

**RENEWABLE ENERGY SOURCES**

**8.4. Small HPPs**

**8.4.1. Methods of small HPPs construction**

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Constant improvement of technology of hydro turbogenerators from micro size (to 100 kW) to small ones (to 5 MW) results in growth of attractiveness of small and micro HPPs for electricity generation.

Small and microHPPs, depending on ways of their construction, are divided into reservoired power plants, derivational and channel ones which, in their turn, can be stationary or portable.

Reservoired small and micro power plants differ from large hydro power plants only by scales of hydro constructions and capacity (fig. 8.18).

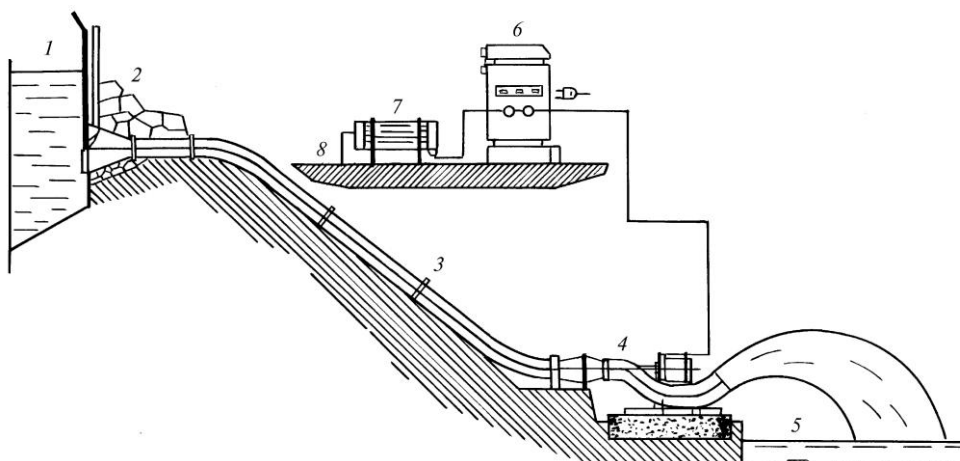
From the top tank 1 through a water scoop 2 water is fed through a water bringing pipeline 3 to the power unit 4 (hydro turbine with electric generator) and is dumped in the bot-

tom tank 5. In the complete set of equipment a block of automatic control 6 and the ballast loading 7 are joined.

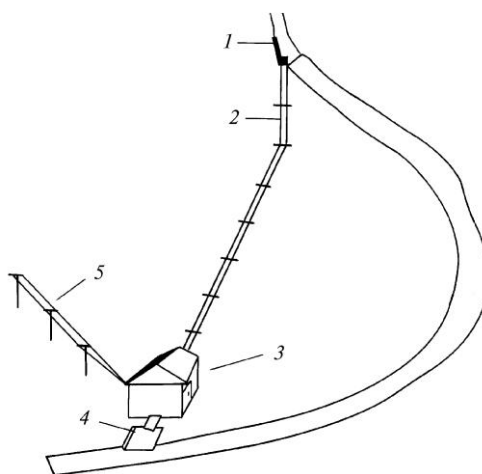
At the mountain rivers with considerable channel slopes, derivational small HPPs are constructed (fig. 8.19).

From a water intake 1, located upstream of a building of a small HPP 3, water through a water conduit 2 is supplied to the hydro unit 3. After pressure drawoff, water through the discharge unit 4 returns to the river. Electricity is supplied to consumers by transmission facilities 5.

Channel small and microHPPs use high-speed pressure and are located in high-speed flows (mountain rivers, inclined channels, etc.).



**Fig. 8.18. A block-diagram of the reservoired small hydro power plant**



**Fig. 8.19. A block-diagram of the derivational small hydro power plant**