HYDRA TESTBED

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1. Testbed Part List

The Hydra testbed is composed of the following components resumed in the Table:

Part	**Quantity**	**Details**
Tank	8	$6 \times 2.2\ l$, $1 \times 10\ l$, $1 \times 15\ l$.
Pipes		1/2" and 1/4".
Hydraulic connection	10	1/2" and 1/4".
Centrifugal Pump	3	$2 \times$ micro-pump RS702-6882 ($Q_max = 2800\ ml/min$, Supply voltage: 3 - 12 V), $1 \times$ New Jet 1200 pump (Q_{max}=20000 ml/min, Supply voltage: 220 - 240 V).
Pressure Sensor	7	used to derive the level of the liquid from the pressure exerted by the water column (pressure range: 0 - 10 KPa, precision: $\pm$ 5%, supply voltage: 4.7 V).
Flow Sensor	2	(Flow range: 0.3 - 6 l/min, supply voltage: 5 - 24 V).
Intel Galileo Gen2	2	The boards are used to acquire the pressure and flow sensor informations (max frequency: 400 MHz, input voltage: 12 V, 20 digital I/O pins, 6 analog input pins, 6 PWM(pulse-width modulation) digital I/O pins).
Arduino Nano	1	Used to control the micro-pumps with a PWM signal (max frequency: 16 MHz, input voltage: 7 - 12 V, 14 digital I/O pins of which 6 provide PWM output, 8 analog input pins).
Valves	15	$8 \times$ Electromechanical valves for the water flow control. $7 \times$ ON/OFF manual valves.
Switch	1	CISCO 8-Port 10/100 PoE Managed Switch (4.17 millions of 64 byte packets per second (mpps), 5.6 gigabits per second switching capacity(Gbps), power over Ethernet, power supply: 48 V - 2.5 A)

Table 1. HYDRA part list.

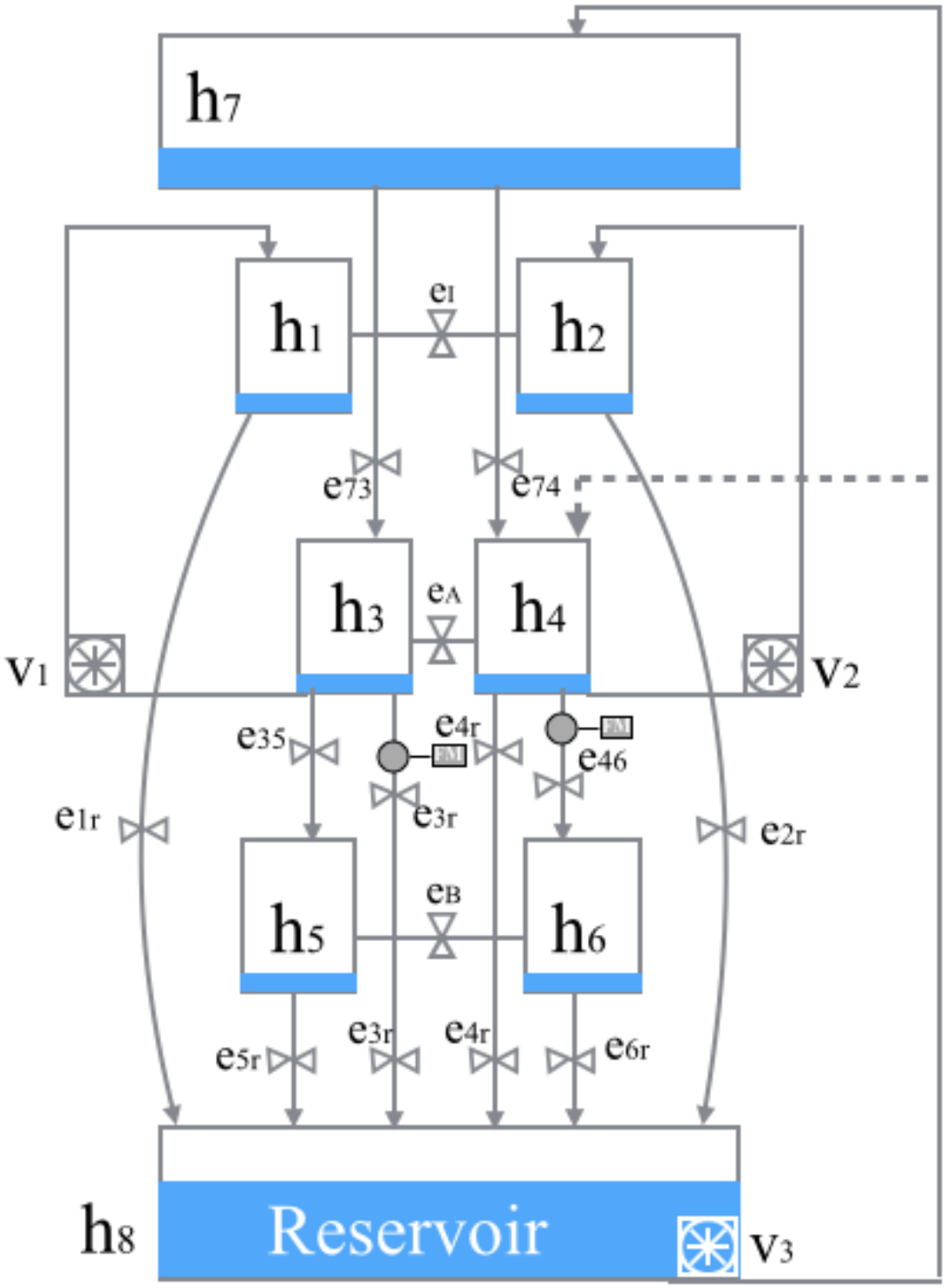

FIGURE 1. The HYDRA testbed structure.