Discussion Round Tables at STLE annual meeting 2018

Session Chair and technical Organization
Dr. Hannes Grillenberger
Schaeffler Technologies AG & Co. KG
hannes.grillenberger@schaeffler.com

Society of Tribologists and Lubrication Engineers
Introduction

1. Format of Discussion Round Tables
2. Hosts and their topics, Schedule

Notes on the Tables

Impressions of the DRTs
Agenda

1 Introduction
   1.1 Format of Discussion Round Tables
   1.2 Hosts and their topics, Schedule

2 Notes on the Tables

3 Impressions of the DRTs
Discussion Round Tables

Discussion Rules
- Discuss politely and respect the moderator and other attendees
- write as many notes you can
- get your point of view on the topic

Number of attendees
- Maximum 10 people per table
- first come first serve

Topics and Hosts
- Hosts volunteer with their own topic
- their maximum technical benefit → find blind spots and get new impulses

Time line
- Introduction (5 mins)
- Discussion 1 (20 mins)
- obligatory table switch (5 mins)
- Discussion 2 (20 mins)
- ...

Wrap up
Session Chair will take photos
- during the session
  - get the impressions of the format
- after the session
  - keep records on the table
Session Chair will wrap up a small presentation and upload on STLE web site
→ leave your business card to get a notice
Agenda

1 Introduction
   1.1 Format of Discussion Round Tables
   1.2 Hosts and their topics, Schedule

2 Notes on the Tables

3 Impressions of the DRTs
Topics and hosts I

**William Tusznkski**

What areas of performance improvements are of importance to end users of greases and lubricants?

**Gagan Srivastava**

Real-time oil quality analysis

**Manfred Jungk**

Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
Introduction

**Topics and hosts II**

**Bodo Hahn**

A perfect rolling bearing simulation. What effects should be included?

**Lynn Rice**

What requirements/performance SPECS will be required for next-generation additives that can’t be met by current additive technology?

**Arup Gangopadhyay**

Improving heat transfer characteristics of lubricants

**Chris DellaCorte**

Are rolling contact fatigue life models GOOD ENOUGH?
<table>
<thead>
<tr>
<th>Time</th>
<th>Discussion Round Tables at the Annual Meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.40 pm</td>
<td>Lunch with Lynn Rice</td>
</tr>
<tr>
<td>4.10 pm</td>
<td>Discussion Round Tables at the Annual Meeting</td>
</tr>
<tr>
<td>4.40 pm</td>
<td>Lunch with Lynn Rice</td>
</tr>
</tbody>
</table>
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?

2.2 Gagan Srivastava - Real-time oil quality analysis

2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?

2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?

2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?

2.2 Gagan Srivastava - Real-time oil quality analysis

2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?

2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?

2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Notes on the tables

William Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?
William Tuszyński - What areas of performance improvements are of importance to end users of greases and lubricants?
William Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?
Agenda

1. Introduction

2. Notes on the Tables
   2.1 William Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?
   2.2 Gagan Srivastava - Real-time oil quality analysis
   2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
   2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants
   2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
   2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
   2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3. Impressions of the DRTs
Notes on the tables

Gagan Srivastava - Real-time oil quality analysis

---

Fracking?
- 9000 RPM
- Wind turbines
- AI enabled tools
- Non-obvious measurements correlated with failure

Engine Oil Supplier should lead deployment
- Imminent failure:
  - Dilution of fuel: glycol

---

REAL TIME OIL QUALITY ANALYSIS

Parameters
- Viscosity
- FUEL (pH, ACOS)
- Dynamic Light Scattering for Real Particles
- pH, Conductivity
- Temperature
- Flow Rate
- Water content
- Oil content
- CO2 content

---

Gagan Srivastava
Dow
Gagan Srivastava - Real-time oil quality analysis

Notes on the tables
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?

2.2 Gagan Srivastava - Real-time oil quality analysis

2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?

2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?

2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?

2.2 Gagan Srivastava - Real-time oil quality analysis

2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?

2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?

2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Notes on the tables

Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

- Oxidation
- Better seals
- No Clutch
- Reduce additives
- Reduce viscosity
- Durability

Power-Split Trans

- 160°C
- Thermal Conductivity - Phase transformer
- High thermal conductivity
- High electrical resistivity
- Compatibility with insulators, laminates, copper, rare earth metals
- Transformer oil
- Alkyl naphthenes

PAO 2 ??

PAO-2

Keep at 130°C

Avoid heat

23 May 2018
Discussion Round Tables at the Annual Meeting
Notes on the tables

Arup Gangopadhyay - Improving heat transfer characteristics of lubricants
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?

2.2 Gagan Srivastava - Real-time oil quality analysis

2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?

2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants

2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?

2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Notes on the tables

Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?

World Peace!

Cage flexibility

Include Thermal effects

Contacts -Info correct

Dynamics of bearings...

Can we simulate a Bearing in a system?

Stiffness

Stiffening of the bearing

Flexible Bands & Rings

Stresses in making

Thermal effects

Vibration analysis

Crossing frame of reference
Notes on the tables

Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
Notes on the tables

Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
Notes on the tables

**Bodo Hahn** - A perfect rolling bearing simulation. What effects should be included?
Notes on the tables

Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
Agenda

1 Introduction

2 Notes on the Tables

2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?
2.2 Gagan Srivastava - Real-time oil quality analysis
2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants
2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Notes on the tables

Chris DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
Agenda

1 Introduction

2 Notes on the Tables
   2.1 Wiliam Tuszynski - What areas of performance improvements are of importance to end users of greases and lubricants?
   2.2 Gagan Srivastava - Real-time oil quality analysis
   2.3 Manfred Jungk - Do Nanoparticles disappear in the valleys of surface roughness or do the valleys provide a reservoir?
   2.4 Arup Gangopadhyay - Improving heat transfer characteristics of lubricants
   2.5 Bodo Hahn - A perfect rolling bearing simulation. What effects should be included?
   2.6 Chis DellaCorte - Are rolling contact fatigue life models GOOD ENOUGH?
   2.7 Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?

3 Impressions of the DRTs
Lynn Rice - What requirements/SPECs will be required for next-generation additives that can’t be met by current additive technology?
Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?
Lynn Rice - What requirements/ SPECS will be required for next-generation additives that can’t be met by current additive technology?
## Agenda

1. **Introduction**
2. **Notes on the Tables**
3. **Impressions of the DRTs**
Impressions of the DRTs

May 23rd 2018

Discussion Round Tables at the Annual Meeting
Impressions of the DRTs

May 23rd 2018

Discussion Round Tables at the Annual Meeting
Impressions of the DRTs

May 23rd 2018

Discussion Round Tables at the Annual Meeting
Impressions of the DRTs

May 23rd 2018

Discussion Round Tables at the Annual Meeting
Impressions of the DRTs

May 23rd 2018

Discussion Round Tables at the Annual Meeting