# INDUSTRIAL APPLICATIONS OF CFD

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## ABSTRACT

This file is an example Microsoft Word file for submission to CFD2008. A limit of 10 pages applies.

**Keywords:** CFD, hydrodynamics, chemical reactors.

## NOMENCLATURE

| | |
|---|---|
| $a$ | characteristic length [m] |
| $p$ | pressure [Pa] |
| $\mathbf{u}$ | velocity [m/s] |
| $\rho_G$ | gas density [kg/m$^3$] |
| $\mu$ | dynamic viscosity [kg/m.s] |

## INTRODUCTION

The introduction goes here.

## MODEL DESCRIPTION

### Example of Subheading

Here is how to produce a numbered equation under a second level heading (James and Ying, 1998).

*Continuity equation*

$$\frac{\partial \rho_G}{\partial t} + \nabla \cdot \left(\rho_G \mathbf{u}\right) = 0 \qquad (1)$$

*Momentum equation*

$$\frac{\partial \rho \mathbf{u}}{\partial t} + \nabla \cdot \left(\rho \mathbf{u}\mathbf{u}\right) = -\nabla p + \nabla . \mu \nabla \mathbf{u} + \mathbf{F}_L \qquad (2)$$

*Example of Sub-subheading*

This is how Luke (1998) produced an unnumbered equation under a third level heading.

$$\mathbf{J} = \sigma\left(\mathbf{E} + \mathbf{u} \times \mathbf{B}\right) \qquad (3)$$

$$\nabla \times \mathbf{B} = \mu_o \mathbf{J} \qquad (4)$$

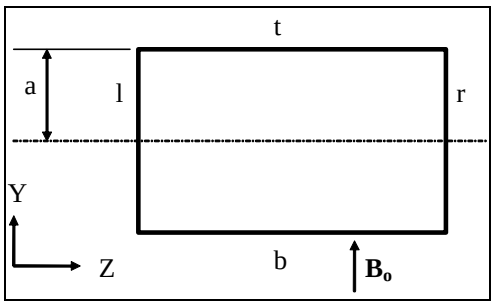


**Figure 1**: Schematic diagram of geometry.

## RESULTS

Here is an example of a table which has been fitted into two-column format.

| CFD Run | ω | $N_D$ | $\chi_\alpha/\chi_\beta$ | $\frac{a}{b_s}$ | $\Gamma_\alpha$ | $\Gamma_\beta$ |
|---|---|---|---|---|---|---|
| First α | | | | | | |
| AA01 | 0.0391 | 0.820 | 0.9469 | 0.041 | 0203 | 0.123 |
| AA02 | 0.8741 | 0.553 | 0.9528 | 0.399 | 7215 | 0.283 |
| AA03 | 0.3654 | 0.958 | 0.5304 | 0.807 | 3049 | 0.350 |
| AA04 | 0.8548 | 0.203 | 0.8170 | 0.332 | 0561 | 0.556 |
| AA05 | 0.8676 | 0.215 | 0.7895 | 0.509 | 9207 | 0.123 |
| AA06 | 0.1763 | 0.409 | 0.0698 | 0.995 | 7991 | 0.123 |
| First β | | | | | | |
| BA11 | 0.9654 | 0.443 | 0.5503 | 0.927 | 9257 | 0.284 |
| BA12 | 0.6548 | 0.191 | 0.5146 | 0.337 | 3357 | 0.042 |
| BA13 | 0.9476 | 0.535 | 0.2801 | 0.939 | 9389 | 0.108 |
| BA14 | 0.3063 | 0.071 | 0.3640 | 0.454 | 4534 | 0.896 |
| BA15 | 0.3982 | 0.091 | 0.9544 | 0.521 | 7331 | 0.911 |
| BA16 | 0.9734 | 0.161 | 0.0897 | 0.388 | 1144 | 0.144 |
| BA17 | 0.8912 | 0.123 | 0.4564 | 0.198 | 7744 | 0.912 |
| BA18 | 0.2312 | 0.723 | 0.0218 | 0.120 | 6612 | 0.893 |
| BA19 | 0.1243 | 0.107 | 0.8490 | 1.289 | 2859 | 0.698 |

**Table 1**: Modelling conditions.

## CONCLUSION

Conclusion goes here.

## REFERENCES

JAMES, T. and YING, A.C., (1988), "A new technique for producing stencils", *Proc. Int. Cong. on Stencils*, ABCD, Melbourne, Australia, February 29-31.

LUKE T., (1988), "A new technique for Stencil publishing", *J. Stencils*, **5,** 179-221.

## APPENDIX A

List of animation files:

| | |
|---|---|
| S10.avi | Motion of the spherical particles |
| V10.mped | Flow field around each particle |