

# FLOW-EFFICIENCY MONITORING SYSTEM MODEL 7530



## Flow-Efficiency Monitoring System Accusonic Model 7530...

...measures on-line individual unit and total plant discharge and efficiency. The system provides the operator with this data in addition to best gate and best combinations of gate settings. This allows the plant engineer or operator to increase unit and plant efficiency based on actual measured performance.

### Measures Efficiency

The 7530 measures flowrate and accepts inputs from power output (MW), pressure and level sensors to compute individual unit and total plant efficiency. Up to 6 turbines can be simultaneously monitored with one 7530. Pumping mode efficiencies are also determined for pumped-storage hydro plants. Stored data is easily retrieved to analyze plant operation, detect trends, and evaluate unit upgrades

## ...Delivers information to maximize plant efficiency.

### Provides Operators with Historical Best™ Gate Combinations

The Historical Best™ feature allows the operator, with one keystroke, to view the highest efficiency achieved for a given plant output, and what gate settings were used to achieve it. Optimum gate combinations can be determined for easy reference, giving the capability to improve upon traditional dispatch strategies. The Historical Best™ feature also provides the highest efficiency achieved for individual units, and what flow, power and gate settings were used.

### Measures Flow

The 7530 is an expansion of our Model 7500 flowmeter and contains all of the features and capabilities of this widely used flowmeter system.

The 7500 is the hydro industry standard acoustic flowmeter system designed for permanent hydroplant operational use and ASME PTC 18/ IEC Pub 41 test programs.

The system simultaneously measures flowrate in multiple penstocks and intakes and is described in detail in our 7500 brochure. Existing 7500 flowmeters can be upgraded to the Model 7530

### Provides Current Unit MW per CFS

Accusonic Technologies has added a feature requested by many plant owners. Display (and data storage) of MW/CFS (or cms) challenges operators to set unit gates at or near their point of highest efficiency, resulting in higher plant efficiency. This feature can be configured on-site to display revenue (income dollars per cfs).

| JANUARY 19 |        | 14:40:00 | PLANT HISTORY BIN 1 |       |      | ACHIEVED: DEC 31, 1994 |  |
|------------|--------|----------|---------------------|-------|------|------------------------|--|
| UNIT       | FLOW   | POWER    | EFF.                | UPLVL | TAIL | GATE                   |  |
| 1          | 0      | 0        | 0                   | 181.5 | 87.6 | 0                      |  |
| 2          | 4575   | 31.1     | 85.3                | 181.5 | 87.6 | 75                     |  |
| 3          | 4625   | 32.4     | 88.5                | 181.5 | 87.6 | 79                     |  |
| 4          | 102    | -1.0     | 0                   | 181.5 | 87.6 | 0                      |  |
| 5          | 4348   | 28.5     | 82.5                | 181.5 | 87.6 | 80                     |  |
| 6          | 4387   | 29       | 83.3                | 181.5 | 87.6 | 79                     |  |
| PLANT      | 18,037 | 120.0    | 83.8                | 181.5 | 87.6 |                        |  |

*Historical Best™ plant efficiency for 120 MW*

# FLOW-EFFICIENCY MONITORING SYSTEM MODEL 7530



## System Specifications

**Inputs:** Reservoir level  
Inlet Pressure  
Tailwater Level  
Draft Tube Pressure  
Power Output  
Gate Position  
Blade Position

**NOTES:**

1. Flow calculated from internal acoustic flowmeter
2. Model 7540 interface unit is used when more than four inputs are required.
3. Not all of the above-listed inputs are required.

- Screens:**
1. Flow, power, efficiency and MW/cfs for individual units and plant totals
  2. Historical Best TM efficiency for each turbine
  3. Historical BestTM plant efficiency for desired plant output (MW)
  4. Status/Diagnostics

**Data Outputs / Storage:**  
RS-232 Serial Digital Communications  
0-10V or 4-20mA Analog Outputs  
Formatted Printed Reports  
Telephone Modem/Remote Reporting  
3.5 Inch Diskette  
Hard Disk Drive

**Capacity:** 6 Turbines (or pump/turbines)

**Display:** Full Screen EL

**Enclosure Options:**  
NEMA 4 Wall Mount 24"H X 20"W X 11"D  
Chassis (for 19" Rack) 22"H X 19"W X 21"D

**Power Requirement:**  
90-260 VAC, 47-63 Hz

| JANUARY 19 |      | 14:35:00 |      | 1995  |      | BEST UNIT EFFICIENCIES |               |
|------------|------|----------|------|-------|------|------------------------|---------------|
| UNIT       | FLOW | POWER    | EFF. | UPLVL | TAIL | GATE                   | DATE          |
| 1          | 4751 | 31.1     | 81.8 | 181.5 | 86.9 | 81                     | Dec. 18, 1994 |
| 2          | 5354 | 36.1     | 84.8 | 181.0 | 87.0 | 70                     | Dec. 12, 1994 |
| 3          | 4877 | 32.5     | 84.2 | 181.5 | 87.6 | 83                     | Nov. 30, 1994 |
| 4          | 4325 | 27.9     | 81.3 | 181.3 | 86.9 | 79                     | Dec. 30, 1994 |
| 5          | 4374 | 28.4     | 81.8 | 181.5 | 87.1 | 81                     | Jan. 5, 1995  |
| 6          | 4525 | 30.0     | 83.2 | 181.3 | 86.8 | 82                     | Jan. 17, 1995 |

*Historical Best™ unit efficiency*

| JANUARY 19   |               | 14:27:29    |             | CURRENT PLANT DATA |             |      |
|--------------|---------------|-------------|-------------|--------------------|-------------|------|
| UNIT         | FLOW          | OUTPUT      | EFF.        | REVENUE            | KW/CFS      | MODE |
| 1            | 4315          | 27.5        | 79.5        | 825                | 6.37        | GEN  |
| 2            | 5235          | 35.6        | 83.8        | 1065               | 6.80        | GEN  |
| 3            | 4751          | 31.0        | 82.1        | 930                | 6.52        | GEN  |
| 4            | 0.0           | 0.0         | 0.0         | 0                  | -           | OFF  |
| 5            | 74            | -1.0        | 0.0         | -35                | -           | MTR  |
| 6            | 0             | 0.0         | 0.0         | 0                  | -           | OFF  |
| <b>PLANT</b> | <b>14,375</b> | <b>93.1</b> | <b>81.3</b> | <b>2785</b>        | <b>6.48</b> |      |

*Current Plant Data*