

Results from BEM program and experimental results from Bahaj [ref: technology (3)]

MARINE CURRENT RESOURCE AND TECHNOLOGY METHODOLOGY

Energy Systems & The Environment MSc Group Project

ESRU University of Strathclyde

HORIZONTAL AXIS MARINE CURRENT TURBINE RESULTS FOR FLOW VELOCITIES FROM 0.5 – 5 ms⁻¹ AND VARIOUS RPMs UP UNTIL CAVITATION

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Current theta_mount    11  of 11  current theta is: 7 degrees
Velocity number        5  of 5  current velocity is: 1.75 m/s
RPM number             46  of 46  current angular velocity is: 500 RPM
Blade calc is         57.1429  % complete
The last element took 2  of 100 iterations and is to an tolerance of 0.01
400

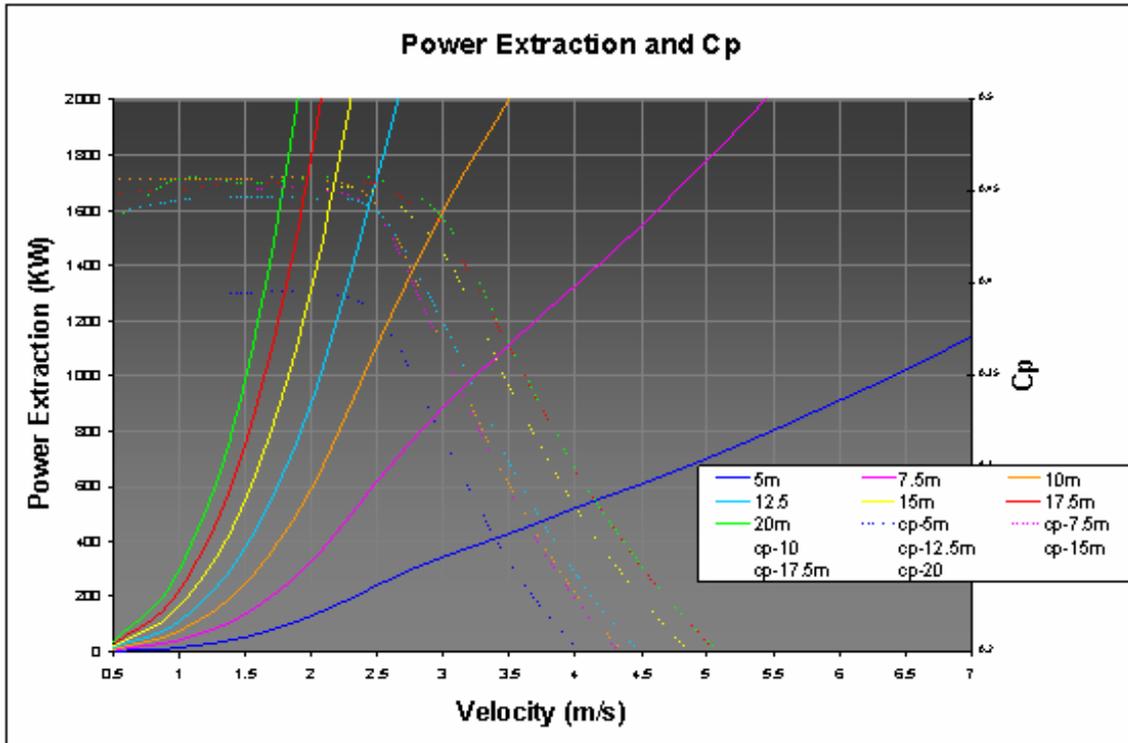
Current theta_mount    11  of 11  current theta is: 7 degrees
Velocity number        5  of 5  current velocity is: 1.75 m/s
RPM number             46  of 46  current angular velocity is: 500 RPM
Blade calc is         71.4286  % complete
The last element took 2  of 100 iterations and is to an tolerance of 0.01
400

Current theta_mount    11  of 11  current theta is: 7 degrees
Velocity number        5  of 5  current velocity is: 1.75 m/s
RPM number             46  of 46  current angular velocity is: 500 RPM
Blade calc is         85.7143  % complete
The last element took 2  of 100 iterations and is to an tolerance of 0.01
400

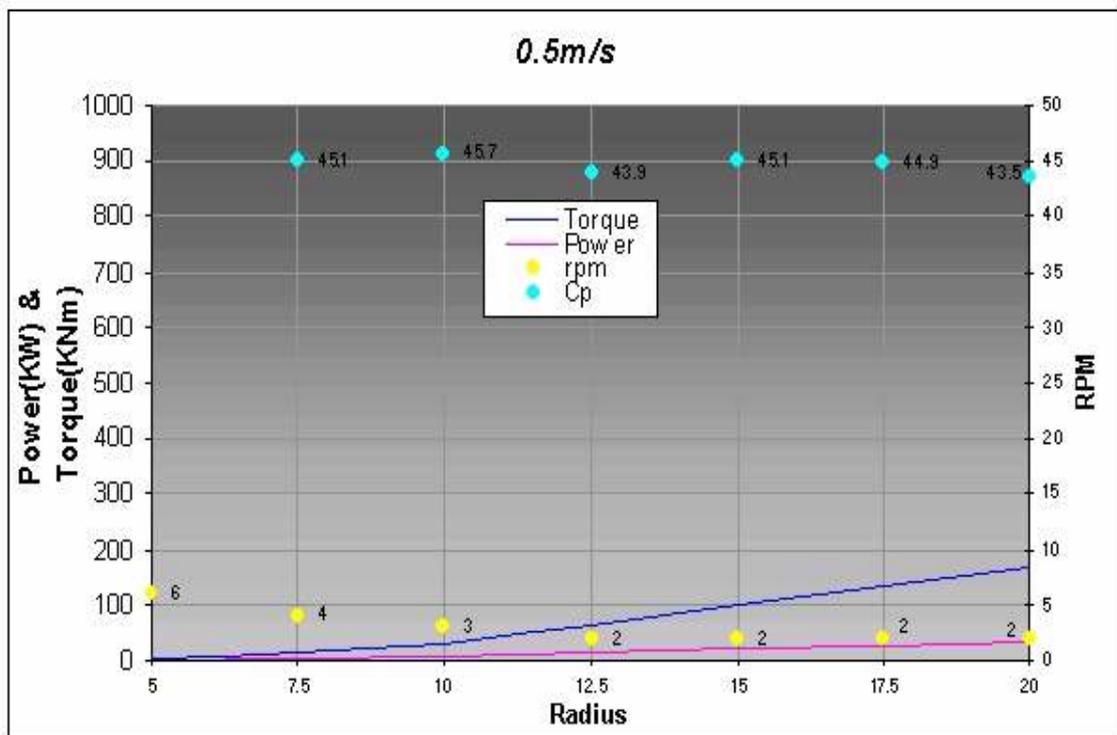
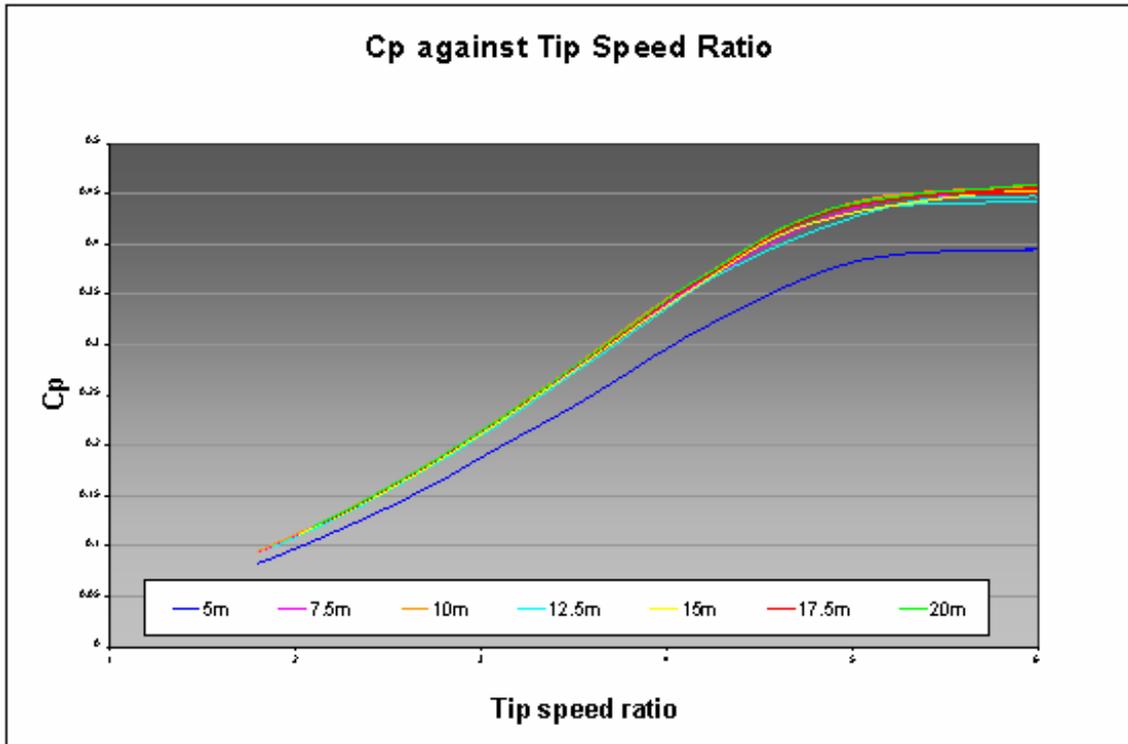
.....
Velocity [m/s]    TSR      theta [deg]      Cpmax      Pmax [kW]
0.75             6.1436         -1            0.33378    0.036346
1                6.2832         -1            0.33331    0.086033
1.25             6.0319         -1            0.33393    0.16835
1.5              6.1436         -1            0.33378    0.29076
1.75             5.984          -1            0.33377    0.46171
.....
Output file saved as: Results\0.4_0.01_0.05_46_5.mat in Results folder
>>
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Sample output from BEM program

Model Results for flow speeds 0.5 ms⁻¹ < U_∞ < 5 ms⁻¹



HORIZONTAL AXIS MARINE CURRENT TURBINE RESULTS FOR FLOW VELOCITIES FROM 0.5 – 5 ms^{-1} AND VARIOUS RPMs UP UNTIL CAVITATION



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