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LAMPIRAN

Lampiran 1. Data Penelitian

a. Tabel data berat kotoran tercuci dan berat jahe yang rusak setelah pencucian

| | (250 rpm) | | | (300 rpm) | | | (360 rpm) | | |
|---|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 3 menit | 6 menit | 9 menit | 3 menit | 6 menit | 9 menit | 3 menit | 6 menit | 9 menit |
| Berat jahe sebelum dicuci (g) | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 |
| Berat jahe setelah dicuci (g) | 3.766 | 3.683 | 3.526 | 3.729 | 3.618 | 3.512 | 3.692 | 3.585 | 3.038 |
| Berat kotoran tercuci (g) | 101 | 184 | 341 | 138 | 249 | 355 | 175 | 282 | 829 |
| Berat jahe yang rusak setelah dicuci (g) | 973 | 1.350 | 1.442 | 1.114 | 1.406 | 1.570 | 1.199 | 1.428 | 2.316 |

b. Tabel data daya dan energi

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 1 | 376.9 | 447.1 | 767 | 376.1 | 412.3 | 732.9 | 360.7 | 384.7 | 757.7 |
| 2 | 354.6 | 438.1 | 753.6 | 359.7 | 382.8 | 770.2 | 342.8 | 399.4 | 768.2 |
| 3 | 332.2 | 438.1 | 763 | 359.0 | 432.8 | 760.4 | 319 | 393.7 | 771.5 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 4 | 319.1 | 434.4 | 777.2 | 339.3 | 418.4 | 750.8 | 307.1 | 391.1 | 734 |
| 5 | 314.1 | 416 | 758.7 | 324.0 | 411.1 | 727.6 | 299.8 | 391.6 | 748.8 |
| 6 | 313.9 | 385.2 | 721.2 | 373.8 | 413.3 | 737.3 | 320.1 | 387.1 | 694.7 |
| 7 | 313.3 | 392.8 | 785.1 | 304.1 | 428 | 784.2 | 399 | 395.1 | 757.2 |
| 8 | 319.9 | 394.4 | 718.4 | 235.2 | 428.3 | 774.9 | 392.6 | 384.4 | 721.6 |
| 9 | 306.9 | 398.6 | 733.1 | 297.7 | 411.6 | 688.9 | 396.6 | 395.9 | 690 |
| 10 | 305.8 | 387.4 | 707.6 | 303.4 | 418.5 | 707.2 | 323.3 | 384.3 | 653 |
| 11 | 312.3 | 392.2 | 740.9 | 308.4 | 454.5 | 772.3 | 313.2 | 421.4 | 738.5 |
| 12 | 312.4 | 386.3 | 771.8 | 237.4 | 414.7 | 770.6 | 299.3 | 391 | 700.8 |
| 13 | 313.2 | 381.5 | 702 | 309.8 | 426.4 | 733.3 | 320.1 | 391.8 | 774.9 |
| 14 | 305.2 | 384.1 | 705.7 | 306 | 397.7 | 755.7 | 330.6 | 396.2 | 760.7 |
| 15 | 318.1 | 384.4 | 696.2 | 299.7 | 392.9 | 790.8 | 317.6 | 397.1 | 733.5 |
| 16 | 306.8 | 390.2 | 745.6 | 307.8 | 427.1 | 750.3 | 314.5 | 387 | 704.5 |
| 17 | 305 | 383.5 | 742.1 | 307.5 | 415.5 | 688.9 | 312.4 | 389.6 | 713.8 |
| 18 | 309.6 | 388.7 | 714 | 303.7 | 437.3 | 729.6 | 333.9 | 395.5 | 675.6 |
| 19 | 309.6 | 390.3 | 709 | 305.6 | 427.4 | 747.7 | 317.6 | 403.2 | 695.6 |
| 20 | 308.4 | 390.3 | 704.2 | 298.9 | 417.6 | 683.7 | 322.8 | 406.4 | 733.1 |
| 21 | 304.4 | 388.6 | 681.4 | 293.7 | 416.8 | 698.1 | 313.6 | 404.7 | 708 |
| 22 | 305.7 | 384.5 | 658.2 | 307.9 | 428.4 | 730 | 308.8 | 399.4 | 641.9 |
| 23 | 313.4 | 388.7 | 702 | 239.4 | 415.7 | 767.9 | 308.2 | 413.7 | 658.1 |
| 24 | 315.5 | 379.9 | 666.3 | 309.5 | 427 | 776.2 | 310.7 | 391.9 | 677.7 |
| 25 | 305.3 | 381.3 | 714.1 | 312.7 | 406.9 | 743.4 | 305.6 | 393.9 | 642.6 |
| 26 | 310.7 | 384.8 | 668.8 | 309.3 | 418.3 | 697.9 | 313.5 | 391.2 | 721.4 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 27 | 307.8 | 388.2 | 688.5 | 304.1 | 419.5 | 720.6 | 317.1 | 402.5 | 704.4 |
| 28 | 309.4 | 392.4 | 709.2 | 320.8 | 401.5 | 722 | 309.4 | 404.6 | 722 |
| 29 | 310.4 | 389 | 712.6 | 305.1 | 428.2 | 728.4 | 306.9 | 388 | 671.8 |
| 30 | 312.3 | 386 | 697.6 | 306.7 | 424.8 | 777.1 | 327.4 | 402.5 | 667.4 |
| 31 | 311 | 380.8 | 668.7 | 307.6 | 414.9 | 736.4 | 310.4 | 419.1 | 708.8 |
| 32 | 303.7 | 376.8 | 718.1 | 310 | 434.2 | 690.2 | 314.7 | 395.8 | 736.1 |
| 33 | 303.4 | 392.4 | 662.9 | 307.7 | 428.5 | 707.3 | 311.4 | 389.2 | 735.4 |
| 34 | 300.2 | 397.6 | 690.3 | 296.2 | 418.8 | 658.1 | 315.4 | 383.6 | 706.1 |
| 35 | 304.6 | 381.4 | 686 | 302.3 | 427.3 | 772.9 | 327.8 | 392.7 | 710.1 |
| 36 | 311.3 | 379 | 693 | 299.9 | 434.9 | 646.7 | 327.8 | 392.6 | 708.3 |
| 37 | 304.3 | 381.2 | 665.5 | 297.5 | 421.1 | 707 | 308.6 | 404.5 | 694.6 |
| 38 | 304.3 | 381.2 | 642.9 | 303.3 | 425.1 | 685.8 | 305.5 | 392.4 | 657.3 |
| 39 | 315.8 | 381.6 | 661 | 293.8 | 425.4 | 686.8 | 315.6 | 395 | 705.3 |
| 40 | 317.3 | 385.5 | 712.2 | 306.5 | 400.1 | 657.6 | 308.8 | 392.2 | 745.8 |
| 41 | 303.4 | 386.5 | 674.5 | 307.6 | 420.7 | 687.6 | 302.3 | 397.2 | 750.5 |
| 42 | 303.4 | 380.4 | 659.5 | 307.4 | 424.2 | 672.9 | 299 | 395.7 | 706.8 |
| 43 | 317.3 | 395.9 | 666.1 | 304.6 | 424.1 | 669.7 | 297.8 | 408 | 756.6 |
| 44 | 307.7 | 399 | 701.4 | 303.5 | 416.5 | 700.3 | 311.6 | 388.5 | 745.4 |
| 45 | 307.7 | 389 | 690.3 | 298.6 | 411.2 | 707.7 | 293.9 | 394 | 659.6 |
| 46 | 306.1 | 383 | 707.6 | 302.3 | 424.8 | 658.6 | 372.8 | 398.3 | 663.2 |
| 47 | 303.7 | 384.8 | 666.3 | 309.6 | 382.9 | 673.2 | 321.5 | 390.6 | 662.7 |
| 48 | 312.7 | 391.5 | 731.2 | 316.3 | 412.3 | 737.6 | 304.6 | 394.9 | 704.9 |
| 49 | 307.2 | 391.5 | 698 | 297 | 411.8 | 769.4 | 302.1 | 396.6 | 703.1 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 50 | 310.1 | 379.1 | 660.3 | 298.3 | 412.7 | 779.1 | 394.1 | 394.8 | 650.3 |
| 51 | 311.1 | 393 | 676.8 | 300.2 | 414.2 | 674 | 294.4 | 386.3 | 649.8 |
| 52 | 318.5 | 392.8 | 679.1 | 305.2 | 413.9 | 677.2 | 301.9 | 402 | 650.9 |
| 53 | 310.7 | 378.8 | 696.5 | 313.6 | 425.5 | 698.3 | 301.5 | 399 | 647 |
| 54 | 310.6 | 392.4 | 683 | 306.7 | 426 | 683.7 | 328.7 | 394.3 | 717.7 |
| 55 | 308.4 | 374.4 | 685.6 | 300 | 413.7 | 722.9 | 304.5 | 395.4 | 641.7 |
| 56 | 308.4 | 383.9 | 703.5 | 309.2 | 407.7 | 667.1 | 288.1 | 395.8 | 653.3 |
| 57 | 313.2 | 394.8 | 685.3 | 304.4 | 404.6 | 707.8 | 292.2 | 409.1 | 643.6 |
| 58 | 310 | 379.4 | 692 | 305.7 | 409.4 | 680.5 | 291.1 | 387.8 | 673.6 |
| 59 | 310 | 393.3 | 690.5 | 303.7 | 409.7 | 727.3 | 310.3 | 399.5 | 623.1 |
| 60 | 316.1 | 393.3 | 673.5 | 300.4 | 406.7 | 723.2 | 288.3 | 392.9 | 752.5 |
| 61 | 303.8 | 385.8 | 755.6 | 311.7 | 414.1 | 665.8 | 306.6 | 384.7 | 716.3 |
| 62 | 295.8 | 387.7 | 699.5 | 301.7 | 414.3 | 692.1 | 343.2 | 395.5 | 797.5 |
| 63 | 312 | 386.5 | 673.1 | 303.5 | 440.5 | 672.9 | 300 | 395 | 728.7 |
| 64 | 297.1 | 393.3 | 689 | 302.9 | 410 | 695.3 | 302.2 | 396.2 | 653.3 |
| 65 | 312.6 | 381.6 | 705 | 300.4 | 414.6 | 755.4 | 298.1 | 402.9 | 672.5 |
| 66 | 334.4 | 387.3 | 653.7 | 307.4 | 409.7 | 774.8 | 305.5 | 400.7 | 676.9 |
| 67 | 298.5 | 383.1 | 686.4 | 296.7 | 416.3 | 720.3 | 293.2 | 409.6 | 694 |
| 68 | 299.1 | 380.3 | 690.3 | 319.9 | 419.2 | 702.6 | 343.2 | 405.5 | 621.6 |
| 69 | 296.1 | 398.5 | 714.3 | 300.4 | 423.4 | 675.6 | 303.2 | 406 | 621 |
| 70 | 304.6 | 399.9 | 701.2 | 306.2 | 414.8 | 675.6 | 295.8 | 397.4 | 650.9 |
| 71 | 310.2 | 398.7 | 668.8 | 306.5 | 421.6 | 736.2 | 298.4 | 404.3 | 638.1 |
| 72 | 302.1 | 385.4 | 701.8 | 307.4 | 411.6 | 774.9 | 291.4 | 400 | 773.3 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 73 | 307.5 | 395.7 | 685.9 | 308.4 | 422.5 | 679.5 | 288 | 397.3 | 677.9 |
| 74 | 305 | 383.8 | 711.1 | 307 | 423.4 | 675.6 | 285.9 | 410.7 | 690.5 |
| 75 | 297.2 | 384.4 | 691.2 | 312.3 | 415.5 | 697.4 | 298.8 | 399.9 | 700.6 |
| 76 | 305.1 | 387.1 | 699.1 | 297.2 | 406.3 | 711.3 | 296 | 401.7 | 650.3 |
| 77 | 310.8 | 381 | 674.9 | 303.7 | 408.3 | 695.5 | 295.3 | 401.3 | 703.5 |
| 78 | 302.5 | 380.8 | 723.7 | 308.8 | 420.8 | 742.1 | 295.3 | 397.1 | 719.1 |
| 79 | 303.3 | 381.9 | 677.2 | 300.9 | 420 | 743.9 | 288.9 | 394.9 | 687.4 |
| 80 | 314.8 | 392.2 | 700.8 | 300.5 | 409.3 | 745.2 | 295 | 403.2 | 698.1 |
| 81 | 303.2 | 383.3 | 705.9 | 298.8 | 412.4 | 768.5 | 296 | 401 | 686.1 |
| 82 | 299.4 | 387 | 701.4 | 324.1 | 424.2 | 737.8 | 309.9 | 419.3 | 682.8 |
| 83 | 301.2 | 379.5 | 701.6 | 297.5 | 414.3 | 747.5 | 293.9 | 394.4 | 722.4 |
| 84 | 305.4 | 389.4 | 719.1 | 304.8 | 406.4 | 739.3 | 297.6 | 397.5 | 667 |
| 85 | 304 | 391.3 | 694.8 | 295.7 | 406.8 | 753.7 | 301 | 413.1 | 718.1 |
| 86 | 308.2 | 384.9 | 705.8 | 307.8 | 410 | 772.3 | 286.5 | 396.6 | 694.6 |
| 87 | 300.1 | 383.5 | 656.1 | 300.9 | 420.6 | 775.9 | 303.6 | 394.4 | 702.6 |
| 88 | 390.1 | 382.2 | 686.3 | 303.9 | 397.7 | 777.3 | 286.6 | 401 | 710.1 |
| 89 | 297.8 | 380.5 | 673.6 | 304.5 | 404.4 | 769.5 | 284.6 | 400.8 | 658.2 |
| 90 | 300.4 | 380.5 | 720.8 | 295.4 | 398 | 727.4 | 395.2 | 392.8 | 629 |
| 91 | 297.3 | 386.3 | 699.3 | 317.7 | 420 | 705 | 300.6 | 401.7 | 743.7 |
| 92 | 303.9 | 388.3 | 671.1 | 299.5 | 403.4 | 724.6 | 292.8 | 405 | 711.9 |
| 93 | 300.9 | 381.7 | 666.7 | 299.7 | 402 | 752.5 | 292 | 406.6 | 675.4 |
| 94 | 306.6 | 407 | 698.2 | 306 | 416.1 | 728.3 | 280.2 | 395.9 | 718 |
| 95 | 308.5 | 387 | 672.7 | 315.9 | 408 | 693.3 | 305.3 | 398 | 792.2 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 96 | 295.7 | 377.3 | 673.7 | 306 | 414 | 705 | 287.8 | 399.5 | 740.3 |
| 97 | 304.9 | 382.1 | 744.3 | 298.5 | 414.4 | 723.2 | 293.6 | 403.9 | 697.8 |
| 98 | 299 | 388.5 | 691.1 | 307.3 | 404.2 | 742.2 | 301.9 | 412.3 | 703.2 |
| 99 | 297.4 | 395.3 | 664.3 | 307.4 | 407 | 735.8 | 286.8 | 398.7 | 679.2 |
| 100 | 297.5 | 382.4 | 715.2 | 300.7 | 405.8 | 773.7 | 282.3 | 390.8 | 678.6 |
| 101 | 300.5 | 382.2 | 710.5 | 302.9 | 411 | 743 | 281.3 | 412.1 | 639 |
| 102 | 300 | 385.8 | 653.9 | 296.8 | 402.3 | 735.6 | 304.6 | 430.6 | 702.7 |
| 103 | 294.6 | 381.7 | 708.2 | 297.4 | 412.1 | 725.6 | 293.7 | 408.8 | 693.2 |
| 104 | 294.5 | 398.5 | 697.8 | 288 | 412.9 | 694.8 | 291.9 | 399.4 | 738 |
| 105 | 302.3 | 384.6 | 688.5 | 295.4 | 401.1 | 753 | 286.7 | 390.4 | 753.4 |
| 106 | 300.7 | 397.9 | 700.1 | 298.6 | 394.3 | 755.9 | 304.9 | 398.6 | 732.7 |
| 107 | 294.2 | 386 | 721 | 295.7 | 410.8 | 755.8 | 291.3 | 394.7 | 693.6 |
| 108 | 299.9 | 384.9 | 706 | 307.6 | 407.3 | 729.2 | 284.2 | 399 | 739.7 |
| 109 | 298.1 | 385.3 | 682.8 | 295.4 | 400.1 | 730.4 | 291.9 | 398.9 | 725 |
| 110 | 295.8 | 378.6 | 695.4 | 293.5 | 415.6 | 738.2 | 282.2 | 400 | 757.1 |
| 111 | 303.5 | 395 | 705.7 | 297.9 | 410.1 | 728.1 | 311 | 395.7 | 703.1 |
| 112 | 309.9 | 395.9 | 696 | 295.6 | 416.2 | 711 | 304 | 401.8 | 760.2 |
| 113 | 296 | 388.5 | 674.2 | 304.3 | 415.7 | 747 | 283.9 | 394.5 | 757.3 |
| 114 | 308.2 | 382 | 681.6 | 295.5 | 406.9 | 745.6 | 284.5 | 405 | 732.7 |
| 115 | 298.6 | 387.7 | 682.8 | 312.9 | 415.5 | 727.8 | 289.7 | 392 | 776.9 |
| 116 | 300.5 | 383.5 | 666.9 | 297.5 | 403.6 | 747.9 | 287.6 | 398.1 | 773.9 |
| 117 | 303.2 | 380 | 649.5 | 295.7 | 411.1 | 688.6 | 288.1 | 395.8 | 707.5 |
| 118 | 301.1 | 381 | 687.2 | 308.2 | 403.8 | 719.2 | 289.2 | 393.9 | 707.6 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 119 | 298.5 | 400.8 | 681.9 | 294.6 | 415.5 | 711.3 | 298.2 | 414.5 | 696.7 |
| 120 | 305.9 | 384 | 658 | 300.6 | 398 | 739.4 | 287.1 | 389.2 | 739.4 |
| 121 | 293.3 | 394 | 660.4 | 293.5 | 399.7 | 740.1 | 297.3 | 398 | 724.9 |
| 122 | 298.6 | 378.3 | 740.6 | 290.2 | 393.9 | 734.9 | 286.2 | 384.7 | 775.9 |
| 123 | 297.1 | 371.2 | 688.5 | 302.6 | 412.1 | 743 | 295.5 | 398 | 709.4 |
| 124 | 307.5 | 389.7 | 656 | 307.7 | 406.2 | 719.5 | 286 | 399.7 | 692.9 |
| 125 | 291.8 | 383.2 | 678 | 298.3 | 398.6 | 743.2 | 302.9 | 393.2 | 714.7 |
| 126 | 306.9 | 388.8 | 696.7 | 294.8 | 414.2 | 735.9 | 293.2 | 412.1 | 719.7 |
| 127 | 296.4 | 385.3 | 683 | 298.8 | 397.4 | 731.8 | 288.1 | 406.2 | 742.6 |
| 128 | 294.9 | 390 | 641.2 | 304.5 | 401.7 | 749.2 | 309.2 | 398.6 | 675.3 |
| 129 | 299.6 | 380.8 | 704.2 | 289.1 | 411 | 752.3 | 286.3 | 414.2 | 738.5 |
| 130 | 300.3 | 379.8 | 677.2 | 296.6 | 416.3 | 740.5 | 286.4 | 397.4 | 706.5 |
| 131 | 321.6 | 386.7 | 700.4 | 290 | 410.8 | 756.1 | 296.4 | 401.7 | 731.6 |
| 132 | 300.8 | 384.7 | 669.3 | 297.2 | 440.4 | 734.1 | 281.9 | 411 | 722.5 |
| 133 | 303.5 | 396.6 | 677.3 | 295.2 | 403.4 | 744.2 | 285.5 | 416.3 | 711.4 |
| 134 | 300.3 | 384.2 | 656.1 | 297.4 | 401 | 718.3 | 290 | 418.8 | 705.4 |
| 135 | 299.2 | 384.2 | 697 | 299.7 | 396.5 | 730.2 | 297.1 | 440 | 722.6 |
| 136 | 298.4 | 392.2 | 658.4 | 302.5 | 402.3 | 701.4 | 280.6 | 403.4 | 723.9 |
| 137 | 303.8 | 386.2 | 694.1 | 307.2 | 399.4 | 738.4 | 285.6 | 410 | 696.2 |
| 138 | 307.1 | 383.7 | 706.4 | 295.5 | 411 | 739.1 | 292.5 | 396.5 | 726.2 |
| 139 | 294.9 | 380.3 | 712.6 | 297.8 | 404.4 | 734.3 | 293.9 | 402.5 | 705 |
| 140 | 295.8 | 382.1 | 673.9 | 308 | 397.9 | 737.7 | 298.3 | 399.4 | 715.4 |
| 141 | 291.3 | 382.1 | 642.4 | 290.5 | 402.9 | 730.8 | 284 | 411 | 733.1 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 142 | 295.8 | 380.8 | 649.6 | 293.4 | 414.7 | 725.6 | 289.4 | 404.4 | 709.8 |
| 143 | 300.5 | 380 | 652.7 | 298.7 | 409.4 | 725.9 | 285.7 | 397.9 | 699.6 |
| 144 | 304.4 | 381.5 | 674.8 | 295.3 | 403.1 | 707.9 | 290.9 | 402.9 | 705.9 |
| 145 | 302.8 | 387.6 | 684.4 | 233.5 | 421.1 | 697.6 | 285.1 | 414.7 | 719 |
| 146 | 299.5 | 382 | 680.2 | 297 | 407 | 718.6 | 284.8 | 409.4 | 717.9 |
| 147 | 302.3 | 383 | 662.3 | 296.8 | 403.3 | 707.8 | 287.4 | 403.1 | 711.9 |
| 148 | 291.6 | 393 | 673.2 | 303.7 | 409.5 | 729.1 | 285.7 | 421.1 | 736.8 |
| 149 | 303 | 387 | 705 | 305 | 402 | 711.5 | 288.8 | 407 | 731.9 |
| 150 | 292.5 | 388.8 | 672.1 | 302.2 | 406.3 | 701.1 | 286.1 | 403.5 | 711.9 |
| 151 | 297 | 378.7 | 640.3 | 289.9 | 413.9 | 716.9 | 280.2 | 409.5 | 721.2 |
| 152 | 302.5 | 382.9 | 740.9 | 298.8 | 408.7 | 715.6 | 298 | 402 | 685.7 |
| 153 | 293 | 381.8 | 691 | 304.4 | 437.2 | 710.6 | 281.1 | 406.3 | 705.9 |
| 154 | 306.5 | 387.7 | 686.2 | 299.8 | 403.1 | 724.3 | 282.7 | 413.9 | 746.4 |
| 155 | 298.6 | 378.6 | 702 | 294.8 | 417.3 | 725.1 | 286.4 | 408.7 | 720.8 |
| 156 | 296.6 | 384 | 687.8 | 298.7 | 416.5 | 712.8 | 291.2 | 437.2 | 683 |
| 157 | 290.9 | 380 | 710.8 | 317.6 | 394.7 | 732 | 280.8 | 403.1 | 715.7 |
| 158 | 295.4 | 379.6 | 678.4 | 292.3 | 404.5 | 735.9 | 276.8 | 417.3 | 712 |
| 159 | 293.8 | 382.9 | 682.9 | 290.2 | 401.3 | 722.7 | 284.4 | 416.5 | 710.6 |
| 160 | 304.6 | 387.5 | 644.8 | 307.5 | 395.8 | 734.9 | 284 | 394.7 | 750.5 |
| 161 | 295.6 | 386.9 | 663.4 | 293.4 | 405.8 | 718.3 | 286.7 | 404.5 | 719.9 |
| 162 | 293.2 | 379.5 | 668 | 289.6 | 405.1 | 693.5 | 279 | 401.3 | 722.2 |
| 163 | 302.2 | 379.4 | 669.5 | 288.3 | 404.4 | 736.6 | 283.2 | 395.8 | 715.6 |
| 164 | 296 | 384.9 | 643.1 | 320.7 | 413.2 | 739.2 | 282.8 | 405.8 | 702.4 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-------|-------|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 165 | 295.2 | 376.4 | 661.2 | 307.5 | 404.7 | 734.4 | 280.2 | 405.1 | 695.3 |
| 166 | 296 | 374.3 | 687.5 | 290.8 | 408.4 | 733.1 | 290.7 | 404.4 | 701.6 |
| 167 | 307.2 | 381.1 | 682.8 | 295.4 | 400 | 733.6 | 280.9 | 413.2 | 707.6 |
| 168 | 295.8 | 382.9 | 687.6 | 293.2 | 396 | 711.2 | 291.2 | 404.7 | 706.1 |
| 169 | 294.2 | 368.5 | 669.2 | 295.6 | 406.8 | 724.1 | 287.2 | 408.4 | 708.2 |
| 170 | 288 | 377.8 | 669.4 | 295.6 | 409 | 789.2 | 285.7 | 400 | 730.1 |
| 171 | 292.9 | 383.2 | 683.7 | 297.7 | 399.5 | 701.4 | 292.6 | 396 | 740.3 |
| 172 | 315 | 382.1 | 668.4 | 298 | 408.2 | 721.6 | 288.3 | 406.9 | 690.4 |
| 173 | 295.8 | 378.8 | 614.8 | 290 | 404.1 | 726.4 | 293.3 | 409 | 641.6 |
| 174 | 300.6 | 376.8 | 646 | 288.6 | 403.1 | 732.2 | 293.2 | 399.5 | 689.7 |
| 175 | 288.8 | 392.6 | 692 | 289 | 417.5 | 715.3 | 284.6 | 408.2 | 744.3 |
| 176 | 287 | 383.2 | 683.7 | 304 | 397.1 | 727.4 | 281.4 | 404.1 | 697.7 |
| 177 | 296.9 | 382.6 | 661.2 | 288.5 | 394.5 | 737.6 | 297 | 403.1 | 745.8 |
| 178 | 296.9 | 382.6 | 682.9 | 304 | 407.5 | 722.8 | 279 | 417.5 | 733.8 |
| 179 | 305.4 | 385.2 | 669.5 | 297.5 | 396.5 | 730 | 294.7 | 397.1 | 704.5 |
| 180 | 305.4 | 392.8 | 740.9 | 285.8 | 396.3 | 723.6 | 281 | 444.1 | 712.2 |
| 181 | | | | 292.3 | 396.2 | 724.4 | 284.4 | 407.5 | 734.4 |
| 182 | | | | 294.7 | 402.9 | 708.8 | 286.7 | 396.5 | 713 |
| 183 | | | | 297.8 | 400.7 | 722.5 | 277.9 | 396.3 | 698.3 |
| 184 | | | | 288.9 | 409.8 | 700 | 285.7 | 382.8 | 683.3 |
| 185 | | | | 287.1 | 405.9 | 707 | 288.5 | 432.8 | 700.7 |
| 186 | | | | 288.1 | 406 | 779.9 | 286.2 | 418.4 | 666.4 |
| 187 | | | | 288.9 | 404.3 | 724.5 | 295.3 | 436.9 | 714.6 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 188 | | | | 296.5 | 400 | 727.9 | 278.3 | 411.1 | 732.6 |
| 189 | | | | 294.6 | 397.3 | 724.3 | 290.2 | 413.3 | 701.2 |
| 190 | | | | 297.4 | 410.7 | 724.6 | 289.2 | 428 | 708.5 |
| 191 | | | | 300.4 | 399.9 | 723.1 | 278.2 | 428.3 | 708.2 |
| 192 | | | | 292.5 | 401.7 | 779.4 | 284.3 | 411.6 | 718.2 |
| 193 | | | | 294.8 | 401.3 | 706.9 | 287.5 | 418.5 | 734 |
| 194 | | | | 296.5 | 397.1 | 777.4 | 281 | 411.2 | 711.6 |
| 195 | | | | 285.6 | 394.9 | 727 | 286.2 | 454.5 | 707.1 |
| 196 | | | | 297.6 | 403.4 | 721.3 | 286.5 | 414.7 | 697 |
| 197 | | | | 296.7 | 401 | 720.8 | 281.3 | 426.4 | 729.9 |
| 198 | | | | 292 | 419.3 | 778 | 287.2 | 497.7 | 727.1 |
| 199 | | | | 294.2 | 394.4 | 775.8 | 281.3 | 422.9 | 695.6 |
| 200 | | | | 289.7 | 391.8 | 791.4 | 285.2 | 427.1 | 693.8 |
| 201 | | | | 289.9 | 397.5 | 716.3 | 287.6 | 415.2 | 773.1 |
| 202 | | | | 286.2 | 413.1 | 713.8 | 283.6 | 437.3 | 678.5 |
| 203 | | | | 289.8 | 396.6 | 719.2 | 294.6 | 427.4 | 719 |
| 204 | | | | 297.1 | 394.5 | 715.5 | 284.3 | 417.6 | 693 |
| 205 | | | | 289.2 | 401.7 | 715.4 | 287.9 | 416.8 | 703.6 |
| 206 | | | | 289.9 | 400.8 | 715 | 281 | 428.4 | 675.7 |
| 207 | | | | 284 | 392.8 | 717.7 | 286.2 | 415.7 | 772.9 |
| 208 | | | | 293 | 401.7 | 716.3 | 283.5 | 427 | 671.3 |
| 209 | | | | 288.5 | 405 | 714.2 | 287.2 | 406.9 | 600.3 |
| 210 | | | | 290.8 | 406.6 | 716 | 281.3 | 418.3 | 678.6 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 211 | | | | 294.9 | 395.6 | 712.7 | 285.2 | 419.5 | 698.4 |
| 212 | | | | 294.4 | 398 | 710.8 | 287.6 | 410.5 | 695.5 |
| 213 | | | | 287.4 | 399.5 | 709.9 | 283.6 | 428.3 | 696 |
| 214 | | | | 299.6 | 403.9 | 770 | 294 | 424.8 | 673.9 |
| 215 | | | | 293.9 | 412.3 | 772.8 | 285.4 | 414.9 | 694.6 |
| 216 | | | | 288.4 | 398.7 | 717.5 | 278.7 | 434.2 | 706.3 |
| 217 | | | | 283 | 390.8 | 713.1 | 291.3 | 428.5 | 699.5 |
| 218 | | | | 289.6 | 412.1 | 712.3 | 287.6 | 418.8 | 671.8 |
| 219 | | | | 287.8 | 430.6 | 715 | 283.6 | 427.3 | 676.3 |
| 220 | | | | 289.7 | 408.8 | 711.5 | 294 | 434.9 | 699.9 |
| 221 | | | | 285.8 | 397.4 | 778.5 | 278.7 | 421.1 | 702.4 |
| 222 | | | | 289.1 | 390.4 | 714 | 291.3 | 425.1 | 673.5 |
| 223 | | | | 288.5 | 398.6 | 674.6 | 287.5 | 425.4 | 654.7 |
| 224 | | | | 285.5 | 394.7 | 699.7 | 292.5 | 400.1 | 715.5 |
| 225 | | | | 285.6 | 399.2 | 683.2 | 282.7 | 420.7 | 709.7 |
| 226 | | | | 286.8 | 390.8 | 715.9 | 283.8 | 424.4 | 711.8 |
| 227 | | | | 286.8 | 400 | 717.5 | 280.4 | 416.5 | 718.7 |
| 228 | | | | 284.8 | 395.7 | 713.6 | 287.7 | 411.2 | 727 |
| 229 | | | | 295.3 | 401.8 | 707.1 | 291.3 | 424.8 | 770.5 |
| 230 | | | | 289.2 | 394.5 | 693.5 | 296.1 | 482.9 | 677.8 |
| 231 | | | | 288.4 | 405 | 697.5 | 285.4 | 413.3 | 715.7 |
| 232 | | | | 283 | 392 | 705.8 | 288.2 | 411.8 | 721.7 |
| 233 | | | | 289.6 | 398.1 | 704.8 | 282.5 | 412.7 | 704.7 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 234 | | | | 287.8 | 395.8 | 711.9 | 281.5 | 414.6 | 711.7 |
| 235 | | | | 290.7 | 393.9 | 712.8 | 285.6 | 413.9 | 712.1 |
| 236 | | | | 285.8 | 414.5 | 709.6 | 288.9 | 429.8 | 712.1 |
| 237 | | | | 289.7 | 389.2 | 708.9 | 292.7 | 426 | 710.3 |
| 238 | | | | 288.5 | 398 | 707.6 | 285.2 | 413.7 | 724.2 |
| 239 | | | | 285.6 | 384.7 | 703.9 | 282.4 | 407.7 | 699.3 |
| 240 | | | | 286.8 | 399.4 | 701.9 | 274.1 | 404.6 | 697.8 |
| 241 | | | | 286.8 | 392.7 | 705 | 282.1 | 409.4 | 667.8 |
| 242 | | | | 235.5 | 391.1 | 702 | 282.6 | 384.7 | 675.8 |
| 243 | | | | 289.2 | 391.6 | 709.2 | 291.8 | 395.9 | 691.4 |
| 244 | | | | 288.4 | 387.1 | 706.8 | 282.9 | 395 | 709.4 |
| 245 | | | | 288.3 | 395.1 | 704.1 | 289.9 | 392.2 | 694.5 |
| 246 | | | | 285.7 | 384.8 | 707.1 | 286.9 | 398.2 | 723 |
| 247 | | | | 287.4 | 395.9 | 706.4 | 284.2 | 385.9 | 684.2 |
| 248 | | | | 293.9 | 384.3 | 716.4 | 291.2 | 402.2 | 671.7 |
| 249 | | | | 294.6 | 421.4 | 707.3 | 279 | 395.2 | 656.6 |
| 250 | | | | 292 | 391 | 709.4 | 293.3 | 389.6 | 687.6 |
| 251 | | | | 287.7 | 391.8 | 704.4 | 282.5 | 392 | 666.9 |
| 252 | | | | 297.3 | 396.2 | 705.6 | 284.1 | 389.1 | 697.4 |
| 253 | | | | 286.9 | 397.1 | 707.2 | 279.1 | 392.3 | 663.2 |
| 254 | | | | 290.4 | 387 | 703.9 | 302.3 | 412.8 | 663.4 |
| 255 | | | | 284.1 | 389.6 | 703.1 | 279.4 | 393.6 | 676.3 |
| 256 | | | | 286 | 395.5 | 707.4 | 287.5 | 398.8 | 673 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 257 | | | | 284.3 | 403.2 | 703.8 | 287 | 388.7 | 679.6 |
| 258 | | | | 297.1 | 406.4 | 705.9 | 281.3 | 390.7 | 700.4 |
| 259 | | | | 285.1 | 404.7 | 707.2 | 282.9 | 398 | 716.4 |
| 260 | | | | 281.8 | 399.4 | 702.9 | 285.9 | 403.6 | 698.7 |
| 261 | | | | 290.9 | 413.7 | 707.1 | 284.2 | 405 | 630.2 |
| 262 | | | | 287.9 | 391.9 | 702.2 | 280.7 | 397.7 | 666.7 |
| 263 | | | | 293.3 | 393.9 | 704.9 | 280.7 | 388 | 661.7 |
| 264 | | | | 300.3 | 391.2 | 702.6 | 287.5 | 395.6 | 687.4 |
| 265 | | | | 294.8 | 402.5 | 700.6 | 274.1 | 382.8 | 713.2 |
| 266 | | | | 282.4 | 404.6 | 699.2 | 294.2 | 397.3 | 661.8 |
| 267 | | | | 289.5 | 388 | 691.5 | 295 | 403.9 | 679.2 |
| 268 | | | | 292.5 | 402.5 | 691.6 | 277.3 | 392.9 | 710.4 |
| 269 | | | | 289.9 | 419.1 | 696.6 | 280.1 | 391.4 | 698.3 |
| 270 | | | | 285.6 | 395.8 | 696.3 | 280.2 | 418.2 | 706.8 |
| 271 | | | | 293.4 | 389.2 | 700.1 | 280.4 | 393.9 | 704.3 |
| 272 | | | | 285.1 | 383.6 | 701.1 | 278.4 | 393.4 | 715.3 |
| 273 | | | | 289.3 | 392.7 | 698.1 | 277.4 | 398.9 | 697 |
| 274 | | | | 297.5 | 392.6 | 699.5 | 299.5 | 386.9 | 681.7 |
| 275 | | | | 286.3 | 404.5 | 696.6 | 280.5 | 391.7 | 673.1 |
| 276 | | | | 292.7 | 392.4 | 695.4 | 289.3 | 384.6 | 778.8 |
| 277 | | | | 287.2 | 395 | 695.5 | 279.8 | 389.2 | 698.6 |
| 278 | | | | 284.6 | 394 | 694.8 | 285.3 | 387.6 | 692.1 |
| 279 | | | | 293.5 | 392.2 | 693.4 | 288.9 | 389.1 | 697.6 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 280 | | | | 303.9 | 397.2 | 697.2 | 286.8 | 394.3 | 705.8 |
| 281 | | | | 284.5 | 395.7 | 693.8 | 283 | 380.6 | 684.8 |
| 282 | | | | 292.1 | 408.5 | 696.7 | 290.5 | 385.2 | 691.2 |
| 283 | | | | 293.6 | 388.5 | 693.3 | 284.7 | 404 | 706.1 |
| 284 | | | | 292.5 | 394 | 695.6 | 285.5 | 381.8 | 773 |
| 285 | | | | 293.5 | 398.3 | 692.8 | 285.5 | 381 | 713 |
| 286 | | | | 289.7 | 390.6 | 693 | 273.9 | 391.5 | 678.5 |
| 287 | | | | 288 | 394.9 | 697.5 | 279.1 | 383.5 | 700.3 |
| 288 | | | | 278 | 396.6 | 690.2 | 278.2 | 390.6 | 686.9 |
| 289 | | | | 296.7 | 394.8 | 695.2 | 282.6 | 384.3 | 704.6 |
| 290 | | | | 283.6 | 386.3 | 695.2 | 285.8 | 383.1 | 707.4 |
| 291 | | | | 290.5 | 402 | 698 | 282.4 | 397.3 | 692.6 |
| 292 | | | | 293.1 | 399 | 699.8 | 286.3 | 400.6 | 706.1 |
| 293 | | | | 284.4 | 394 | 697.2 | 279.3 | 387.7 | 706.7 |
| 294 | | | | 285.5 | 395.4 | 699.5 | 282.5 | 389.6 | 701.2 |
| 295 | | | | 285.2 | 395.8 | 698.6 | 296 | 386.6 | 703.6 |
| 296 | | | | 286.7 | 409.1 | 692.1 | 277.7 | 384.4 | 702.2 |
| 297 | | | | 282.3 | 387.8 | 692.6 | 279.4 | 387.9 | 684.1 |
| 298 | | | | 287.4 | 399.5 | 697.8 | 278.5 | 405 | 677.7 |
| 299 | | | | 287.8 | 392.9 | 689 | 283.3 | 406.6 | 702.7 |
| 300 | | | | 284 | 384.7 | 689.1 | 277.3 | 395.6 | 708.7 |
| 301 | | | | 283.4 | 395.5 | 689.2 | 277.3 | 381.6 | 702.3 |
| 302 | | | | 293.1 | 395 | 697.9 | 280.3 | 385.5 | 706.8 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 303 | | | | 288.5 | 392.2 | 690.7 | 289.9 | 386.5 | 702.4 |
| 304 | | | | 288.6 | 398.2 | 690.8 | 275 | 380.4 | 698.1 |
| 305 | | | | 290.9 | 385.5 | 690.8 | 286.1 | 395.9 | 692.5 |
| 306 | | | | 289.3 | 402.5 | 688.8 | 281.8 | 399 | 698.4 |
| 307 | | | | 285.8 | 395.8 | 690.6 | 280.6 | 389 | 700.3 |
| 308 | | | | 284.2 | 389.6 | 695 | 281 | 383 | 694.8 |
| 309 | | | | 297.6 | 392 | 697.7 | 286.3 | 384.8 | 692.5 |
| 310 | | | | 283.2 | 389.1 | 693 | 283.2 | 391.5 | 698.2 |
| 311 | | | | 282.7 | 392.3 | 695 | 284.3 | 368.5 | 685 |
| 312 | | | | 292.1 | 412.8 | 694 | 273.1 | 377.8 | 707.4 |
| 313 | | | | 287 | 393.6 | 690.3 | 280.2 | 383.2 | 694.4 |
| 314 | | | | 285.7 | 398.8 | 688.2 | 282.5 | 382.1 | 691.3 |
| 315 | | | | 288 | 388.7 | 691.2 | 281 | 378.8 | 692.1 |
| 316 | | | | 292.4 | 390.7 | 694.2 | 281.2 | 376.8 | 697.1 |
| 317 | | | | 294.8 | 398 | 691.2 | 276.7 | 392.6 | 694.8 |
| 318 | | | | 282.6 | 403.6 | 690.9 | 281 | 383.2 | 690.8 |
| 319 | | | | 282.7 | 405 | 690.2 | 276 | 382.6 | 678 |
| 320 | | | | 283.4 | 397.7 | 690.8 | 287.4 | 383.1 | 687.3 |
| 321 | | | | 286.2 | 388 | 690.2 | 284.7 | 393.4 | 678.1 |
| 322 | | | | 295.7 | 395.6 | 689.7 | 280.4 | 387 | 691.5 |
| 323 | | | | 283.6 | 382.8 | 690.8 | 285.3 | 388.8 | 692.2 |
| 324 | | | | 278.5 | 397.3 | 689.4 | 280.7 | 378.7 | 691.7 |
| 325 | | | | 293.8 | 403.9 | 689.9 | 283.7 | 382.9 | 698.2 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 326 | | | | 289.6 | 392.9 | 692.3 | 279.4 | 381.8 | 676.9 |
| 327 | | | | 287.7 | 391.4 | 690 | 275.4 | 387.7 | 690.5 |
| 328 | | | | 278.9 | 418.2 | 698.3 | 285.6 | 378.6 | 691.2 |
| 329 | | | | 285.3 | 393.9 | 697.9 | 275.9 | 384.6 | 696.4 |
| 330 | | | | 287.4 | 393.4 | 690.3 | 274.7 | 389.4 | 692.2 |
| 331 | | | | 282.2 | 398.9 | 690 | 284.9 | 391.3 | 698 |
| 332 | | | | 284.6 | 386.9 | 698.8 | 280.1 | 384.9 | 698.8 |
| 333 | | | | 292.5 | 391.7 | 691.2 | 282.4 | 383.5 | 694.2 |
| 334 | | | | 284.2 | 384.6 | 692.1 | 284.4 | 382.2 | 691.1 |
| 335 | | | | 283.2 | 389.2 | 690.6 | 286.1 | 380.5 | 691.9 |
| 336 | | | | 286.7 | 387.6 | 690.5 | 324.5 | 380.5 | 694.1 |
| 337 | | | | 283.4 | 389.1 | 689.1 | 294.4 | 386.3 | 699.1 |
| 338 | | | | 282.6 | 394.3 | 691.1 | 279.1 | 388.3 | 694 |
| 339 | | | | 278.6 | 380.6 | 690.5 | 276.4 | 381.7 | 697.4 |
| 340 | | | | 284.2 | 385.2 | 689.7 | 290.9 | 407 | 695.8 |
| 341 | | | | 293.8 | 400.4 | 688.4 | 286.7 | 387.8 | 697.6 |
| 342 | | | | 287.2 | 381.8 | 688.1 | 280.2 | 377.3 | 691.4 |
| 343 | | | | 282.4 | 381 | 687.6 | 286.1 | 382.1 | 697 |
| 344 | | | | 290.1 | 391.5 | 686.3 | 276.2 | 388.5 | 693 |
| 345 | | | | 302.5 | 383.6 | 683 | 276.2 | 395.3 | 692 |
| 346 | | | | 287.1 | 389.5 | 683.6 | 276.2 | 382.4 | 692.4 |
| 347 | | | | 283.7 | 390.6 | 683.7 | 276.7 | 382.2 | 691.6 |
| 348 | | | | 287.2 | 384.5 | 687.2 | 278.2 | 385.8 | 691.7 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-------|-------|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 349 | | | | 282.1 | 383.1 | 681.7 | 280.1 | 381.7 | 674.3 |
| 350 | | | | 282.2 | 387.2 | 683 | 278 | 398.5 | 692.7 |
| 351 | | | | 285.9 | 397.3 | 682.1 | 283 | 384.6 | 687.2 |
| 352 | | | | 279.4 | 400.6 | 681.1 | 278.2 | 397.9 | 675 |
| 353 | | | | 285.3 | 387.7 | 680.8 | 278.5 | 432.8 | 692.6 |
| 354 | | | | 287.5 | 389.6 | 697.2 | 274 | 418.4 | 697.9 |
| 355 | | | | 288.7 | 386.6 | 689.2 | 285.2 | 411.1 | 696 |
| 356 | | | | 285 | 384.4 | 690 | 281.6 | 413.3 | 694.5 |
| 357 | | | | 286 | 387.9 | 689.7 | 285.6 | 428 | 694.9 |
| 358 | | | | 283.9 | 381.6 | 689.4 | 276.9 | 428.3 | 691.2 |
| 359 | | | | 285.1 | 385 | 690.5 | 277.4 | 411.6 | 692.2 |
| 360 | | | | 284.3 | 380.4 | 679.1 | 278.6 | 418.5 | 675.6 |
| 361 | | | | | | | 274 | 454.5 | 689.4 |
| 362 | | | | | | | 276.6 | 414.7 | 689.1 |
| 363 | | | | | | | 276.2 | 426.4 | 696.7 |
| 364 | | | | | | | 275 | 397.7 | 676.4 |
| 365 | | | | | | | 279.7 | 392.9 | 689 |
| 366 | | | | | | | 280.5 | 427.1 | 688.1 |
| 367 | | | | | | | 280.7 | 415.5 | 688.1 |
| 368 | | | | | | | 279.6 | 437.3 | 690.4 |
| 369 | | | | | | | 275.2 | 427.4 | 679 |
| 370 | | | | | | | 276 | 417.6 | 677.1 |
| 371 | | | | | | | 276.8 | 416.8 | 697.1 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 372 | | | | | | | 298.4 | 428.4 | 690.6 |
| 373 | | | | | | | 276.6 | 415.7 | 694.6 |
| 374 | | | | | | | 276.2 | 427 | 696 |
| 375 | | | | | | | 281.4 | 406.9 | 683 |
| 376 | | | | | | | 274.3 | 418.3 | 686.2 |
| 377 | | | | | | | 278.2 | 413.9 | 696.8 |
| 378 | | | | | | | 277 | 408.7 | 683.8 |
| 379 | | | | | | | 279.6 | 437.2 | 692.6 |
| 380 | | | | | | | 272.2 | 403.1 | 693.1 |
| 381 | | | | | | | 281.2 | 417.3 | 691.4 |
| 382 | | | | | | | 278.7 | 416.5 | 684.9 |
| 383 | | | | | | | 276.8 | 394.7 | 681 |
| 384 | | | | | | | 277.3 | 404.5 | 696.7 |
| 385 | | | | | | | 270.8 | 401.3 | 609.7 |
| 386 | | | | | | | 274 | 395.8 | 679.5 |
| 387 | | | | | | | 283 | 405.8 | 677.3 |
| 388 | | | | | | | 276.9 | 405.1 | 675.9 |
| 389 | | | | | | | 276 | 404.4 | 672.8 |
| 390 | | | | | | | 280.4 | 413.2 | 691.5 |
| 391 | | | | | | | 273.2 | 404.7 | 694.8 |
| 392 | | | | | | | 278.5 | 408.4 | 692.1 |
| 393 | | | | | | | 282.2 | 400 | 679.6 |
| 394 | | | | | | | 271.2 | 396 | 676.4 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 395 | | | | | | | 276.9 | 406.8 | 676.7 |
| 396 | | | | | | | 271.6 | 409 | 676.1 |
| 397 | | | | | | | 276.1 | 399.5 | 674.8 |
| 398 | | | | | | | 279.6 | 408.2 | 676.2 |
| 399 | | | | | | | 273.8 | 412.3 | 674.7 |
| 400 | | | | | | | 289.2 | 398.7 | 676.4 |
| 401 | | | | | | | 293.4 | 390.8 | 675.8 |
| 402 | | | | | | | 279 | 412.1 | 642.1 |
| 403 | | | | | | | 280.8 | 430.6 | 678.5 |
| 404 | | | | | | | 286.4 | 408.8 | 678.8 |
| 405 | | | | | | | 276.3 | 397.4 | 659.8 |
| 406 | | | | | | | 277.7 | 390.4 | 654.7 |
| 407 | | | | | | | 274.6 | 398.6 | 620.8 |
| 408 | | | | | | | 283.6 | 394.7 | 670.5 |
| 409 | | | | | | | 274.1 | 399.2 | 667.4 |
| 410 | | | | | | | 284.5 | 390.8 | 674.5 |
| 411 | | | | | | | 275.2 | 400 | 677.9 |
| 412 | | | | | | | 277 | 395.7 | 673.4 |
| 413 | | | | | | | 275.5 | 401.8 | 659.4 |
| 414 | | | | | | | 273.9 | 394.5 | 672.1 |
| 415 | | | | | | | 273.9 | 405 | 659.9 |
| 416 | | | | | | | 278.5 | 392 | 670.5 |
| 417 | | | | | | | 274.2 | 398.1 | 676 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 418 | | | | | | | 289 | 395.8 | 670.5 |
| 419 | | | | | | | 275.4 | 393.9 | 670.8 |
| 420 | | | | | | | 276.5 | 414.5 | 669.2 |
| 421 | | | | | | | 275.4 | 389.2 | 668.5 |
| 422 | | | | | | | 277.4 | 398 | 667.5 |
| 423 | | | | | | | 278.7 | 384.7 | 669.4 |
| 424 | | | | | | | 277 | 399.4 | 669.1 |
| 425 | | | | | | | 277.2 | 392.7 | 667.5 |
| 426 | | | | | | | 273.8 | 391.1 | 670.9 |
| 427 | | | | | | | 277.6 | 391.6 | 667.6 |
| 428 | | | | | | | 275 | 387.1 | 664.9 |
| 429 | | | | | | | 276.7 | 395.1 | 654.6 |
| 430 | | | | | | | 280 | 384.8 | 655.9 |
| 431 | | | | | | | 286.5 | 395.9 | 654.2 |
| 432 | | | | | | | 271.4 | 384.3 | 661.2 |
| 433 | | | | | | | 313.5 | 421.4 | 663.7 |
| 434 | | | | | | | 274.2 | 391 | 665.9 |
| 435 | | | | | | | 273.7 | 391.8 | 656.1 |
| 436 | | | | | | | 275.7 | 396.2 | 656.2 |
| 437 | | | | | | | 278.9 | 397.1 | 666.2 |
| 438 | | | | | | | 275.8 | 387 | 662.8 |
| 439 | | | | | | | 276.7 | 389.6 | 661.8 |
| 440 | | | | | | | 276.3 | 395.5 | 659.2 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 441 | | | | | | | 271.7 | 403.2 | 658.1 |
| 442 | | | | | | | 272.4 | 406.4 | 650.3 |
| 443 | | | | | | | 276.1 | 404.7 | 660.9 |
| 444 | | | | | | | 276.1 | 399.4 | 659.3 |
| 445 | | | | | | | 271.1 | 413.7 | 659.3 |
| 446 | | | | | | | 278.6 | 391.9 | 658.7 |
| 447 | | | | | | | 278.9 | 393.9 | 653.7 |
| 448 | | | | | | | 283.3 | 391.2 | 659 |
| 449 | | | | | | | 278.5 | 402.5 | 658.4 |
| 450 | | | | | | | 277.2 | 404.6 | 663 |
| 451 | | | | | | | 280 | 388 | 660.8 |
| 452 | | | | | | | 279.5 | 402.5 | 658.3 |
| 453 | | | | | | | 273.4 | 419.1 | 658.1 |
| 454 | | | | | | | 278 | 395.8 | 650.3 |
| 455 | | | | | | | 273.5 | 389.2 | 651.4 |
| 456 | | | | | | | 269.9 | 385.5 | 660.9 |
| 457 | | | | | | | 283 | 402.5 | 659.6 |
| 458 | | | | | | | 274.3 | 395.8 | 659.6 |
| 459 | | | | | | | 269.1 | 389.6 | 651.1 |
| 460 | | | | | | | 274.4 | 392 | 650.1 |
| 461 | | | | | | | 277.7 | 389.1 | 659.5 |
| 462 | | | | | | | 275.2 | 392.3 | 659.3 |
| 463 | | | | | | | 277.6 | 412.8 | 660.4 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 464 | | | | | | | 271.9 | 393.6 | 659.9 |
| 465 | | | | | | | 270.4 | 398.8 | 698.6 |
| 466 | | | | | | | 274.8 | 388.7 | 660.5 |
| 467 | | | | | | | 271.4 | 390.7 | 660 |
| 468 | | | | | | | 276 | 398 | 660.8 |
| 469 | | | | | | | 270.8 | 403.6 | 659.3 |
| 470 | | | | | | | 276.2 | 405 | 668.4 |
| 471 | | | | | | | 272.3 | 397.7 | 659.1 |
| 472 | | | | | | | 274.5 | 388 | 656.5 |
| 473 | | | | | | | 282.2 | 395.6 | 656.7 |
| 474 | | | | | | | 278.9 | 382.8 | 658.6 |
| 475 | | | | | | | 271.6 | 397.3 | 659.2 |
| 476 | | | | | | | 272.2 | 403.9 | 658.8 |
| 477 | | | | | | | 276.8 | 392.9 | 658.3 |
| 478 | | | | | | | 273 | 391.4 | 657.6 |
| 479 | | | | | | | 277.5 | 418.2 | 656.6 |
| 480 | | | | | | | 281.9 | 393.9 | 655.4 |
| 481 | | | | | | | 277.5 | 393.4 | 656.2 |
| 482 | | | | | | | 272.5 | 398.9 | 655.8 |
| 483 | | | | | | | 278.1 | 386.9 | 654.5 |
| 484 | | | | | | | 274.4 | 391.7 | 655 |
| 485 | | | | | | | 271 | 384.6 | 655.3 |
| 486 | | | | | | | 273.5 | 389.2 | 655.1 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 487 | | | | | | | 277 | 387.6 | 652.7 |
| 488 | | | | | | | 277.8 | 389.1 | 653.1 |
| 489 | | | | | | | 274.8 | 394.3 | 650 |
| 490 | | | | | | | 274 | 380.6 | 722.7 |
| 491 | | | | | | | 271.6 | 385.2 | 721.8 |
| 492 | | | | | | | 273.1 | 400.4 | 719.3 |
| 493 | | | | | | | 272.8 | 381.8 | 719 |
| 494 | | | | | | | 272.2 | 381 | 718 |
| 495 | | | | | | | 282.1 | 391.5 | 716 |
| 496 | | | | | | | 277.5 | 383.6 | 715.6 |
| 497 | | | | | | | 275.9 | 389.5 | 714.5 |
| 498 | | | | | | | 275.8 | 390.6 | 719.1 |
| 499 | | | | | | | 275 | 384.5 | 712.6 |
| 500 | | | | | | | 273.8 | 383.1 | 713.9 |
| 501 | | | | | | | 275.8 | 387.2 | 713.3 |
| 502 | | | | | | | 278.6 | 397.3 | 714.4 |
| 503 | | | | | | | 276.4 | 389.2 | 714.1 |
| 504 | | | | | | | 275.9 | 383.6 | 714.8 |
| 505 | | | | | | | 276.5 | 392.7 | 713.6 |
| 506 | | | | | | | 267.9 | 392.6 | 714.3 |
| 507 | | | | | | | 282.5 | 404.5 | 714.6 |
| 508 | | | | | | | 277.1 | 392.4 | 714.5 |
| 509 | | | | | | | 277.3 | 395 | 713 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------|-----------------------|-----|-----|-----------------------|-----|-----|-----------------------|-------|-------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 510 | | | | | | | 283.9 | 394.5 | 715.4 |
| 511 | | | | | | | 277.8 | 392.2 | 714.4 |
| 512 | | | | | | | 273.9 | 397.2 | 714.6 |
| 513 | | | | | | | 277.4 | 395.7 | 713.6 |
| 514 | | | | | | | 274.5 | 408.5 | 713.6 |
| 515 | | | | | | | 283 | 388.5 | 712.3 |
| 516 | | | | | | | 276.9 | 394 | 712.8 |
| 517 | | | | | | | 272.2 | 398.3 | 712.4 |
| 518 | | | | | | | 278.8 | 390.6 | 710.8 |
| 519 | | | | | | | 273.1 | 394.9 | 708.1 |
| 520 | | | | | | | 278.9 | 396.6 | 710 |
| 521 | | | | | | | 276.8 | 394.8 | 710.1 |
| 522 | | | | | | | 257.8 | 386.3 | 778.2 |
| 523 | | | | | | | 279.7 | 402 | 778.9 |
| 524 | | | | | | | 277.7 | 399 | 708.2 |
| 525 | | | | | | | 274.7 | 394 | 707.6 |
| 526 | | | | | | | 275.2 | 395.4 | 707.6 |
| 527 | | | | | | | 275.2 | 395.8 | 705.9 |
| 528 | | | | | | | 271.7 | 409.1 | 706.1 |
| 529 | | | | | | | 273.4 | 387.8 | 704.4 |
| 530 | | | | | | | 272.6 | 399.5 | 704 |
| 531 | | | | | | | 261.9 | 392.9 | 704 |
| 532 | | | | | | | 268.8 | 384.7 | 704 |

| Waktu (s) | 3 Menit | | | 6 Menit | | | 9 Menit | | |
|-----------------------------------|-----------------------|-----------------|-----------------|-----------------------|-----------------|-----------------|-----------------------|-----------------|-----------------|
| | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | | Kecepatan Putar (rpm) | | |
| | 250 | 300 | 360 | 250 | 300 | 360 | 250 | 300 | 360 |
| 533 | | | | | | | 280.6 | 395.5 | 754.8 |
| 534 | | | | | | | 285.6 | 395 | 748.8 |
| 535 | | | | | | | 278.2 | 392.2 | 768.7 |
| 536 | | | | | | | 272 | 370.8 | 721.6 |
| 537 | | | | | | | 275.5 | 376.2 | 690 |
| 538 | | | | | | | 281.1 | 372.3 | 653 |
| 539 | | | | | | | 270.8 | 374.5 | 738.5 |
| 540 | | | | | | | 257.8 | 382.2 | 700.3 |
| Jumlah Energi (watt.s) | 54886.9 | 69681.3 | 124327.2 | 106268.2 | 145416.4 | 257253.7 | 155121.6 | 216225.2 | 375426.5 |
| kWh | 0.015246 | 0.019355 | 0.034535 | 0.029518 | 0.040393 | 0.071459 | 0.043089 | 0.060062 | 0.104285 |

Lampiran 2. Perhitungan

a. Menghitung berat kotoran tercuci

$$wk = (w_1 - w_2) - 133g$$

1. Kecepatan putar 250 rpm

➤ Perlakuan 3 menit

$$wk = (4.000 - 3.766) - 133$$

$$wk = 234 - 133$$

$$= 101 \text{ g}$$

➤ Perlakuan 6 menit

$$wk = (4.000 - 3.683) - 133$$

$$wk = 317 - 133$$

$$= 184 \text{ g}$$

➤ Perlakuan 9 menit

$$wk = (4.000 - 3.526) - 133$$

$$wk = 474 - 133$$

$$= 341 \text{ g}$$

2. Kecepatan putar 300 rpm

➤ Perlakuan 3 menit

$$wk = (4.000 - 3.729) - 133$$

$$wk = 271 - 133$$

$$= 138 \text{ g}$$

➤ Perlakuan 6 menit

$$wk = (4.000 - 3.618) - 133$$

$$wk = 382 - 133$$

$$= 249 \text{ g}$$

➤ Perlakuan 9 menit

$$wk = (4.000 - 3.512) - 133$$

$$wk = 488 - 133$$

$$= 355 \text{ g}$$

3. Kecepatan putar 360 rpm

➤ Perlakuan 3 menit

$$wk = (4.000 - 3.692) - 133$$

$$wk = 308 - 133$$

$$= 175$$

➤ Perlakuan 6 menit

$$wk = (4.000 - 3.585) - 133$$

$$wk = 415 - 133$$

$$= 282 \text{ g}$$

➤ Perlakuan 9 menit

$$wk = (4.000 - 3.038) - 133$$

$$wk = 962 - 133$$

$$= 829 \text{ g}$$

b. Menghitung persentase kerusakan yang terjadi pada jahe setelah pencucian

$$wr = \frac{Wr_2}{Wr_1} (100\%)$$

1. Kecepatan putar 250 rpm

➤ Perlakuan 3 menit

$$wr = \frac{Wr_2}{Wr_1} (100\%)$$

$$= \frac{972}{4.000} (100\%)$$

$$= 24,325\%$$

- Perlakuan 6 menit

$$\begin{aligned}w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\ &= \frac{1.350}{4.000} (100\%) \\ &= 33,75\%\end{aligned}$$

- Perlakuan 9 menit

$$\begin{aligned}w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\ &= \frac{1.442}{4.000} (100\%) \\ &= 36,05\%\end{aligned}$$

2. Kecepatan putar 300 rpm

- Perlakuan 3 menit

$$\begin{aligned}w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\ &= \frac{1.114}{4.000} (100\%) \\ &= 27,85\%\end{aligned}$$

- Perlakuan 6 menit

$$\begin{aligned}w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\ &= \frac{1.406}{4.000} (100\%) \\ &= 35,15\%\end{aligned}$$

- Perlakuan 9 menit

$$\begin{aligned}w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\ &= \frac{1.570}{4.000} (100\%) \\ &= 39,25\%\end{aligned}$$

3. Kecepatan putar 360 rpm

- Perlakuan 3 menit

$$\begin{aligned}
 w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\
 &= \frac{1.199}{4.000} (100\%) \\
 &= 29,975\%
 \end{aligned}$$

➤ Perlakuan 6 menit

$$\begin{aligned}
 w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\
 &= \frac{1.428}{4.000} (100\%) \\
 &= 35,7\%
 \end{aligned}$$

➤ Perlakuan 9 menit

$$\begin{aligned}
 w_r &= \frac{W_{r2}}{W_{r1}} (100\%) \\
 &= \frac{2.316}{4.000} (100\%) \\
 &= 57,9\%
 \end{aligned}$$

Lampiran 3. Dokumentasi Penelitian

a. Menimbang jahe merah (4kg)



b. Penyetelan kecepatan putar



c. Proses pencucian jahe



d. Menimbang jahe yang telah dicuci



e. Pemisahan dan menimbang rimpang jahe yang rusak dan bagus

