

# Optimization of the Heating Process for Offshore Wind Turbine Foundations

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- 80m monopole
  - Piles welded together

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- Minimum 100 °C

# Introduction

- 80m monopole
  - Piles welded together
- Minimum 100 °C
- Propane & Natural gas

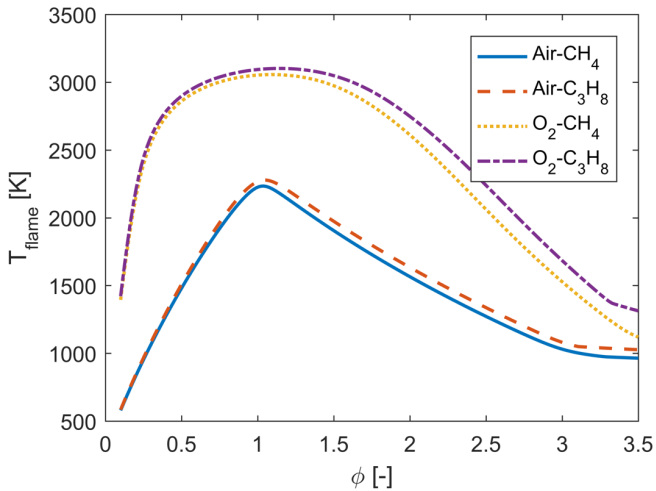


1234567890 math

1234567890 no math

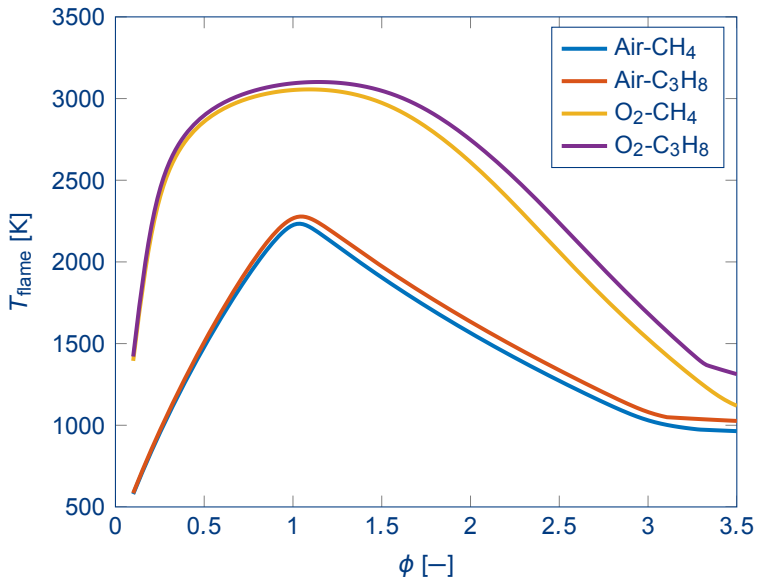
- Cost reduction by changing burner configuration
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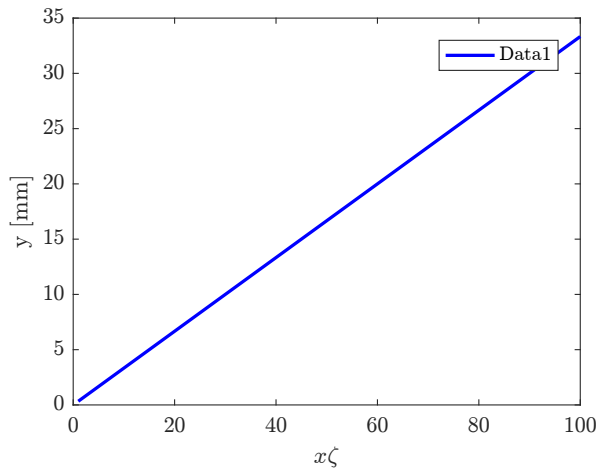
# Adiabatic flame temperature



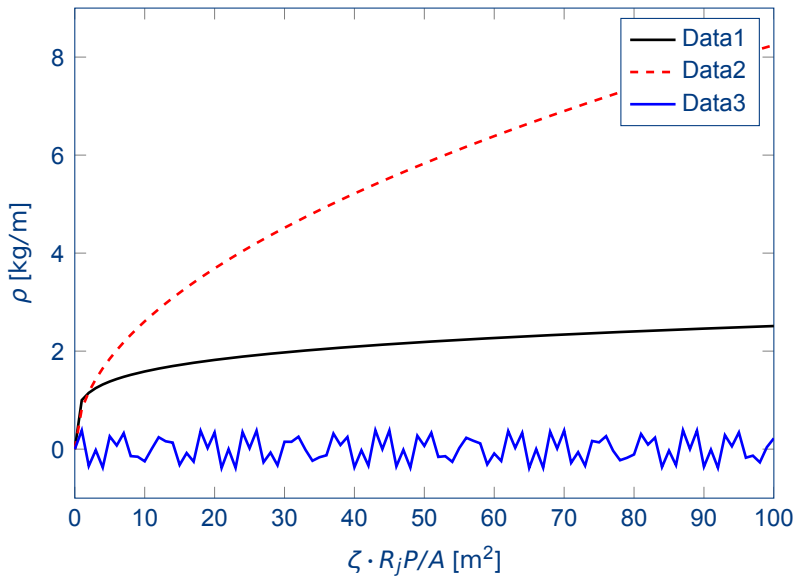


## Tikz Figure

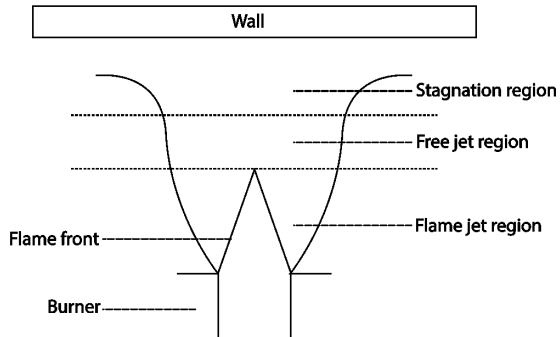




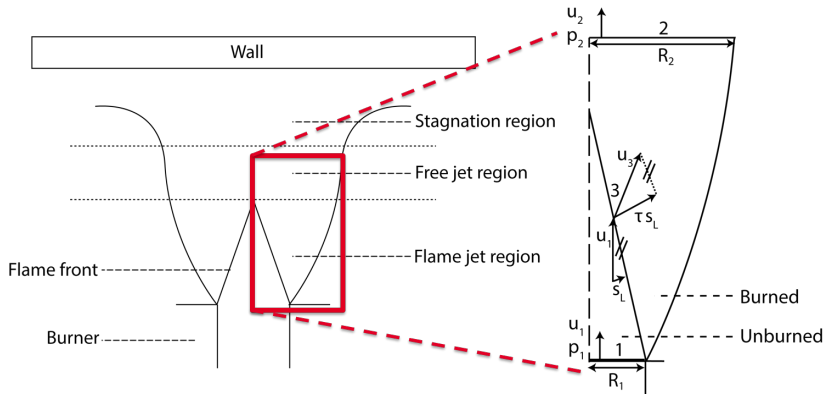
## Tikz Figure



## Laminar flow: single jet burner



# Laminar flow: single jet burner



## Stagnation point

sdfsdfsdcxvxcv  $Ca$   $We$   $Re$   $Pe$

$$q(r) = q_s \exp\left(-0.45 \frac{r}{R_2} - 1\right)$$

$$h = 0.763 \sqrt{\beta^{1.5} \rho_u \mu Re^{0.6} c_p Ca_i x We^{5.2}} \delta_{ij}$$

### The Marangoni Effect

<https://www.youtube.com/watch?v=0h16Tyn2138>

**TO DO**

**structuur**

**Matlab script**



## Conclusions/Summary

- Cost reduction by changing burner configuration
- Burner to pile

**Questions?**

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## Backup slides

Sometimes, it is useful to add slides at the end of your presentation to refer to during audience questions.

The best way to do this is to include the `appendixnumberbeamer` package in your preamble and call `\appendix` before your backup slides.

will automatically turn off slide numbering and progress bars for slides in the appendix.

# Blockies

Just some random text to prove that these blocks can be incorporated within a slide

## Formulae

$$F = m \cdot a = m \frac{\partial^2 x}{\partial t^2}$$

If you are keen on writing some more, you could do it here.

## Definition

Newton says, force is mass times acceleration

It's even possible to write under the blocks

Tab. 1 Properties of different fuels for current situation (Factory specs) and at the highest  $T_{flame}$  (Optimal)

Fuel	Setting	$s_L[\frac{cm}{s}]$	$T_{flame}[K]$	$\rho_u[\frac{kg}{m^3}]$	$\rho_b[\frac{kg}{m^3}]$
CH <sub>4</sub> – O <sub>2</sub>	Optimal	306	3055.43	1.0961	0.0830
	Factory	306	3051.62	1.1091	0.0859
C <sub>3</sub> H <sub>8</sub> – O <sub>2</sub>	Optimal	353	3100.85	1.4238	0.0858
	Factory	353	3064.47	1.4427	0.0796

