Tribology for Industry. Closing the Gap Between Knowledge, Application and Measurable Benefits

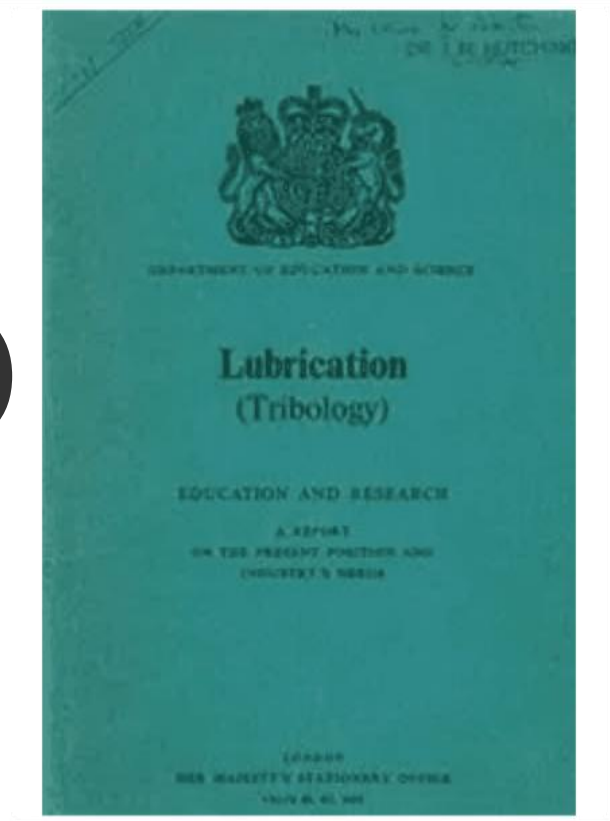
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(1) Grupo Sicelub Lubritech / Asociación Argentina de Tribología (aat)

The Gap

1%

PBI



The Jost Report (1966)

THE INDUSTRIAL PERCEPTION GAP

"We just buy the cheapest lubricants and filters here"

"We change the oil based on time, regardless of condition"

"Lubrication is managed by corrective maintenance Contractor in this Plant"

A MASSIVE GAP EXISTS BETWEEN POTENTIAL VALUE AND DAILY PLANT PERCEPTION.

What can we Tribology professionals do to narrow this gap?

The Missing Ownership of Tribology in Industry

IS TRIBOLOGY CONSIDERED DURING EPC STAGES?

Feed Engineering?

Detailed Engineering?

OEM's?

EPC's?

Purchasing Department?

Construction Department?

Department?

Commissioning Department?

Department?



The missing gear!

WHO MANAGES TRIBOLOGY IN AN INDUSTRIAL PLANT?

Predictive Maintenance?

Reliability Maintenance?

Preventive Maintenance?

Maintenance Manager?

Purchasing Department?

Contractor?

Any communication with:

Production Department

Environmental Department

Safety Department?

Professional Communities: Building the Missing Ownership

PASSION AS THE DRIVING FORCE

THE LEGACY OF PIONEERS

Inspired by Don Miguel González Bonnin, who saw saw Tribology not just as a science, but as a passion passion that keeps the world moving.

THE TRIBOLOGIST'S ROLE

We must be more than technicians; we are ambassadors of value, bridging the gap between between theory and industrial reality.



STLE Latin America Chapter 2002-2004

"Tribology is the hidden science that enables modern industry."

Inspired by the vision of Peter Jost and Miguel González Bonnin.

Asociación Argentina de Tribología

OUR MISSION

- To promote the knowledge and the best practice in Tribology
- To create an environment of interchange and participation for the development of activities linked with Tribology
- To encourage an active interrelationship between professionals, technicians and academics in disciplines linked to Tribology

CURRENT ACTIVITIES

- Jornadas de Tribología: Face-to-face technical sessions.
- Commercial Exhibition: Connecting providers with solutions.
- Online Colloquiums: Continuous knowledge dissemination.

"Promoting the discipline beyond commercial competition."

Asociación Argentina de Tribología

La Tribología es una ciencia interdisciplinaria que esta disponible
para servir a la industria.
Acerquese a ella a través del

Centro Argentino de Tribología

Fundado el 7 de Agosto 1970

22 / TRIBOLOGIA / 4 - OCTUBRE 87



JORNADAS de TRIBOLOGIA 2023

20 AUG 2024

Los días 1 y 2 de noviembre se realizaron las Jornadas de Tribología 2023, organizadas por la Asociación Argentina de Tribolog&ia

6th International Workshop of Tribology 2022



29 DEC 2022

Durante los días 29 y 30 de noviembre de

Asociación Argentina de Tribología

2º International Workshop of Tribology – TRIBaires 2013



7º International Workshop of Tribology – 2025



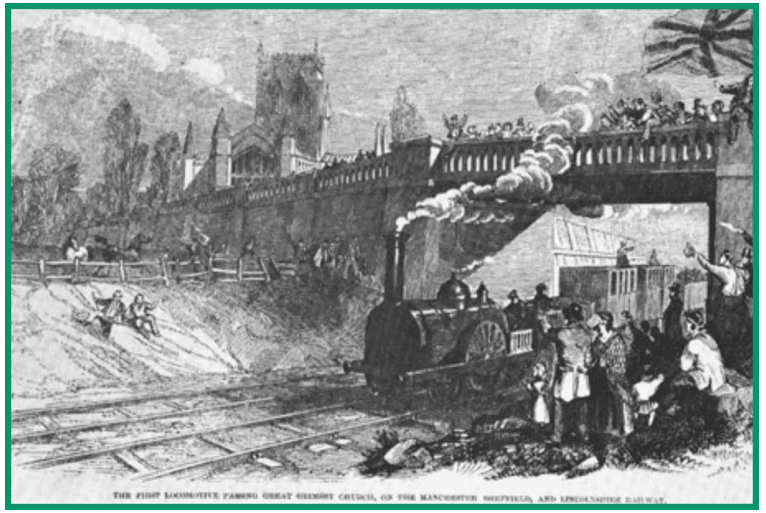
The next Tribology Workshop will take place in Buenos Aires on September 29th–30th, 2026; featuring 12 technical presentations and a commercial exhibition.

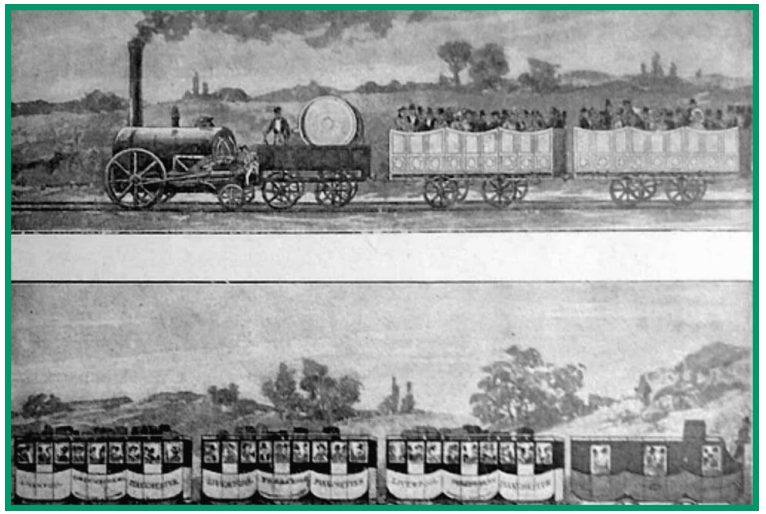
HISTORICAL PARALLEL: 19TH CENTURY UK RAILWAYS

THE SECRET OF SUCCESS

Engineers and competitors met to share Best Practices. This collective knowledge accelerated innovation and Reliability, making the UK the “Workshop of the World”

The Lesson: Sharing Technical cases doesn’t lose you business; it builds and entire industry and expands the market for everyone.





Collaboration fueled the Industrial Revolution's greatest transport network.

STRENGTH IN UNITY: THE POWER OF COLLABORATION

THE PARADOX OF COMPETITION

We are competitors in the market, but allies in dissemination. A shared commitment to Tribology benefits the entire Industry

GROWING THE MARKET

When customers understand the value of Tribology, the market expands for everyone; creating long-term opportunities for all suppliers.

COLLECTIVE DISSEMINATION

Moving from "selling a product" to "promoting a discipline." Sharing technical cases doesn't lose business; it builds an industry.

BRIDGING THE GAP THROUGH EDUCATION



I personally attended an inspiring lubrication presentation at university, and later met professionals in industry who had attended our tribology talks as students. It creates a strong connection between academia and industry.

THE UNIVERSITY LINK

Maintaining a permanent connection with undergraduate and postgraduate engineering engineering programs is vital for the future of the of the field.

THE CHALLENGE

Tribology is often taught as a "specialized niche" niche" subject, detached from the daily realities of realities of industrial application.

NATURALIZING APPLICATION

Our goal is to move from theory in the classroom to value in the industry, making Tribology a fundamental pillar of professional development.

CASE STUDY: THE TECHNICAL CHALLENGE

300

MEGAWATTS

Thermal Power Plant
Mexico

THE SCENARIO

A scheduled major Turnaround at a critical power generation facility. Every hour of downtime carries significant economic weight.

THE PROBLEM

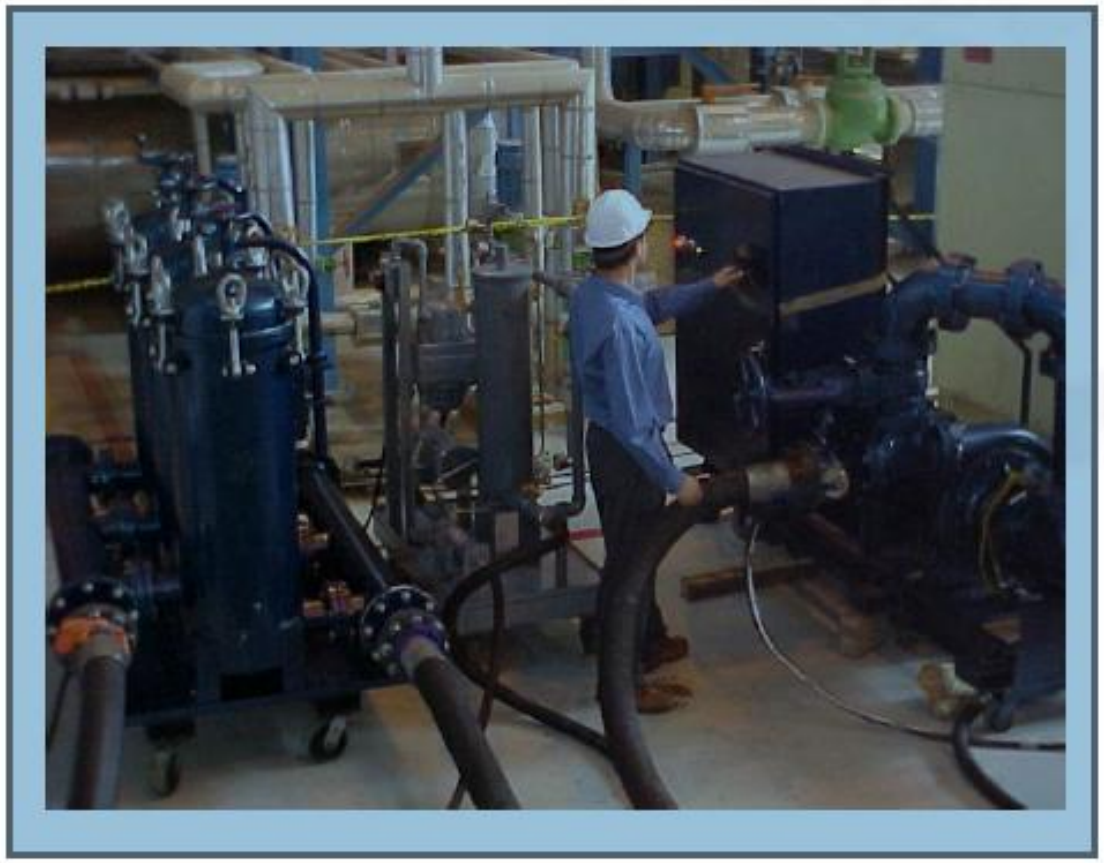
Oil analysis identified high levels of particulate contamination and and lubricant degradation in the main turbine system. They had some some issues with high temperatures in bearing due to poor cooler cooler performance.

INITIAL APPROACH

Focus was strictly technical: improve oil cleanliness and mitigate startup startup reliability risks, and cleaning coolers to improve cooling process. process.

TECHNICAL SOLUTION

High-Velocity Flushing Execution & Monitoring



STANDARDIZED PROCEDURE

Implementation of high-velocity flushing based on the ASTM the ASTM D-6439 standard to ensure turbulent flow and and effective contaminant removal.

REAL-TIME MONITORING

Daily ISO 4406 cleanliness reports presented to the maintenance team to track progress and validate the cleaning efficiency.

SYSTEM INTEGRITY

Focused on the turbine lubrication system to mitigate risks of premature wear and startup reliability issues.

THE "EUREKA" MOMENT

BEYOND MAINTENANCE

Moving from the maintenance office to the Production Production Director's desk changed the entire narrative narrative of the project.

THE QUESTION

"How does this oil cleanliness impact your startup startup schedule?"

THE DISCOVERY

In previous turnarounds, startup was delayed delayed by several days to manually clean clean protection meshes.

The flushing didn't just clean oil; it guaranteed the startup timeline.

VALUE

Case Study. Technical and Managerial View

THE TECHNICAL VIEW

FOCUS ON RELIABILITY

ISO 16/14/11

Achieving precise oil cleanliness targets to protect critical critical components.

RISK MITIGATION

Reducing the probability of premature wear and bearing failure.

PRIMARY METRIC

Technical Compliance

THE MANAGERIAL VIEW

FOCUS ON AVAILABILITY

4-5 DAYS SAVED

Elimination of manual cleaning delays during the startup sequence.

REVENUE GROWTH

Extra days of power generation far outweigh the cost of the service.

PRIMARY METRIC

Production Availability

Case Study. Voice of Customer

El servicio TurboClean es una de las prácticas operativas que se pueden aplicar en los sistemas de lubricación de los Turbogeneradores de manera inmediata y que permite acortar los tiempos de arranque. En algunos casos en más de 5 días. Lo cual representa una mayor disponibilidad anual cercana al 1.5% para la generación de energía eléctrica en el caso de paros programados. Este servicio TurboClean solo es una parte del Programa Estratégico LubriCare comentado en nuestra reunión anterior.

Estamos seguros podrán impactar positivamente el estado de resultados de los diferentes centros de trabajo de CFE a su digno cargo.

Respetuosamente sometemos a su consideración el llevar a cabo esta reunión ejecutiva la primera semana de Abril entre los días Lunes y Miércoles en el horario que considere conveniente.

Agradeciendo de antemano su respuesta, nos despedimos en espera sus amables indicaciones.

Atentamente,

Ing. Luis Mariano Hernández Pérez
Director de Mercadotecnia y Desarrollo

COMISION FEDERAL DE ELETRICIDAD
GERENCIA REGIONAL DE PRODUCCION CENTRAL
MAR 28 2003

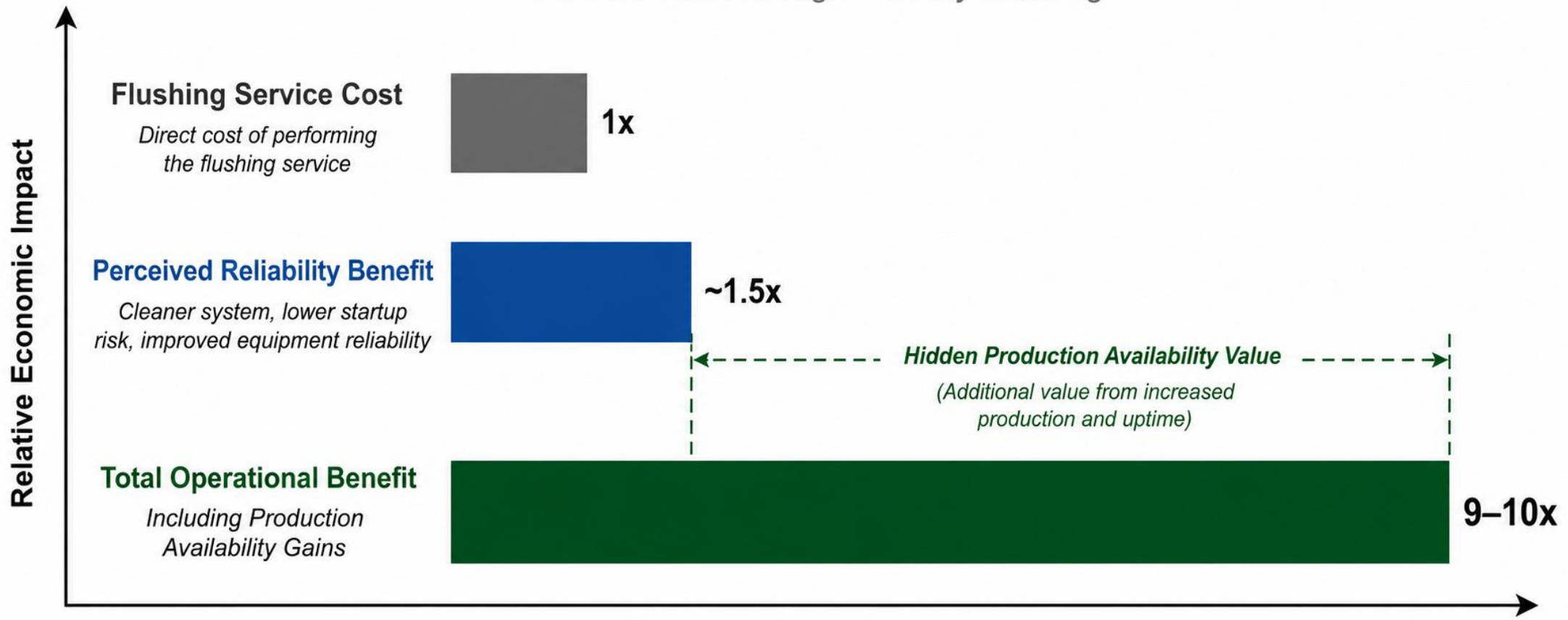
VOICE OF CUSTOMER

Document signed in March 2003, and used as a reference for similar cases. Presented to Regional Managers of Managers of Customers.

Case Study. Total Operational Benefit

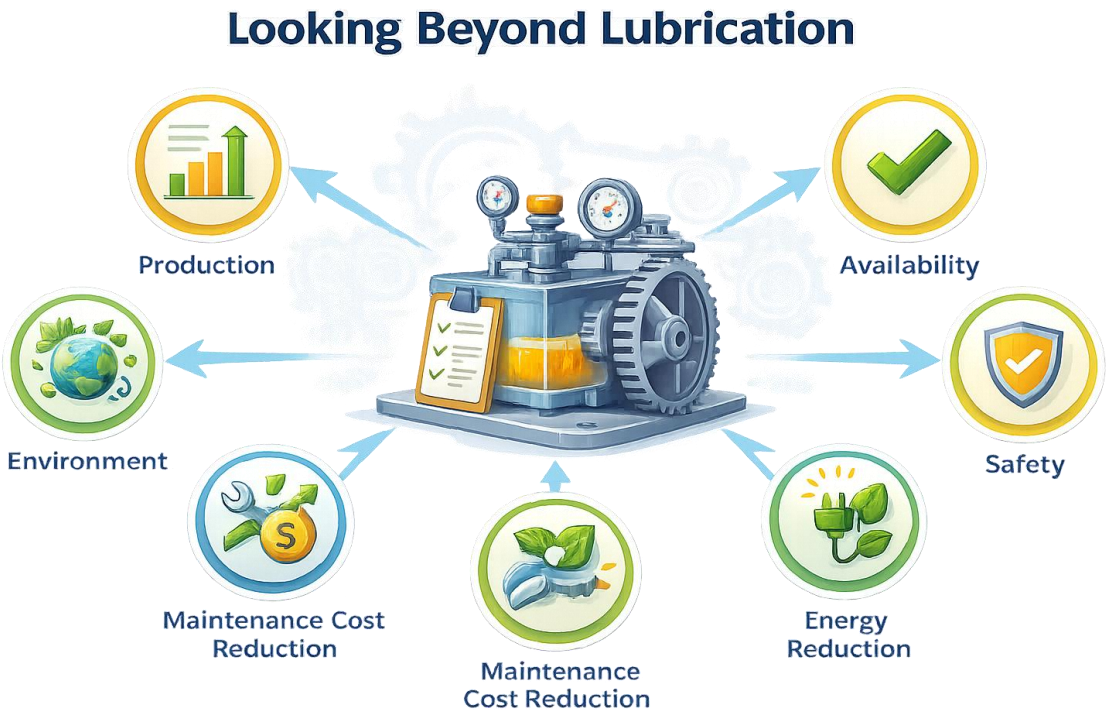
From Maintenance Cost to Production Value

The True Value of High-Velocity Flushing



Illustrative relative comparison based on operational experience.

Learning. Finding Hidden Tribological Opportunities



- **Maintenance Cost Reduction.** MTBF, Reliability Manpower, Spare Parts.
- **Production Gains.** Availability during Operation, Reduction Turnarounds.
- **Safety.** Improve safety of installations and people. Automation. Insurance Premiums.
- **Sustainability.** Reduction in oil consumption, circular economy. Cooling Water and Energy Savings.

The most important objective is to effectively communicate this value to decision-makers — typically Plant Managers — in order to increase the visibility of our work and promote the adoption of Tribology throughout the organization.

Learning. Finding Hidden Tribological Opportunities





• **Oil Purification.** Initial focus was lubricant consumption, how to reduce it! Then, we (customer and us) understood that real value was to increase life of machine, and reduce risks for unplanned shutdowns.

• **Using Oil Mist in Refineries.** Initial focus was increasing MTBF. Then, we (customer and us) understood that real value was to improve Safety and reduce Insurance Premiums.

Key Actions to Achieve These Objectives

From technical discipline to strategic business value

Conclusion. Call to Action

- **Actively participate in professional associations** to promote and communicate the value that Tribology brings to industry (AAT, AELT, STLE, etc).

- **Promote Professional Certifications** (STLE, ICML).

- **Adapt our language to the audience and industrial area we are addressing.** Having a strong management-level elevator pitch is essential to gain visibility and support.

- **Develop a deeper understanding of our customers' processes** in order to clearly demonstrate the operational, reliability, and financial value generated by Tribology.

- **Expand Tribology beyond industry alone** by involving undergraduate and postgraduate engineering programs, as well as other technical and scientific disciplines.

LEAD WITH PASSION, DELIVER WITH VALUE.

Let's close the gap together and elevate Tribology to its rightful place as a pillar of industrial excellence.



Be a Reference. Leave a Legacy!

Questions

