



Satuan Acara Pengajaran

MMS8120801 - Analisa Kerusakan + Lab

Pengajar

Prof. Dr. Ir. Winarto M.Sc

Prof. Dr. Ir. Dedi Priadi DEA.

Tujuan Perkuliahan

Mhs. Mampu Memahami & Menganalisa Kegagalan berbagai jenis Material dengan Teknik Analisa Kegagalan serta dapat mengetahui Prinsip Dasar Mekanika Perpatahan Material secara umum. Beberapa studi kasus kerusakan material diberikan untuk dipecahkan (dianalisis) serta praktek pengujian material kerusakan di laboratorium

Minggu 1

Materi INTRODUKSI:
- Penjelasan SAP MK Perpatahan & FA
- Aspek enjiniring Kegagalan & Analisanya
- Sumber/Faktor Kegagalan Material.

TEKNIK ANALISA KEGAGALAN-1
- Tujuan Analisa Kegagalan
- Tahapan dalam Analisa kegagalan
- Uraian Skematis
- Pengumpulan Data
- Pengamatan Awal Patahan
- NDT

Media LCD

Referensi 1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
2. Brooks C R., Metallurgical Failure Analysis

Aktivitas

Minggu 2

Materi Libur Iedul Fitri

Media

Referensi

Aktivitas

Minggu 3

Materi JENIS PERPATAHAN

- Distorsi
- Patah Ulet (Ductile)
- Patah Getas (Brittle)
- Patah Fatik (Fatigue)

STUDI KASUS LANJUTAN (Bahas 2 Contoh Kasus)

Media LCD

Referensi 1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
2. Brooks C R., Metallurgical Failure Analysis

Aktivitas Kuliah Tatap Muka
Tugas kelompok

Minggu 4

Materi JENIS PERPATAHAN

- Distorsi
- Patah Ulet (Ductile)
- Patah Getas (Brittle)
- Patah Fatik (Fatigue)

STUDI KASUS LANJUTAN (Bahas 2 Contoh Kasus)

Media LCD

Referensi Referensi

1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
2. Brooks C R., Metallurgical Failure Analysis

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Tugas kelompok

Minggu 5

Materi Sistim Tegangan dan Residual Stress

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
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Tugas Kelompok

Minggu 6

Materi Teori Mekanika Perpatahan & Aplikasinya

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention?", Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography?" Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
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Tugas Kelompok

Minggu 7

Materi Tolls for Failure Analysis

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention" Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Aktivitas Kuliah Tatap Muka
Tugas Kelompok

Minggu 8

Materi Perpatahan Akibat Keausan (wear)
STUDI KASUS DI KELAS (Bahas 2 Contoh Kasus)

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention" Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Aktivitas Kuliah & Diskusi
Tuags Kelompok

Minggu 9

Materi Perpatahan Akibat Kerapuhan (embrittlement)
STUDI KASUS LANJUTAN (Bahas 2 Contoh Kasus)

Media LCD

Referensi

1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
2. Brooks C R., Metallurgical Failure Analysis
3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994

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Tugas Kelompok

Minggu 10

Materi Perpatahan Akibat Proses Heat Treatment
STUDI KASUS LANJUTAN (Bahas 2 Contoh Kasus)

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Tugas Kelompok

Minggu 11

Materi Perpatahan Akibat Proses Creep
STUDI KASUS LANJUTAN (Bahas 2 Contoh Kasus)

Media LCD

- Referensi**
1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
 2. Brooks C R., Metallurgical Failure Analysis
 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Aktivitas Kuliah & Diskusi
Tugas Kelompok

Minggu 12

Materi Perpatahan Akibat Tegangan Sisa (Residual Stress)
Studi Kasus & Analisa Permasalahan FA

Media LCD

Referensi

1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988.
2. Brooks C R., Metallurgical Failure Analysis
3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992
4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992
5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1
6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2
7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography"
8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994

Aktivitas Kuliah & Diskusi
Tugas Kelompok

Minggu 13

Materi Studi Kasus & Pembahasan Permasalahan FA

Media LCD

Referensi	<ol style="list-style-type: none"> 1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988. 2. Brooks C R., Metallurgical Failure Analysis 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography" 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Aktivitas	Kuliah & Diskusi Tugas Kelompok
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Minggu 14

Materi	PRESENTASI TIAP GROUP
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Media	LCD
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Referensi	<ol style="list-style-type: none"> 1. Wulpi, D.J., "Understanding How Components Fail?", ASM, 1988. 2. Brooks C R., Metallurgical Failure Analysis 3. Boyer, H.E.(Ed.), "Failures Analysis & Prevention? Metal Handbook, 8th Ed. Vol. 11, ASM, 1992 4. Fellows, J.A.(Ed.), "Fractography & Atlas Fractography", Metal Handbook, 9th Ed. Vol. 12, ASM, 1992 5. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol. 1 6. Khlefa A. Esaklul , "Hand Book Of Case Histories In Failure Analysis" Vol . 2 7. Stuart A. Shiels , "Corrosion, Failure Analysis and Metallography" 8. Stephens, R.I (Ed), "Case Studies for Fatigue Education" ASTM PCN, STP 1250, 1994
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Aktivitas	Kuliah & Diskusi Tugas Kelompok
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Minggu 15

Materi Final Examination (UAS)

Media Paper

Referensi

Aktivitas UAS
