

Rethinking the Design of Presentation Slides

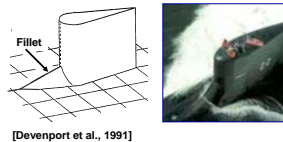
Michael Alley
College of Engineering
Penn State

Fillets reduce leading edge vortices in nature and in engineering

Fillet on dorsal fin of shark



Fillet on Seawolf submarine



[Zess and Thole, 2001]

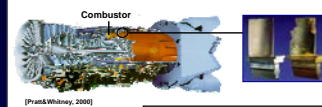


Templates: <http://writing.eng.vt.edu/slides.html>

This presentation presents a slide design that is more effective than PowerPoint's default design

Is grasped more readily

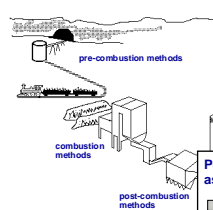
We propose to test a fillet design for turbine blades and vanes downstream of the combustor



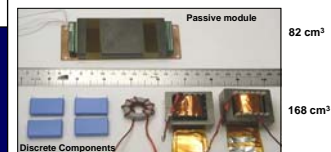
The purpose of the fillet is to disrupt the film cooling

Is more memorable

This presentation compares several methods for reducing emissions of sulfur dioxide



Power passive modules perform the same functions as discrete circuits but with smaller volumes



The total volume is cut by more than half



[Gottlieb, 2002]
[Alley, 2003]

Is more persuasive

For a slide to be effective, the audience has to be able to grasp its content quickly



Literature Review

- Hefner developed a dynamic electro-thermal model for a temperature-dependent IGBT silicon chip, package and heat sink. The temperature-dependent IGBT electrical model describes the electrical behavior in terms of the instantaneous temperature of the chip surface. The instantaneous power dissipated in the chip is calculated using the electrical model and determines the instantaneous temperature applied to the surface of the silicon chip thermal model. Hefner applied this methodology into the *SABER* circuit simulator.
- Adams, Jr. considered thermal interactions between the heat source and the enclosure walls as affected by the thermal conductance of the walls and the intent of determining which physical effects and level of detail are necessary to accurately predict thermal behavior of discretely heated enclosures.
- Chen, Wu and Borojevich are modeling of thermal and electrical behavior using several commercial softwares (I-DEAS, Maxwell, Flotherm and Saber) and 3-D, transient approaches.

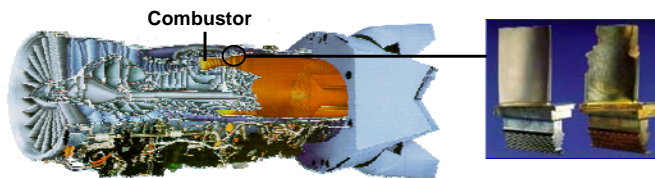
For a slide to be effective, the audience has to be able to grasp its content quickly

Observations

- ✧ Segment C (not on the 520 Map) represents the dominant feature
- ✧ The characteristics of Segment C are vastly different than the characteristics of Segments A and B (which are located in the same property)
- ✧ The characteristics of the dominant portion of the Segment C are suggestive of a perennial
- ✧ Direct observations are needed
- ✧ A detailed technical analysis is needed by a qualified, independent hydrologist.

For a slide to be effective, the audience has to be able to grasp its content quickly

We propose to test a fillet design for turbine blades and vanes downstream of the combustor



[Pratt&Whitney, 2000]

The purpose of the fillet design is to reduce vortices that disrupt the film cooling of the blades and vanes



Sentence headline

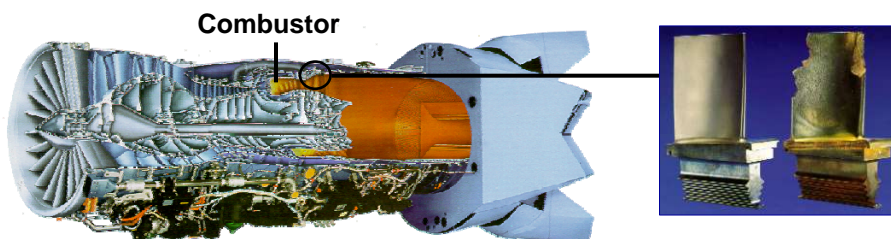
Visual evidence

No bullet lists

3

[Zess and Thole, 2001]

We propose to test a fillet design for turbine blades and vanes downstream of the combustor



[Pratt&Whitney, 2000]

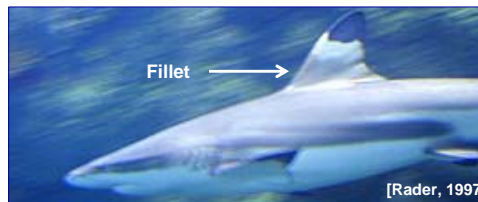
The purpose of the fillet design is to reduce vortices that disrupt the film cooling of the blades and vanes



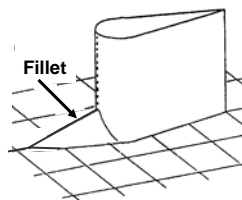
4

Fillets reduce leading edge vortices in nature and in engineering

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[Devenport et al., 1991]

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The sentence headline should state succinctly the purpose or assertion of the slide

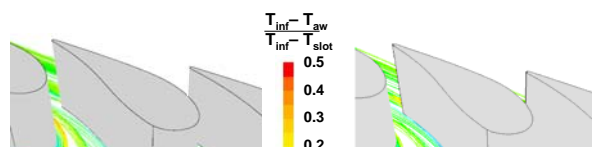


Sentences orient the audience much better than phrases do



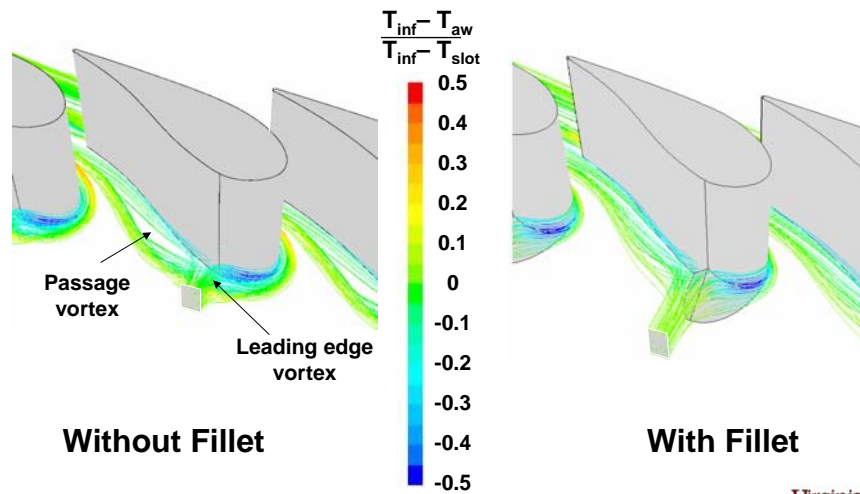
Sentences force the presenter to wrestle with the argument

Computations show that the fillet prevents the leading edge vortex and delays the passage vortex



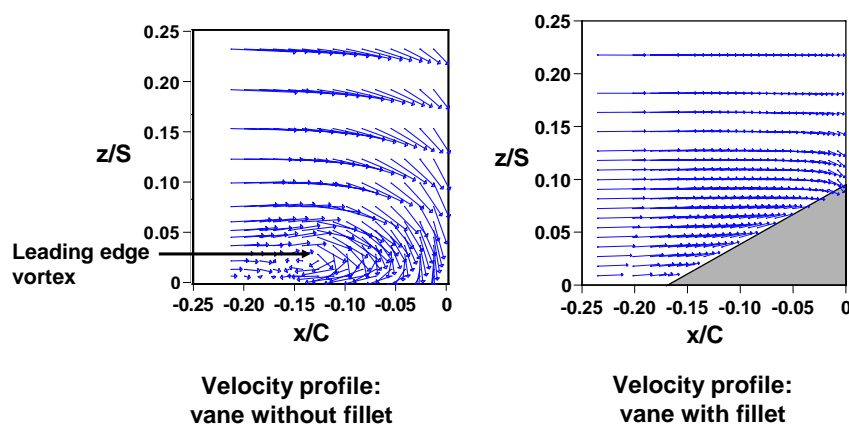
6

Computations show that the fillet prevents the leading edge vortex and delays the passage vortex



7

Measurements show that the fillet prevents formation of the leading edge vortex



8

To make slides memorable, you have to consider what to include and what to exclude

Presentation Outline

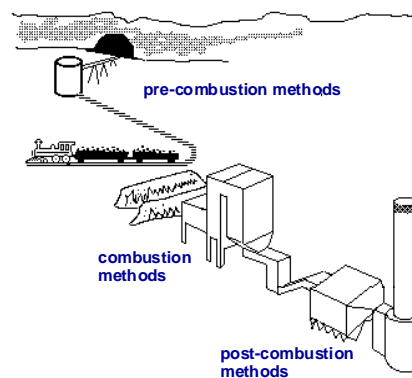
- Introduction
- Background
- Pre-Combustion Methods
 - coal switching
 - coal cleaning
- Combustion Methods
 - atmospheric fluidized bed
- Post-Combustion Methods
 - adsorption
 - absorption
- Conclusions
- Questions?

Not memorable

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To make slides memorable, you have to consider what to include and what to exclude

This presentation compares several methods for reducing emissions of sulfur dioxide



What to include

What to exclude

9

[Schmidt, 1989]

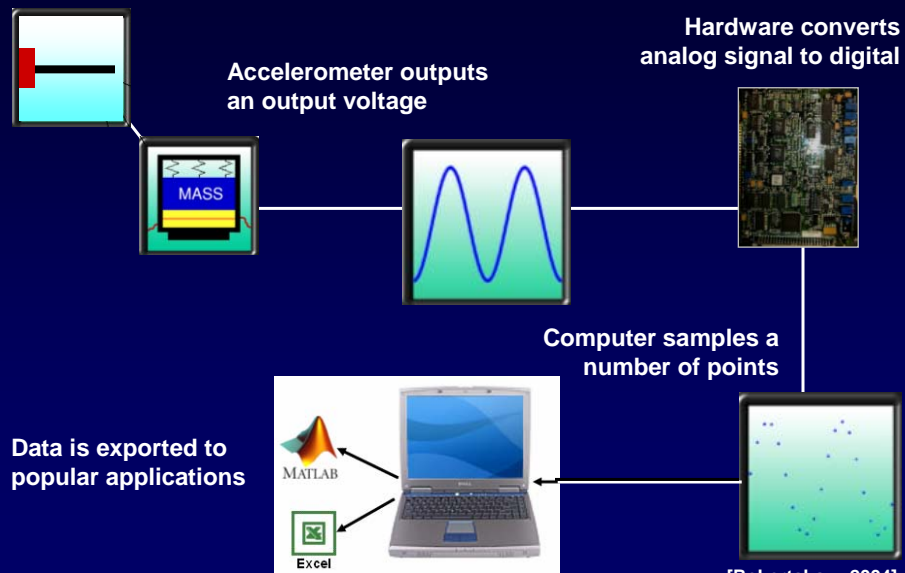
Bullets are not memorable, because bullets do not show the connections

- Accelerometer outputs an analog voltage
- Hardware converts analog signal to digital
- Computer samples a number of points
- Data is exported to popular applications

10

[Shaw and others, 1998]

Audiences can remember more when details are presented visually



11

[Robertshaw, 2004]

In a pilot study, we tested this new design in the teaching slides of a large geology course



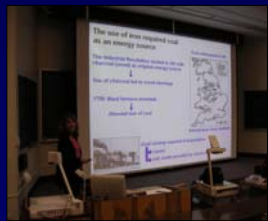
Message delivered with typical slide design



Students: Fall 2004



Comparison:
Test scores on
same questions



Same message delivered with new slide design



Students: Fall 2005



[Alley et al., 2006]

When the tested assertion was in the sentence headline, students performed significantly better

Q: How abundant is iron in the earth's crust?

Iron

- An abundant metal, makes up 5.6% of earth's crust
- Properties:
 - shaped, sharpened, welded
 - strong, durable
- Accounts for >95% of metals used
- Iron ores discovered in 1844 in Michigan's Upper Peninsula
- Soon found other ores in upper Wisconsin and Minnesota

Iron Ore Distribution

Kesler 1994

Led to 59% recall

Iron ores make up 5.6% of the earth's crust and account for 95% of the metals used

Is strong and durable

Iron Ore Distribution

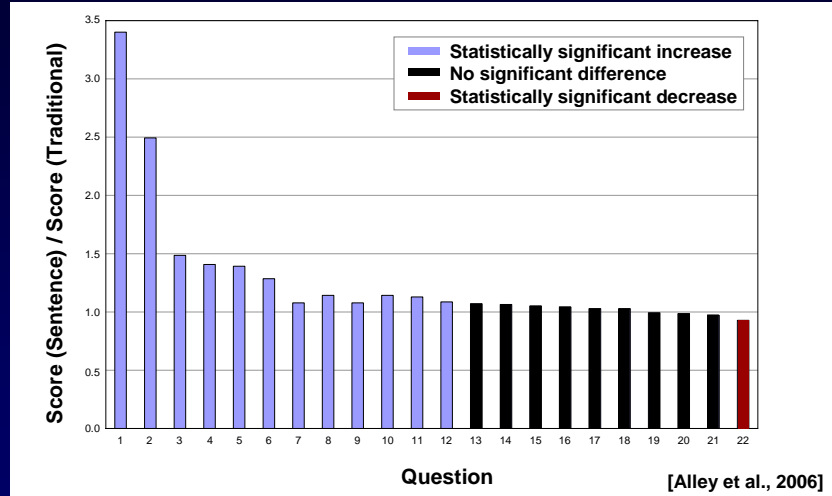
Can be shaped, sharpened, and welded

[Kesler 1994]

Led to 77% recall

Level of significance < .001

When the tested assertion was in the sentence headline, students performed significantly better

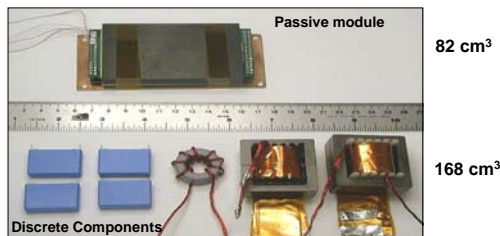


Overall percent correct (traditional headline):
Overall percent correct (sentence headline):

70%
82%
 $p < 0.001$

The slide design presented here is more persuasive than PowerPoint's default design

Power passive modules perform the same functions as discrete circuits but with smaller volumes



The total volume is cut by more than half

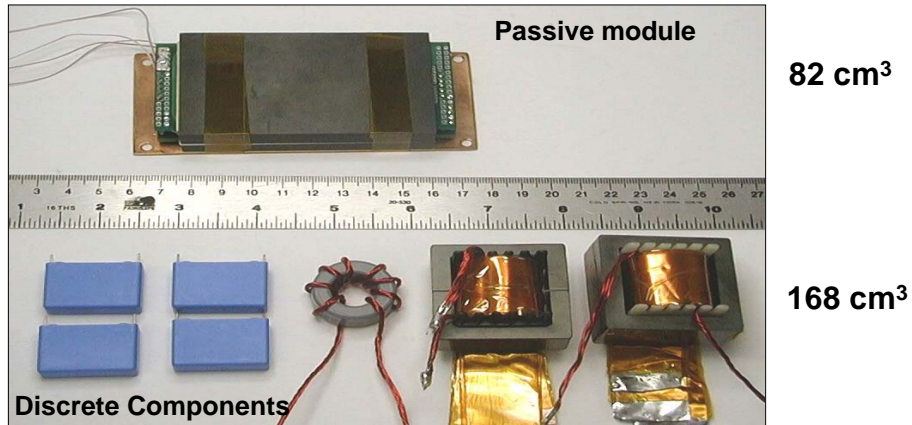


← Sentence headline can clarify assertions

← Images in body can supply cogent evidence

↓
Design leads to fewer slides, which can increase ethos

Power passive modules perform the same functions as discrete circuits but with smaller volumes



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16



In summary, this slide design gives a much higher starting point than PowerPoint's default design



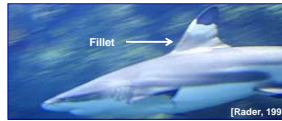
17

[Alley and Neeley, 2005]

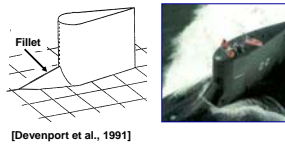
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[Zess and Thole, 2001]

more readily understood

more memorable

more persuasive

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References

- Alley, Michael. *The Craft of Scientific Presentations* (New York: Springer-Verlag, 2003), chap 4.
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