Asset Efficiency Optimization for Improved Profitability.

S.S. Pamnani

SKF Bearings India Ltd., Mumbai.

Abstract

From Drying Cylinder to Press Roll, Smallest Motor to Largest Pump and Calender to Reeler - and everything in between - if there is a problem, the bearing knows. As the key interface between moving parts, the bearing is literally the diagnostic heart of the machine. Misalignment, unbalance, looseness and friction, are all telegraphed through the bearing. Understanding the information coming from this diagnostic "pulse" and then applying the latest and best technology to the problem is the key to raising machine productivity and lowering operating cots. This is achieved through" Asset Efficiency Optimization Program leading to an improved productivity."

INTRODUCTION

When we did our own bearing and machine maintenance we were always playing catchup with technology. Tie-up with experts keep us running and lets us concentrate on doing our business of making our core product - the Paper." "Anybody can tell you that something is wrong. Tie-up with experts who have experience to tell you exactly what is wrong... fix the problem... and help you make sure it dose not happen again." "Who knows how industry will take plant productivity to the next level? The bearing knows! Keeping a finger on the pulse of your plant's productivity."

The Asset Efficiency Optimization concept picks up where plant asset management programs typically stop. AEO enables a plant to produce the same amount for less cost, or to produce more for the same cost.

It is a system of organizing and applying assets - from personnel to machinery - bringing together knowledge and technology to achieve the greatest return on investment. By applying the power of SKF's technology and service solutions, you can benefit from AEO program, which assists in achieving your organization' s overall business objectives. These include reduced costs, greater productivity, better utilization of resources, and as a result, increased bottom line profitability.

Achieving Asset Efficiency' objectives is a significant challenge. Very often, management is aware of the significant benefits that can be achieved from a well-run asset management program. However, in some organizations, actually achieving asset efficiency can present a major challenge. Few companies have the-resources or expertise to implement the rapidly developing new technologies processes and cultural changes that are so important to achieve timely, yet long-term successes. It is not uncommon for corporations to begin the process in earnest, only to be hindered by an incomplete strategy or insufficient planning or benchmarking. The result is typically over or underspending of capital and maintenance resources, and ultimately, failure to achieve efficiency objectives.

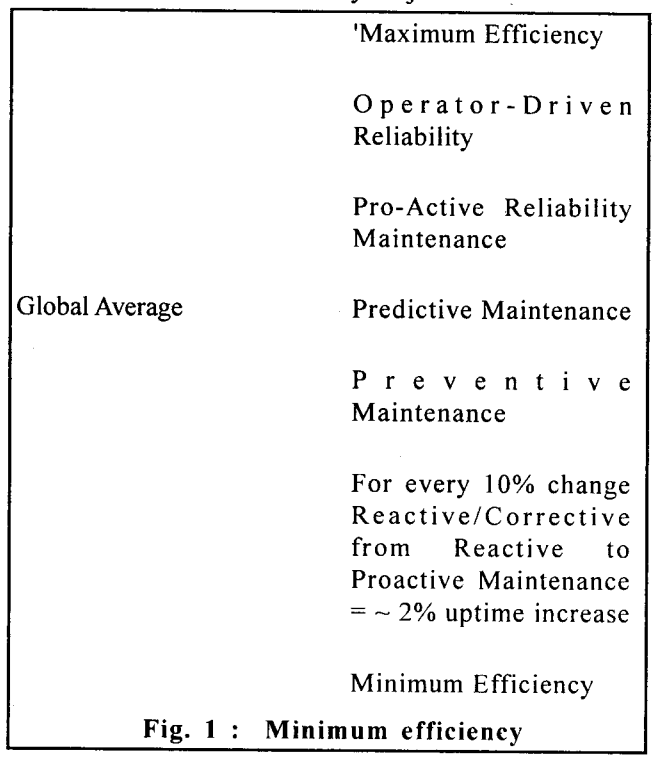


Fig. 1 : Minimum efficiency

Fig. 2 In brief below are the Steps involved in AEO implementation with SKF expertise:

Assessment

•Determine the current situation
- Maintenance Situation
- Supply and Stores Process
- Predictive Maintenance

Maintenance Strategy

- PM / PdM Focus
- Reliability Focus
- Reliability Focus
- Asset Optimization

Maintenance Engineering

- Planned & Predictive Maintenance Procedures
- Computerized Maintenance Management System
- Documentation
- Spare Part Optimisation

Supply Process

- Trouble Free Supply
- Electronic Supply Process
- Stores and Supply Assessment

Proactive Reliability Maintenance

- Predictive Maintenance
- Vibration Monitoring
- Thermography
- Lubrication Analysis
- ODS (Operating Deflection shape) Analysis
- Diagnostics and Root Cause Analysis
- Key Performance Indicators
- Operational Review

Machine Maintenance

- Machine Alignment
- Precision Balancing
- Lubrication & Filtration Management
- Root Cause Failure Analysis
- Technology Advice & Machine Upgrading
- Bearing Installation

Machine Improvements

- Upgrade, Rebuild and Redesign
- Design Engineering
- Refurbishment and Repair of Machines
- Refurbishment of Bearings
- Instrument/Equipment Calibrations

Training

- Building & Enhancing Competence
  - Proactive Reliability Maintenance
  - Condition Monitoring & Analysis
  - Maintenance & Skill
  - Software Calculations
  - Lubrication & Seal

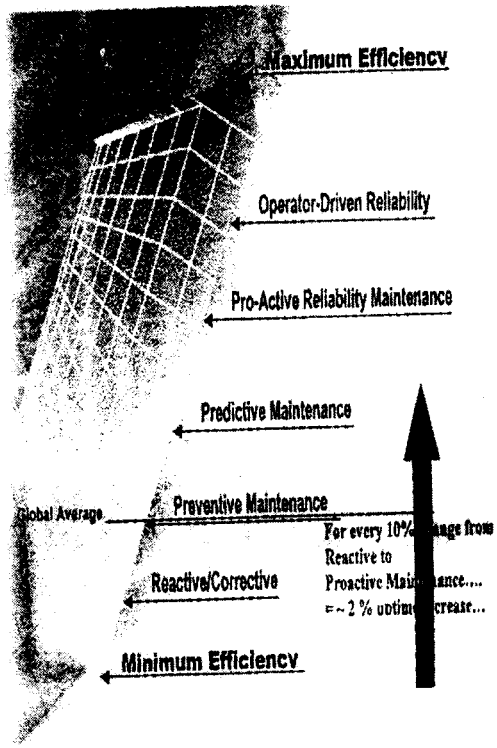


Fig. 2

Bearing Maintenance

Integrated Maintenance Solutions

- Guaranteed return without capital investment

Maintenance strategies are changing rapidly

Maximizing the efficiency and integrity of a plant and its equipment in the most effective manner requires a shift from traditional maintenance activity, which is both reactive and functional, into a proactive maintenance process that is fully integrated into overall plant activity. This is what Best-in-Class maintenance departments do to achieve optimization goals.

Putting reliability as the cutting edge

Many of today's multi-national organizations are adopting an innovative approach to maintenance called Operator Driven Reliability (ODR). With the availability of today's rugged, handheld industrial computers, operators have the ability to collect, store and assess machine condition, process. vibration and inspection data. Operation Driven Reliability bridges the gap between operations. maintenance, reliability and engineering in the quest for improved plant-wide reliability.

Moving towards an integrated, proactive reliability maintenance strategy starts with understanding where you stand today, and defining your objectives for the future. The chart illustrates the range of maintenance practices.

The Reliability Maintenance Challenge - Mapping a course to enhanced productivity and profitability.

The critical factors that affect the success are culture, technology and processes. A complete solution is to focus on all these parts to improve as a whole. Whatever may be your current asset management strategy. SKF's Reliability Systems offers the knowledge, services and the products needed to achieve your productivity goals.

The Future of Asset Management based on Integrated Platform.

SKF's range of products and services - from condition monitoring and decision support systems to bearings and seals - are all designed to provide the solutions that will ultimately lead to increased bottom line profitability for our customers. Our focus on technology and seamless interface with plant-wide systems supports four key areas in an effective maintenance process.

Decision Support

SKF has the ability to facilitate consistent, accurate "and effective decisions on plant equipment and processes with use of support software.

Condition Monitoring

As a leading supplier of condition monitoring products, SKF offers a complete range- form hand-held data collectors /analyzers to online surveillance and machinery protection systems. These products offer seamless interface to CoMo " analysis software, CMMS, ERP etc.

Maintenance Tools and Lubricants

SKF offers complete range of maintenance products e.g. Mechanical Tools, Pullers, Induction Heaters, Oil Injection Pumps, Hydraulic Nuts, Shaft & Belt Alignment Tools, Thermometers, Stethoscope, Greases, Automatic Lubricators, Oil Check Monitor, Rust Inhibitors, Anti-Corrosive & Fretting Agents, etc.

Component innovation & solution products

Explorer Series - SRB, CARB, ACBB, SRTB, CRB etc with higher capacity Carb - A beginning of New Era for Pulp & Paper Industry. Case hardened SRB, & CARB for Drying & Yankee Cylinders. No-Wear

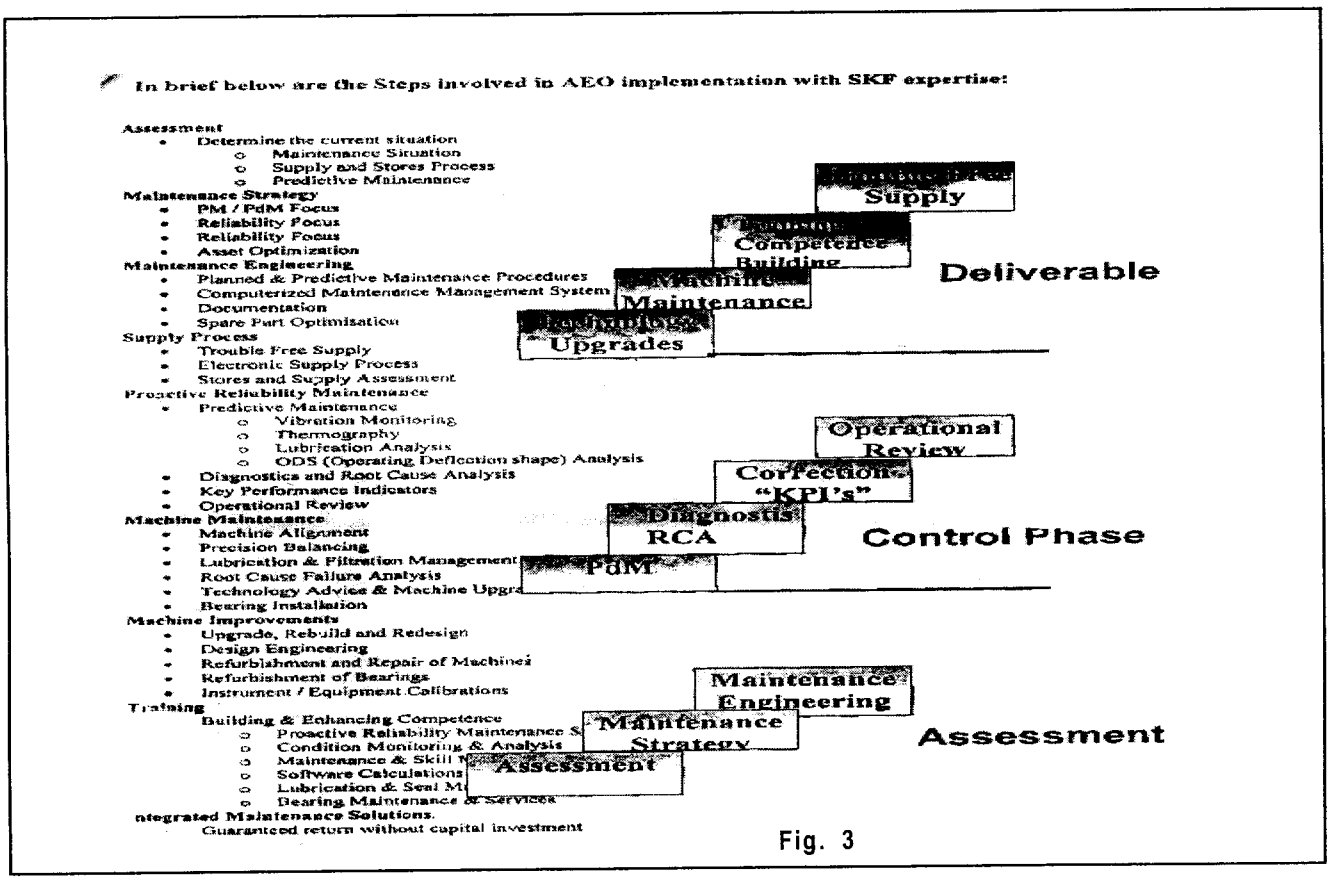


Fig. 3

Case Study : Paper Mill				
Process	**Production 2002 (Tonne)**	**Downtime 2000 (hours)**	**Downtime 2002 (hours)**	**Increased 2002 (Tonne)**
Pulp Dryer	303	57	0	1.643
Paper Machine	89	31	0.7	252
OMC	61	21	0	119

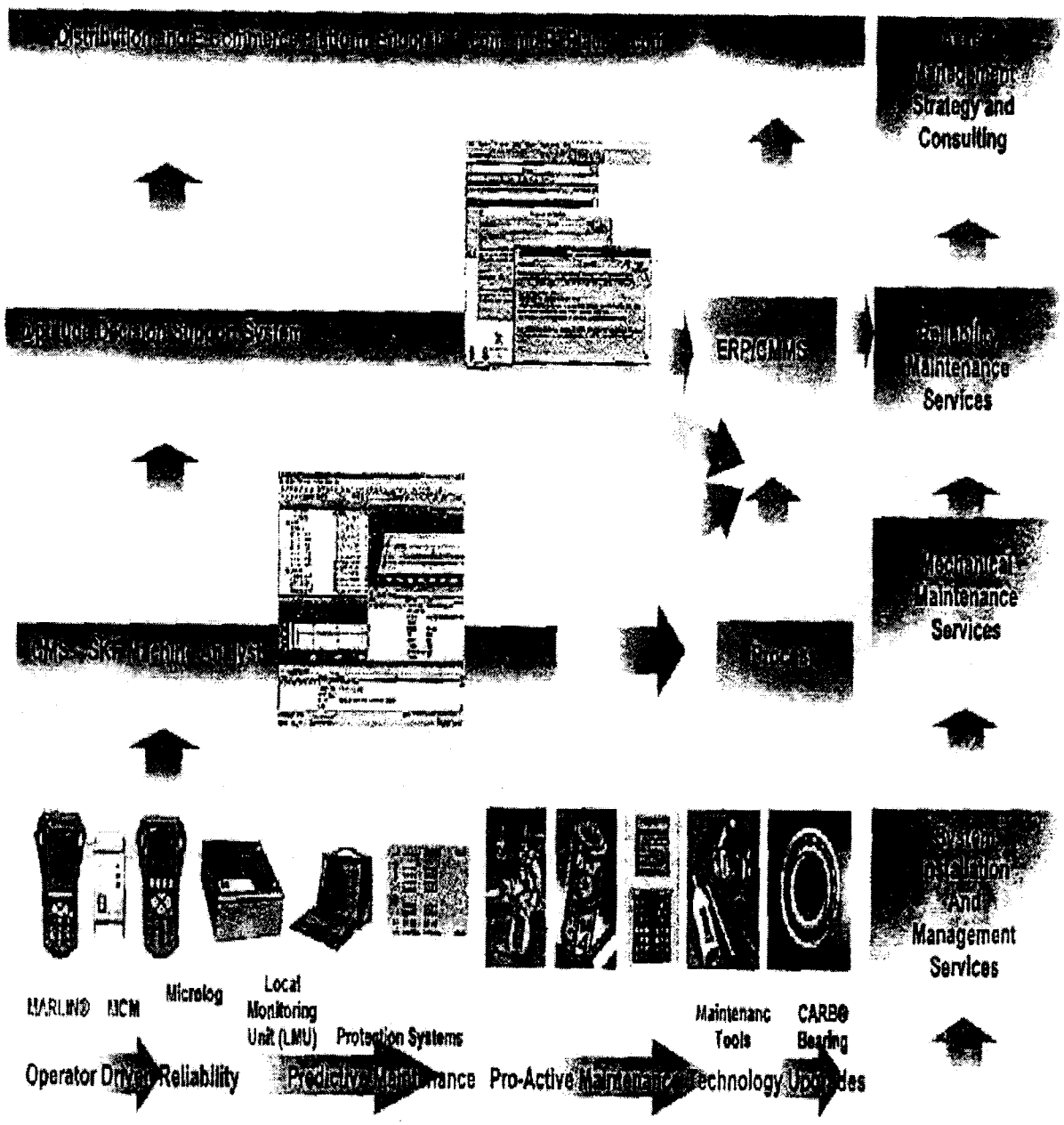
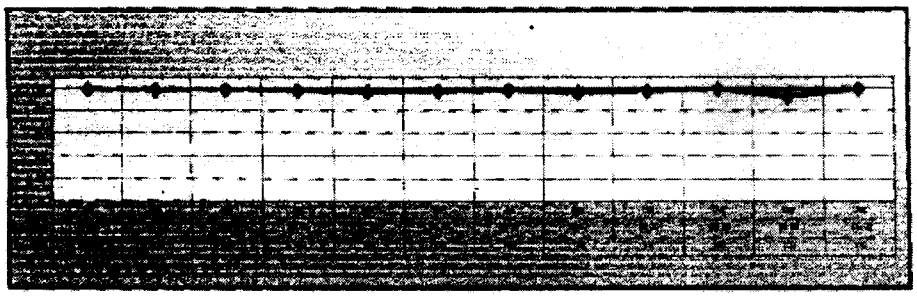


Fig. 4 An Integrated Platform for Asset Efficiency Optimization

Year 2002



Year 2001

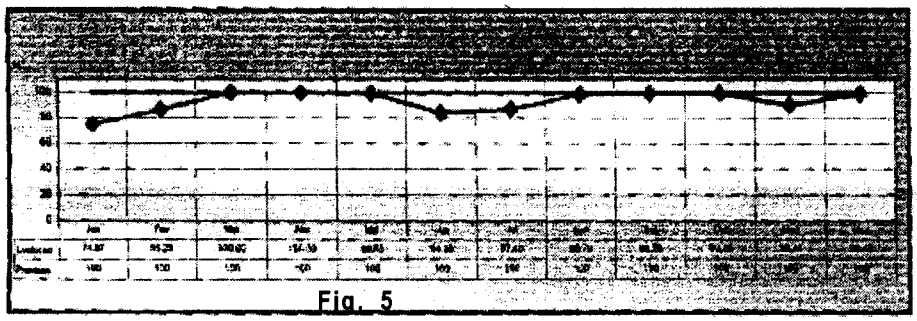


Fig. 5

Result: 1 Million Dollar Incremental in Production.

Bearing for Super Calenders. Triple Ring Bearings for Deflection-Compensating Rolls. Multi-row radial bearings for Doctors. Insulated Bearings for Electric Motors. SKF - Drive-up method for mounting bearings. SNL and Special Housings /Rockers for Pulp & Paper Industry.

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In order to reduce cost associated with purchasing, supply and inventory management SKF has built a large & strong network of distributors connected to a Central Warehouse and nearest Logistic Center. They have global accessibility about bearing availability.

SKF expertise extends far beyond bearings. Our experience includes virtually every industry and you can benefit from SKF's advanced capabilities in manufacturing and research.

We are at your service to offer "SKF's Asset Efficiency Optimization" Because no other company in the world is better prepared to help you boost plant productivity by maximizing machine uptime and eliminating costly, unexpected downtime.

SKF can help you optimize asset efficiency to increase profitability. Today, reliance on supplier expertise is often recognized as one of the most practical and cost-effective means to enhance internal competencies. SKF enables customers to benefit from a dedicated entity called SKF Reliability Systems.

CONCLUSION

Proper maintenance is a key contributor to the delivery of asset performance when it is planned and implemented according to sound business drivers, such as return on capital, cash flow, asset integrity and protection of reputation. An effective strategy continually identifies areas with the highest commercial and safety risk, and then measures how well specific activities reduce that risk It encompasses all aspects of human talent, machine expertise, correct assessment, well planned strategies and engineering practices, supply process, asset knowledge, machine improvements and continuously thriving for highest standards so as to provide the greatest return on investment.