

Pumps - the hearts of aquatic installations



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About Abyzz

Abyzz is a registered trademark of venotec GmbH, Germany.

- ▶ Specialized in pumps for aquatic equipment
- ▶ Mostly replaces pumps with double wattage
- ▶ Can be used summersed or external
- ▶ Highest grade manufacturing
- ▶ Designed for seawater
- ▶ Sustainable product
- ▶ Silent operation
- ▶ Ultra compact
- ▶ Up to 10 years warranty without additional costs



Introduction

Water movement is essential. Without pumps, the life we care about in our systems will soon be in serious trouble.



Picture by Author:
Neptunea, Switzerland



Picture by Author:
Korallenzucht Wendel, Germany



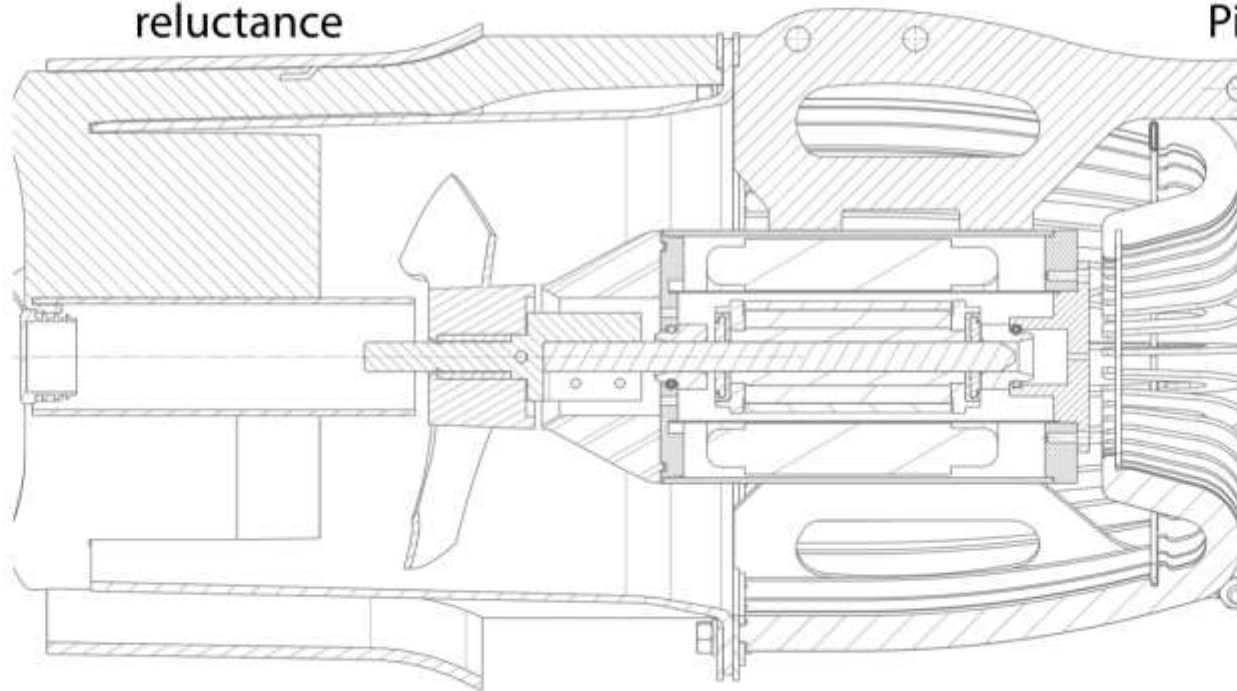
Picture by Schuran:
Sealife Speyer, Germany

Pump types

What's available....

(not a full list)

Control type (Input)	Motor	Excitation	Coupling	Hydraulic
1-phase	asynchronous	electrical	Magnetic (sealed)	Propeller pump
3-phase	synchronous	magnets	dry (sealed)	Rotary pump
Frequency conv.	DC		wet (direct)	Diagonal compressor
PWM	reluctance			Piston pump
DC				
BLDC				



Checking your demand

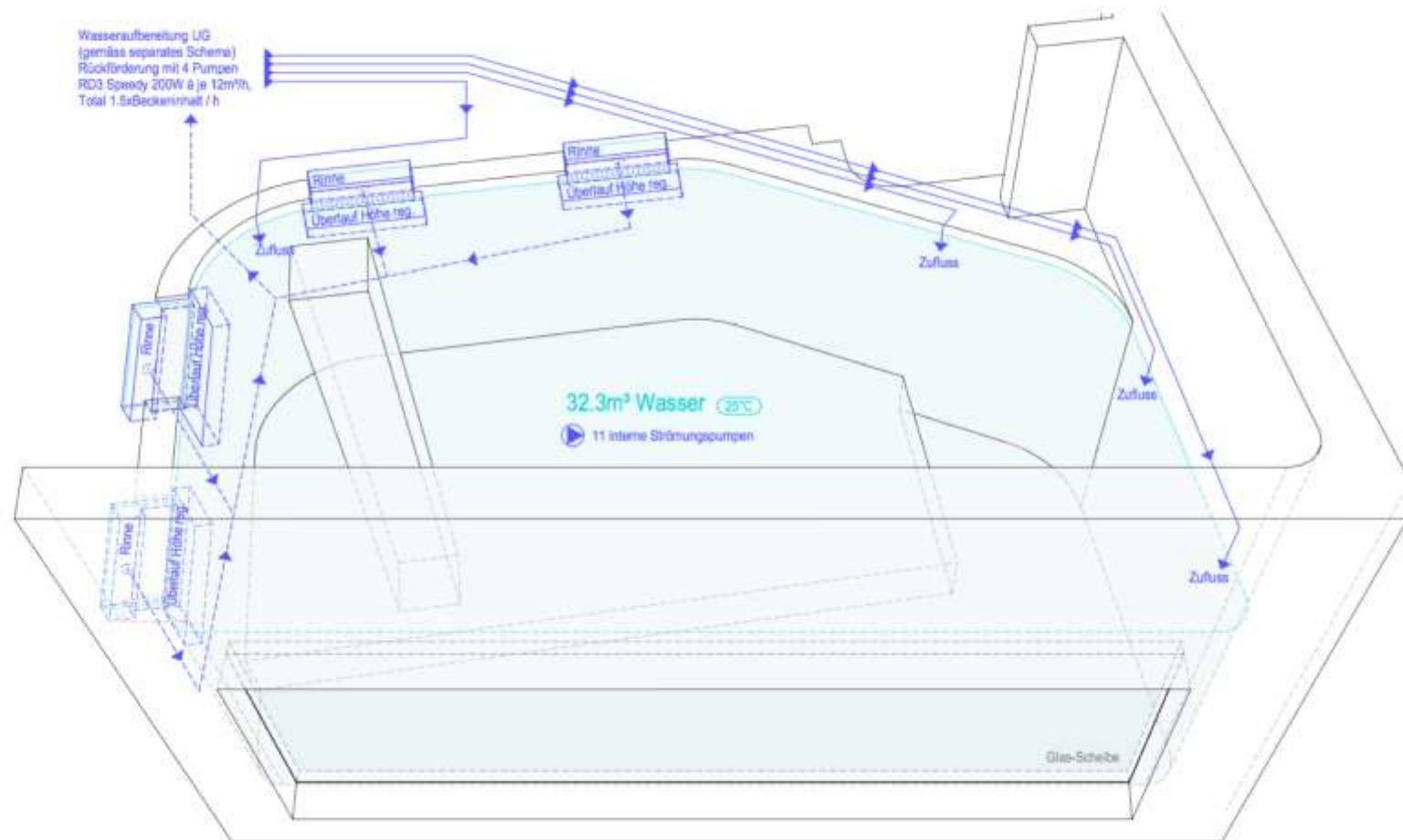
... and what do you need?

Low head:

- ▶ Internal current
- ▶ Return lines
- ▶ Media reactors

High head:

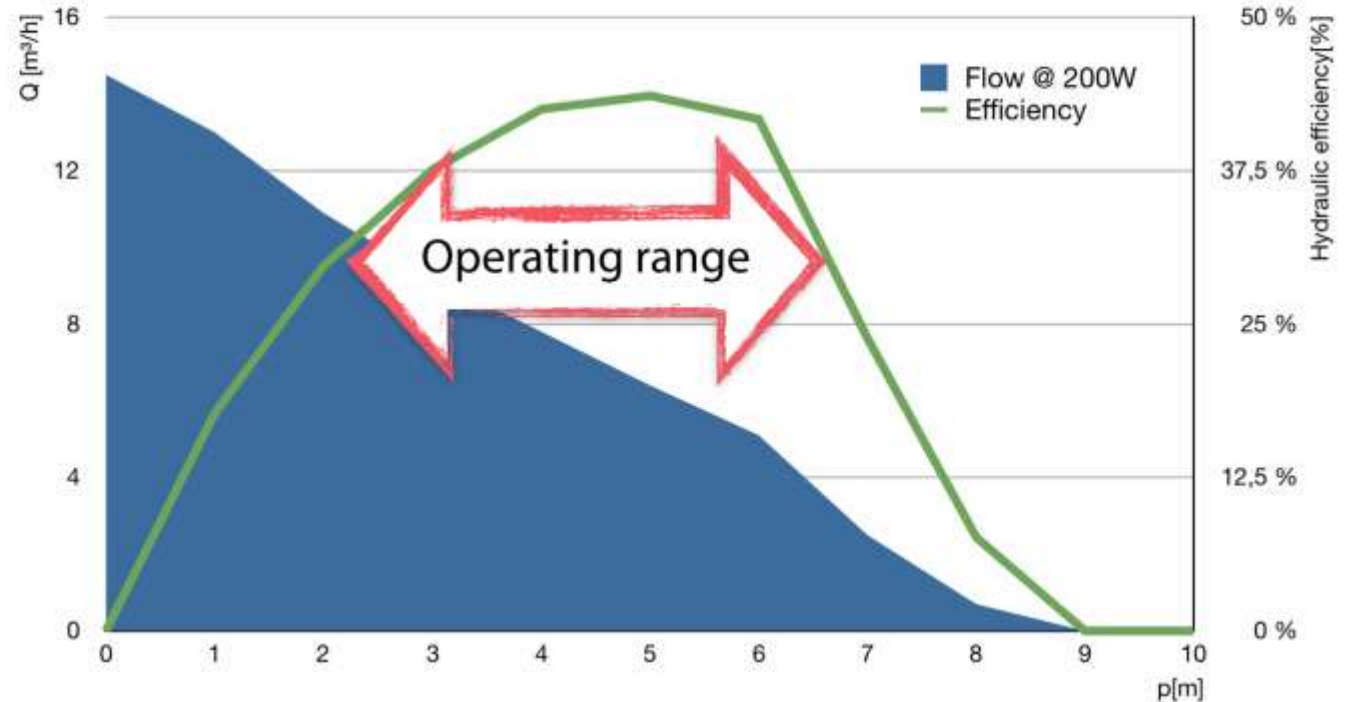
- ▶ Filtration pumps
- ▶ Cooling



Matching pumps to your application

Different application, different pump!

- ▶ Set your turnover per hour
- ▶ Check the head pressure
- ▶ Check pump datasheet for highest efficiency area
- ▶ Select pump



Things to consider as well

- ▶ Daily running cost
- ▶ Maintenance
- ▶ Chiller consumption
- ▶ Noise level in aquarium as well as „behind the scenes“
- ▶ Outside corrosion
- ▶ Availability
- ▶ Redundancy (cold/hot spare, interchangeability)
- ▶ Sustainability

ROI calculation / Comparison

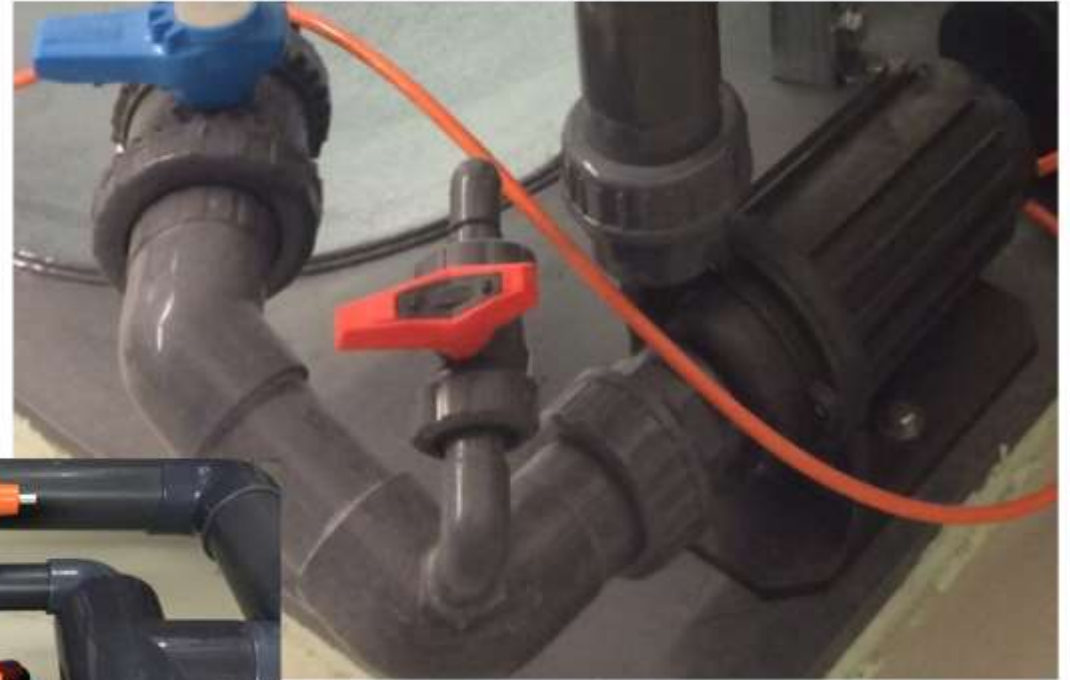
	A400	Older pump
Power cons. [W]	380	1870
Noise level [dB(A)]	80,9	86,8
Flow (approx.) [gph]	60	60
System Temp. [°F]	72	75
Chiller cost/year [US\$]	0	800
Cost/day (0.15/kWh) [US\$]	1,37	6,73
Cost/year [US\$]	499,32	2.457,18
Pump cost [US\$]	2349,99	520,00
Life expectancy [years]	10	1,5
Repair cost/year [US\$]	50,00	346,67
Total cost/year incl. Chiller	549,32	3603,85
Initial cost first year	2899,31	4123,85
Total cost after 3 years	3997,95	11331,54
Total cost after 5 years	5096,59	18539,23
Total cost after 10 years	7843,19	36558,47

Plumbing - or how not to...



Pictures by Jared Goldenberg and Author

Plumbing - or how not to...



Pictures by Author

Suggestions for maximum efficiency in installations

- ✓ Don't merge multiple pumps in (or from) one manifold
- ✓ Use pumps that do not need to be throttled on the output
- ✓ Use less 90° elbows wherever possible
- ✓ Don't use self-priming pumps if not needed
- ✓ Match product to your head pressure requirement on efficiency level
- ✓ Don't use check valves if not essential
- ✓ Check flow speed and increase pipe diameter (remember: $\Delta p = (\lambda * L * \rho * v^2) / (d_i * 2)$)

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Thank you for your attention !

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