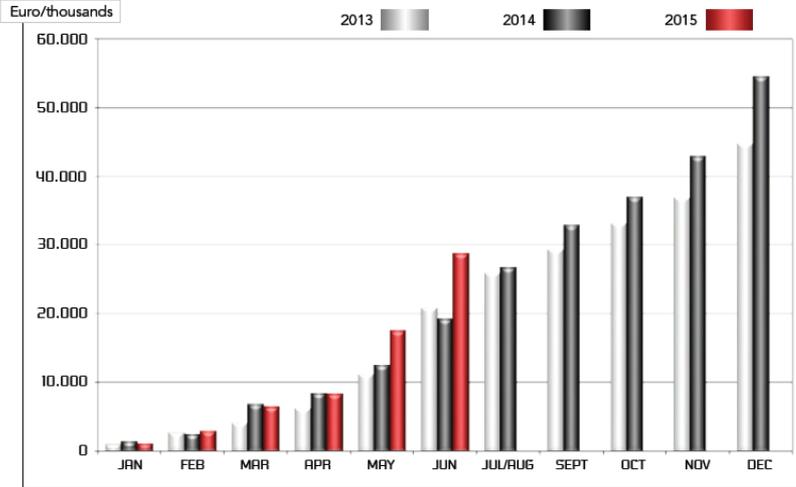
FIDIA is the unique European single source supplier of:

- **Mechanics:** a wide range of **HSM** machines
- **Electronics:** CNC, XPower Digital Drives, I/O Lux[®]
- **Real-time SW:** CNC V5, VI-MILL[®]
- **Accessories:** HMS[®], HPW, TMS, etc.

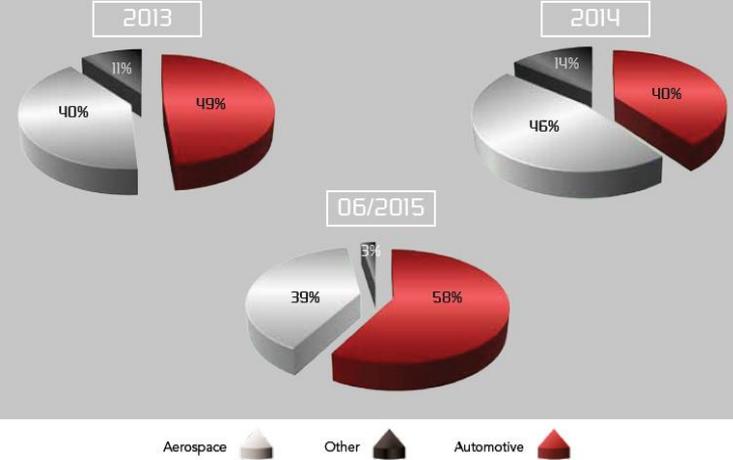


ECONOMIC DATA

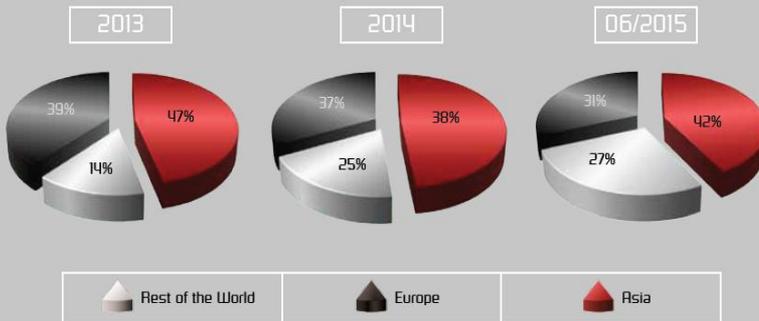
Group Net Revenues



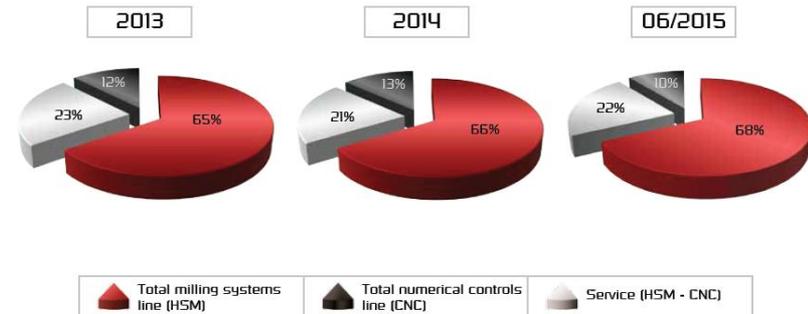
Group Net Revenues per Market



Consolidated Net Revenues by geographical region



Consolidated Net Revenues by business line





T-REX promotes integrated **Product-Service Systems (PSS)** supporting the adoption of **Service-Oriented Business Models** in different industrial fields, machine tools, forklifts and robotic cells. The project gives support for the transition from «traditional» business models to «new» ones (e.g rental, pay-x-use, pay-x-performance, etc.) developing and experimenting conceptual tools for different domains.



START DATE: 1 OCTOBER 2013
DURATION: 36 MONTHS
TOTAL BUDGET: € 5.1 MILLION
FUNDING: € 3.6 MILLION

T-REX has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n° 609005

WHAT IS SERVITIZATION?

FIDIA is a world leader machine tool manufacturer in advanced sectors as automotive and aerospace.

European machine tool builders are facing competition from emerging countries in a situation characterized by the economic crisis in which companies are trying to react to the fierce competition introducing elements of innovation in their current business models.

For FIDIA the innovative approach to the market is related to Servitization (*).

Servitization is the process of changing our current business model, to offer advanced services coupled with products, rather than just the products alone.

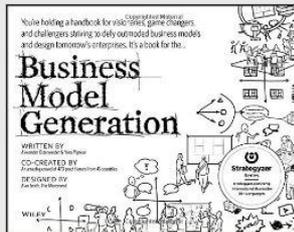
This means providing a holistic solution to our customers, helping to improve their competitiveness, rather than just engaging in single transactions through the sale of a physical product.

(*) Vandermerwe and Rada, 1988

WHAT DOES SERVITIZATION IMPLY?

It is a process that requires numerous changes:

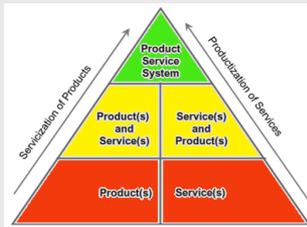
- Cultural change (strategy and business model)
- Organizational changes
- New technologies



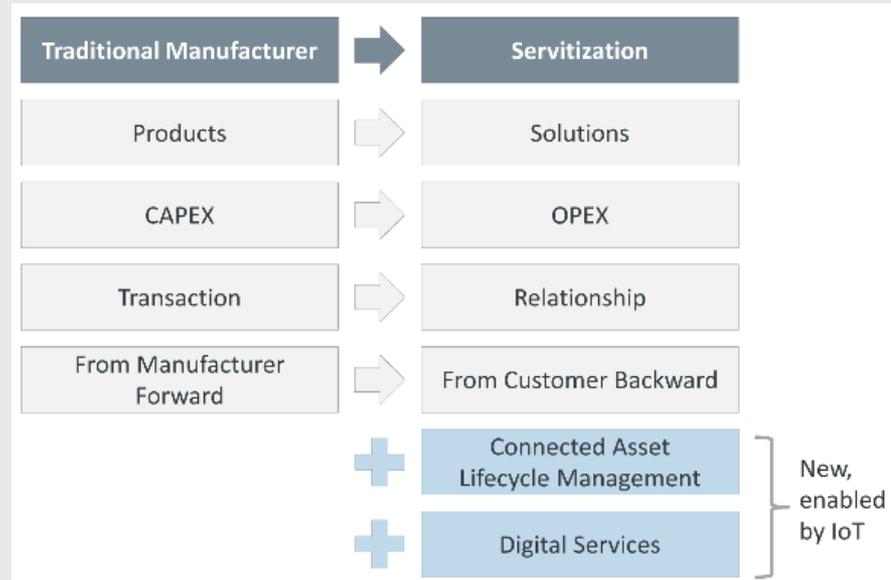
EXPECTED BENEFITS FROM SERVITIZATION

Servitization to gain competitive advantage:

- Increase of product sale
- Increase of service sale (maintenance contracts)
- Increase of brand visibility



HOW TO SERVITIZE? FROM PRODUCTS TO SOLUTIONS



A recent study shows that:

- Servitization customers are reducing costs by up to 25%–30%

From a supplier perspective, servitization also has many benefits:

- Value-added services can generate additional revenue
- Continuous, service-based revenue streams allow for more predictable financial planning
- A recent study shows that servitization promises sustained annual business growth of 5%–10%

Source: <https://www.safaribooksonline.com/library/view/enterprise-iot/9781491934258/ch01.html>

HOW TO SERVITIZE? THE T-REX EXPERIENCE

The path to launch the new BM requires a number of implementation actions that is very important to plan the schedule and the cost of the investment.

Action 1: Development of Service culture and attitude

Action 2: Re-organization of the Service Business Unit

Action 3: Formulation of a new Service portfolio

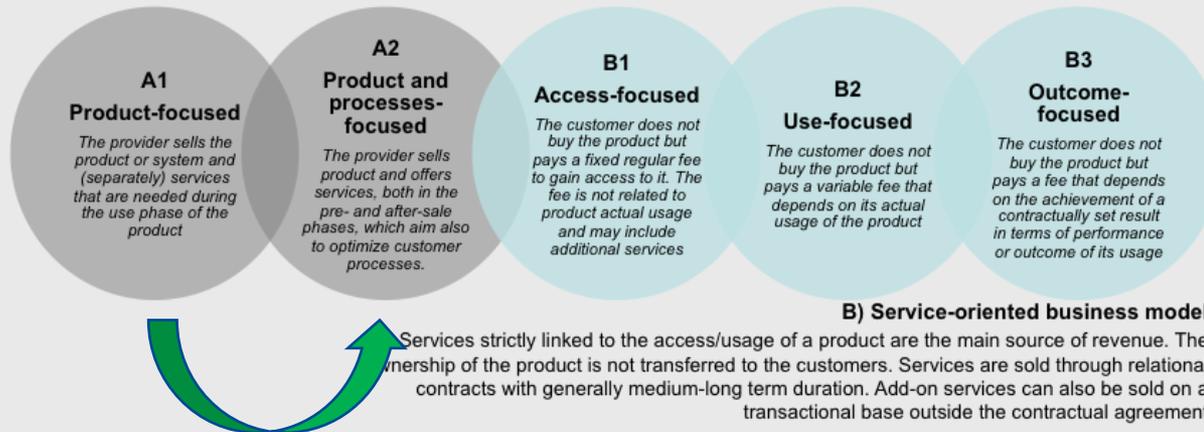
Action 4: Development of a new electro-spindle maintenance solution

SERVICE ATTITUDE

Shift from “Product-focused” to “Product and processes-focused” on the SOBM continuum.

A) Ownership-oriented business model

Product sales are the main source of revenue; services are sold as an add-on of the product. Service can be sold both transitionally (e.g. corrective technical assistance without any contractual agreement) and relationally (e.g. maintenance contract).



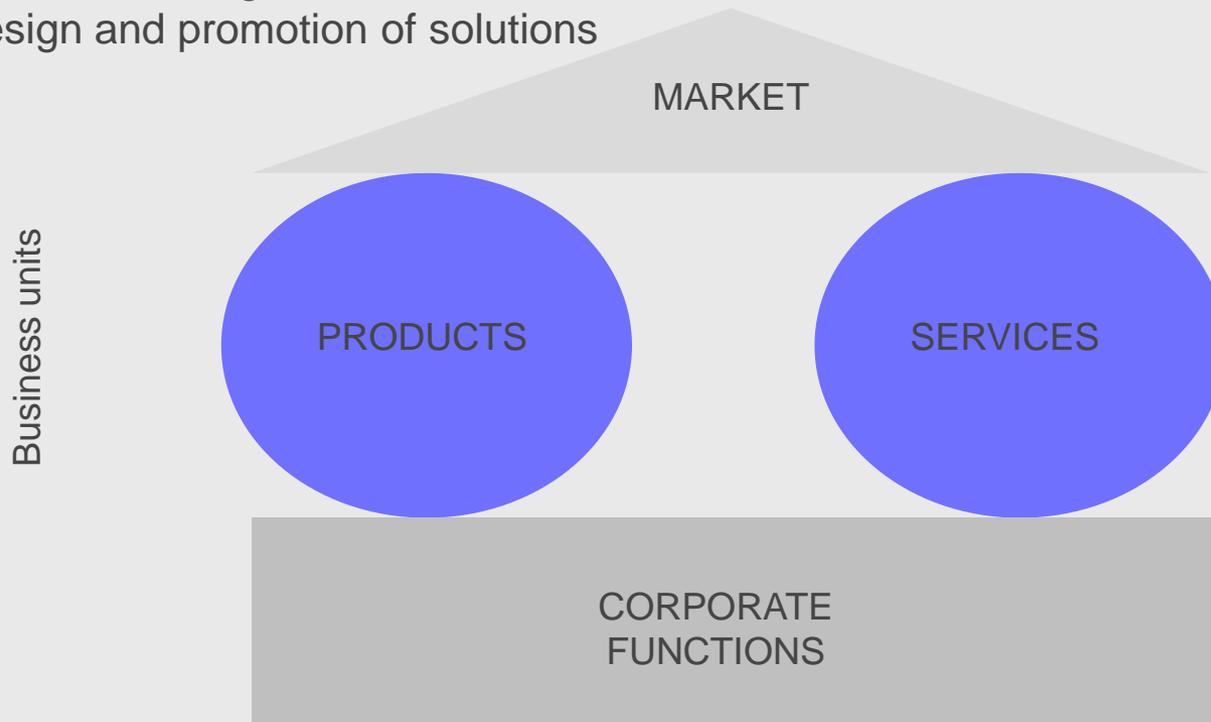
- Interactions with customers no more based only on product sales people and field technicians but continuous relationships with after-sales support related to the customer’s process.
- Different terminology e.g. life cycle services, pre- and after-sales, solutions, etc.
- Marketing and commercial specific approach to customers to consolidate the communication campaign e.g. (i.e. dedicated page on the website, *Inform* newsletter).

ORGANIZATIONAL CHANGES

The first step to facilitate the adoption of Servitization in a company is related to the perception of how important is Service for that company.

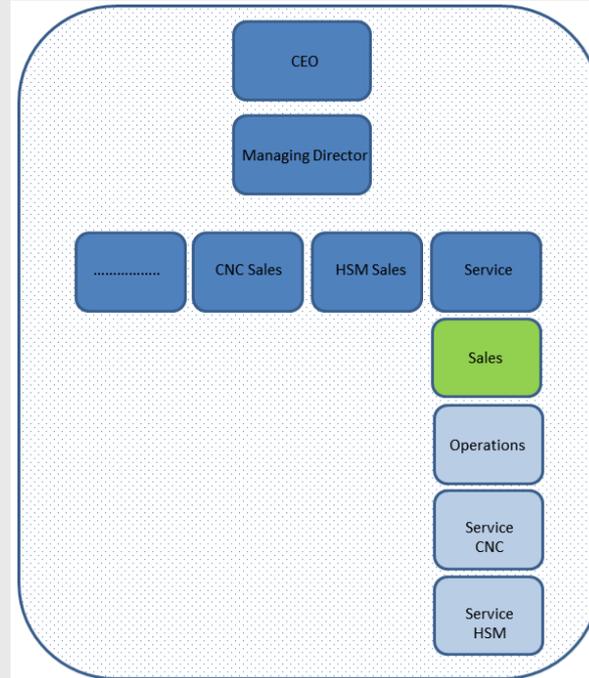
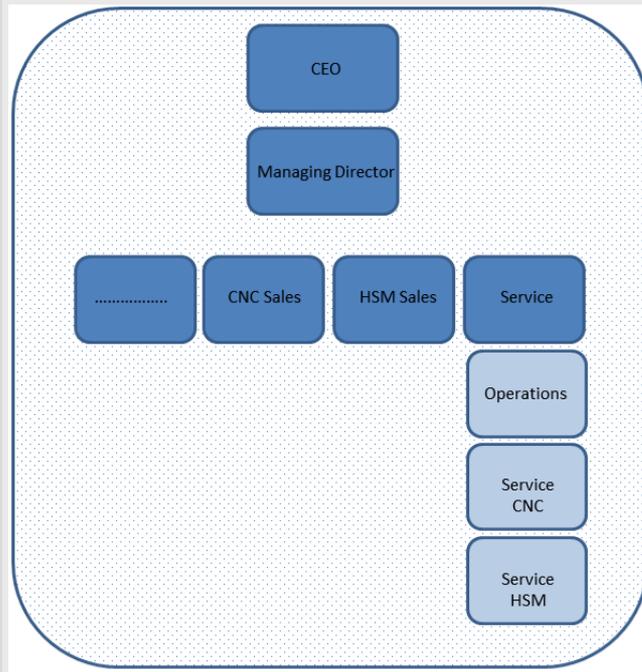
Separation of service business from product business, is supported from:

- Creation of units
- Allocation of budget
- Definition of targets
- Design and promotion of solutions



ORGANIZATIONAL CHANGES

Different organization to serve clients with new roles, skills and profiles of Service staff, formalized workflows to define procedures, etc.



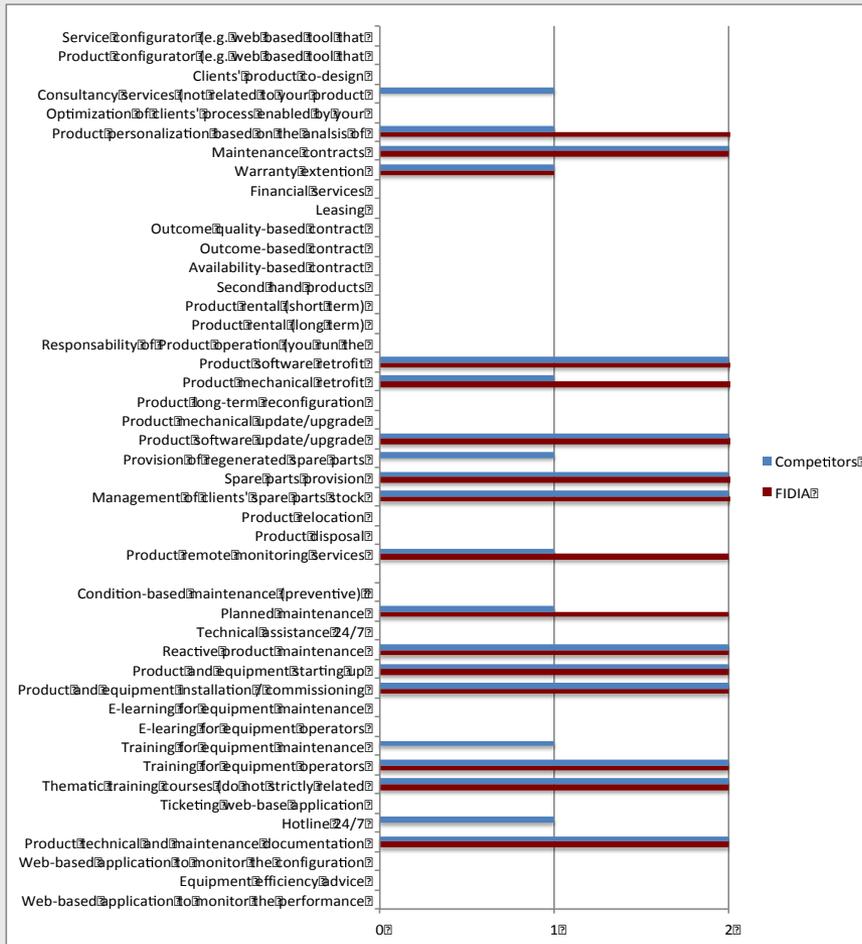
➔ List of key activities to be performed

➔ Enhanced data analysis capability

THE SERVICE PORTFOLIO

Development of new support services, but for existing markets rather than new ones. This has the advantage that market structures (customers, competitors, etc.) are generally already familiar, making the communication of the relevant information much less complex.

Service portfolio analysis



Current Service portfolio compared with competitors is not so large and detailed

Specific considerations (e.g.):

- Training is offered as face-to-face courses on specific topics
- Maintenance is provided on preventive basis.
- Consultancy services not related to customer's product are not usually considered
- Even if financial Services and the optimization of procedures for making investments have become one of the key elements in the current financial logic, FIDIA is not able to help its customers

EXTENDED MAINTENANCE AND RELIABILITY SERVICES

Fidia portfolio of Life Cycle Services



1- Basic

Component: CNC

Cost: ...€/year

Highlights:

- Concise information and reminders of necessary maintenance procedures
- Defined maintenance intervals
- Increased service life
- Timely service scheduling

Included:

- Periodical Service inspection
- Support to Service interventions through detailed list of actions



2- Plus

Component: Machine

Cost: ...€/year

Highlights:

- Maintain your machine's value
- Increased product life cycle
- Decreased unpredictable downtimes
- Higher availability and reliability

Included:

- Periodical Service inspection by experienced service technicians
- Support to Service interventions through detailed list of actions



3- Full

Component: CNC+Machine+Spindle

Cost: ...€/year

Highlights:

- Maintain your machine's value
- Avoid premature wear and leaks
- Increased product life cycle
- Improved TCO

Included:

- Periodical Service inspection by experienced service technicians
- Replacement of all defective components with new original parts for maximum safety and reliability



Otpional- CBM Spindle

Component: Spindle

Cost: ...€

Highlights:

- Graphic process monitoring, unbalance detection, temperature monitoring and bearing diagnostics
- Avoid sudden downtimes and production losses

Included:

- Professional disassembly and installation of your spindles by experienced service technicians

- Maintenance contracts with periodical inspections
- Corrective, preventive and predictive (CBM) solutions
- Improved component design (reliability, availability, etc.)

TECHNOLOGIES

The overall Service solution proposed in T-REX is called Condition Based Maintenance (CBM) for new generation machine tool electro-spindles.

It complements/enlarges the actual Service portfolio

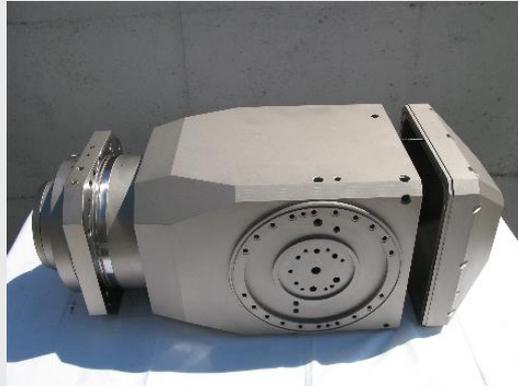
It exploits the features of the new family of IMATECNO electro-spindles that has been re-designed (shift from a purely performance to a reliability driven concept) and also equipped with new sensors that allow the machine tool builder to retrieve essential data about the working and operating conditions of the component.

The new developed software application (performing some tests and collecting data from the field) enables FIDIA to offer its customers a new solution with predictive capabilities to improve productivity avoiding sudden interruptions in machining of workpieces due to breakdowns.

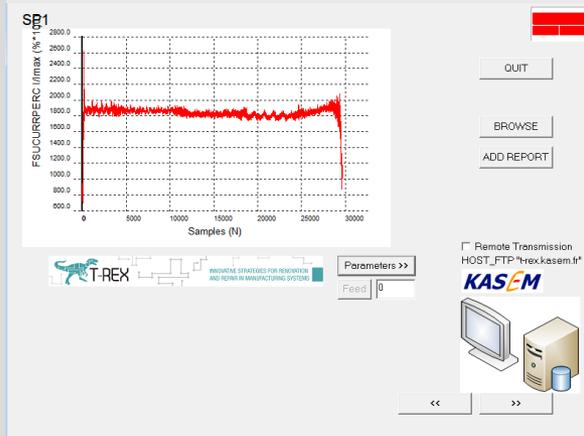
This increases machine availability and lowers Total Cost of Ownership (TCO) for customers.

TECHNOLOGIES

Full sensorized new electrospindle prototype



Diagnostic SW tool for electrospindle monitoring



New Service solution for monitoring and Condition Based Maintenance of electrospindle (at fleet level)



Main outcomes

SUMMARY

- *The proposed solution uses all available internal signals from the FIDIA CNC + those embedded in the new spindle. **No added cost for external equipment.***
- *At present SoA no manufacturer provides this **number of embedded sensors in the spindle** for diagnostic purposes.*
- ***No CBM** solution for the electrospindle **is marketed** from machine tool builders.*
- ***Fleet management** of machine tools is a totally new concept.*
- ***Easiness of installing** the integrated solution.*
- *The CBM solution may be sold in the **aftermarket and** installed as a **retrofit** on existing machine tools.*

EXPECTED BENEFITS

- *Increase of product sales*
- *Increase of maintenance contracts sales*

Thank you!



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