LAMPIRAN 1 Perhitungan nilai Cd pada pipa ½ inch.

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<th>( v ) (m/s)</th>
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<th>( (1-(A_2/A_1)^2)^{0.5} )</th>
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LAMPIRAN 2 Perhitungan nilai $C_d$ pada pipa $\frac{3}{4}$ inch.

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LAMPIRAN 3 Hasil perhitungan $V_{orifice}$ pada pipa ½ inch.

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<th>Re</th>
<th>$V_{air ideal}$ ($m^3/s$)</th>
<th>Cd (Persamaan regresi)</th>
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LAMPIRAN 4 Hasil perhitungan $\dot{V}_{orifice}$ pada pipa $\frac{3}{4}$ inch.

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<th>Re</th>
<th>$\dot{V}_{air\ ideal}$ ($m^3/s$)</th>
<th>Cd (Persamaan regresi)</th>
<th>$\dot{V}_{orifice}$ ($m^3/s$)</th>
<th>$\dot{V}_{orifice}$ (LPM)</th>
<th>$\Delta \dot{V}$ (LPM)</th>
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## LAMPIRAN 5 Perbandingan hasil perhitungan pada ½ dan ¾ inch.

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<th>ΔP&lt;sub&gt;Rata-rata 2&lt;/sub&gt; (N/m&lt;sup&gt;2&lt;/sup&gt;)</th>
<th>Re&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Re&lt;sub&gt;2&lt;/sub&gt;</th>
<th>v&lt;sub&gt;1&lt;/sub&gt; (m/s)</th>
<th>v&lt;sub&gt;2&lt;/sub&gt; (m/s)</th>
<th>V&lt;sub&gt;air ideal 1&lt;/sub&gt; (m&lt;sup&gt;3&lt;/sup&gt;/s)</th>
<th>V&lt;sub&gt;air ideal 2&lt;/sub&gt; (m&lt;sup&gt;3&lt;/sup&gt;/s)</th>
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LAMPIRAN 6 Perhitungan interpolasi pada pipa \( \frac{1}{2} \) dan \( \frac{3}{4} \) inch.

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<th>( \Delta P ) Rata-rata 2 (N/m(^2))</th>
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<th>( v_2 ) (m/s)</th>
<th>( V_{air; ideal; 1} ) (m(^3)/s)</th>
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<td>0,701</td>
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<td>0,687</td>
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</tr>
<tr>
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<td>0,370</td>
<td>1,686E-04</td>
<td>1,996E-04</td>
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<td>0,678</td>
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<td>6743,608</td>
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<td>0,394</td>
<td>1,788E-04</td>
<td>2,109E-04</td>
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<td>0,680</td>
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<tr>
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<td>0,495</td>
<td>0,417</td>
<td>1,883E-04</td>
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<td>0,686</td>
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<td>0,522</td>
<td>0,440</td>
<td>1,969E-04</td>
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<td>0,692</td>
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<td>9322,917</td>
<td>0,549</td>
<td>0,463</td>
<td>2,088E-04</td>
<td>2,477E-04</td>
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<td>0,714</td>
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<tr>
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<td>11037,920</td>
<td>0,577</td>
<td>0,486</td>
<td>2,292E-04</td>
<td>2,698E-04</td>
<td>0,655</td>
<td>0,661</td>
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LAMPIRAN 7 Perbandingan hasil interpolasi $\Delta P_{\text{Rata-rata}}$

<table>
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<tr>
<th>Re</th>
<th>$\Delta P_{\text{Rata-rata 1}}$ (N/m$^2$)</th>
<th>$\Delta P_{\text{Rata-rata 2}}$ (N/m$^2$)</th>
<th>$\Delta P_{\text{Rata-rata 1}}$ - $\Delta P_{\text{Rata-rata 2}}$ (N/m$^2$)</th>
<th>$\Delta P_{\text{Rata-rata}}$ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>2420.43003</td>
<td>328.044209</td>
<td>2092.385818</td>
<td>86.4469%</td>
</tr>
<tr>
<td>2000</td>
<td>2617.51145</td>
<td>478.580489</td>
<td>2138.930963</td>
<td>81.7162%</td>
</tr>
<tr>
<td>2500</td>
<td>2818.01315</td>
<td>601.619413</td>
<td>2216.39738</td>
<td>78.6509%</td>
</tr>
<tr>
<td>3000</td>
<td>3134.42367</td>
<td>746.81403</td>
<td>2387.609641</td>
<td>76.1738%</td>
</tr>
<tr>
<td>3500</td>
<td>3571.21841</td>
<td>1006.28832</td>
<td>2564.930091</td>
<td>71.8223%</td>
</tr>
<tr>
<td>4000</td>
<td>3862.82104</td>
<td>1324.35367</td>
<td>2538.46737</td>
<td>65.7154%</td>
</tr>
<tr>
<td>4500</td>
<td>4276.63551</td>
<td>1782.39788</td>
<td>2494.237626</td>
<td>58.3224%</td>
</tr>
<tr>
<td>5000</td>
<td>4771.69425</td>
<td>2245.80489</td>
<td>2525.889351</td>
<td>52.9349%</td>
</tr>
<tr>
<td>5500</td>
<td>5303.54773</td>
<td>2732.41902</td>
<td>2571.128703</td>
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</tr>
<tr>
<td>6000</td>
<td>5852.62597</td>
<td>3253.7232</td>
<td>2598.902773</td>
<td>44.4058%</td>
</tr>
<tr>
<td>6500</td>
<td>6415.68789</td>
<td>3933.37625</td>
<td>2482.31164</td>
<td>38.6913%</td>
</tr>
<tr>
<td>7000</td>
<td>6965.51868</td>
<td>4585.15328</td>
<td>2380.365403</td>
<td>34.1736%</td>
</tr>
<tr>
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<td>7625.91288</td>
<td>5239.87504</td>
<td>2386.037833</td>
<td>31.2886%</td>
</tr>
<tr>
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<td>8373.00427</td>
<td>6040.21142</td>
<td>2332.792851</td>
<td>27.8609%</td>
</tr>
<tr>
<td>8500</td>
<td>9420.58148</td>
<td>6743.60787</td>
<td>2676.973612</td>
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</tr>
<tr>
<td>9000</td>
<td>10442.1642</td>
<td>7428.80248</td>
<td>3013.361681</td>
<td>28.8576%</td>
</tr>
<tr>
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<td>11414.7543</td>
<td>8127.75106</td>
<td>3287.003236</td>
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</tr>
<tr>
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<td>9322.91681</td>
<td>3524.02565</td>
<td>27.4309%</td>
</tr>
<tr>
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<td>15462.8971</td>
<td>11037.9202</td>
<td>4424.97689</td>
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</tbody>
</table>
LAMPIRAN 8 Perbandingan hasil interpolasi $\dot{V}_{\text{air ideal}}$.

<table>
<thead>
<tr>
<th>Re</th>
<th>$\dot{V}_{\text{air ideal } 1}$ $(m^3/s)$</th>
<th>$\dot{V}_{\text{air ideal } 2}$ $(m^3/s)$</th>
<th>$\dot{V}<em>{\text{air ideal } 1} - \dot{V}</em>{\text{air ideal } 2}$</th>
<th>$\Delta \dot{V}_{\text{air ideal}} %$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>9.06612E-05</td>
<td>4.64725E-05</td>
<td>-4.41887E-05</td>
<td>48.7404%</td>
</tr>
<tr>
<td>2000</td>
<td>9.43053E-05</td>
<td>5.61676E-05</td>
<td>-3.81378E-05</td>
<td>40.4407%</td>
</tr>
<tr>
<td>2500</td>
<td>9.78291E-05</td>
<td>6.29774E-05</td>
<td>-3.48517E-05</td>
<td>35.6251%</td>
</tr>
<tr>
<td>3000</td>
<td>0.000103172</td>
<td>7.01135E-05</td>
<td>-3.3059E-05</td>
<td>32.0425%</td>
</tr>
<tr>
<td>3500</td>
<td>0.000110169</td>
<td>8.14005E-05</td>
<td>-2.8769E-05</td>
<td>26.1134%</td>
</tr>
<tr>
<td>4000</td>
<td>0.000114566</td>
<td>9.33309E-05</td>
<td>-2.12349E-05</td>
<td>18.5351%</td>
</tr>
<tr>
<td>4500</td>
<td>0.000120516</td>
<td>0.000108339</td>
<td>-1.21775E-05</td>
<td>10.1044%</td>
</tr>
<tr>
<td>5000</td>
<td>0.000127283</td>
<td>0.000121635</td>
<td>-5.64868E-06</td>
<td>4.4379%</td>
</tr>
<tr>
<td>5500</td>
<td>0.0001342</td>
<td>0.000134198</td>
<td>-1.69846E-09</td>
<td>0.0013%</td>
</tr>
<tr>
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<td>0.000146398</td>
<td>5.40767E-06</td>
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</tr>
<tr>
<td>6500</td>
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<td>0.000161003</td>
<td>1.33613E-05</td>
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</tr>
<tr>
<td>7000</td>
<td>0.00015386</td>
<td>0.000173873</td>
<td>2.00126E-05</td>
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<tr>
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<td>0.000185833</td>
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</tr>
<tr>
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</tr>
<tr>
<td>9500</td>
<td>0.000196892</td>
<td>0.000231531</td>
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<tr>
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<tr>
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<td>0.000229234</td>
<td>0.000269799</td>
<td>4.05652E-05</td>
<td>17.6960%</td>
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LAMPIRAN 9 Perbandingan hasil interpolasi Cd.

<table>
<thead>
<tr>
<th>Re</th>
<th>Cd₁</th>
<th>Cd₂</th>
<th>Cd₂ - Cd₁</th>
<th>ΔCd (%)</th>
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</thead>
<tbody>
<tr>
<td>1500</td>
<td>0,235</td>
<td>0,541</td>
<td>0,306</td>
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</tr>
<tr>
<td>2000</td>
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<td>0,594</td>
<td>0,291</td>
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</tr>
<tr>
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<td>0,365</td>
<td>0,663</td>
<td>0,298</td>
<td>44,99%</td>
</tr>
<tr>
<td>3000</td>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<td>0,678</td>
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</table>
LAMPIRAN 10 Desain flange dan plat orifice papa pipa ½ inch.
LAMPIRAN 11 Desain flange dan plat orifice papa pipa \(\frac{3}{4}\) inch.