



## Sea Water Injection - Case Study



### Case Study Information

Customer	Engineering Consultant
Location	UK
Enquiry Received	27th April
Order Placed	20th June
Order Dispatched	19th September

### Equipment Supplied:

#### 4 x Azcue Long Coupled End Suction Self-Priming Centrifugal Pumps

Model	CA 150-25
Fluid	1.1 kW 6 Pole 400/2/50 IP55 TEFC
Casing	Stainless Steel
Impeller	Stainless Steel
Shaft	Stainless Steel
Flow Rate	200m <sup>3</sup> /hr at 14m head
Suction Discharge Ø	150/150
+	1450RPM
	18.5Kw
	380V/3Ph/50Hz

### Enquiry:

- ✓ The customer contacted us requiring 4 x self-priming sea water injection pumps in stainless steel 316. The customer could not accept bronze material for this application which is the recommended material.

### Solution:

- ✓ We selected 4 of our CA 150-25 long coupled end suction self-priming centrifugal pumps in stainless steel 316. The long coupled design separates the pump from the motor allowing easier maintenance and also reducing the risk of any fluid entering the motor in the event of a mechanical seal failure. The pumps are fitted with 4 pole motors running at 1450RPM, the slower motor speed reduces the wear on the pump in the long term, making them perfect for 24/7 applications such as this. We also supplied a 2 year recommended spare parts package to further avoid any potential issues for the customer.



## Emergency Pump Replacement - Case Study



### Case Study Information

Customer	Ship Repair Company / Subsea Support Vessel
Location	UK
Enquiry Received	17:06 on Friday 13 <sup>th</sup> October
Order Placed	Monday 16 <sup>th</sup> October
Order Dispatched	Monday 16 <sup>th</sup> October (same day carrier)
Order Received	Monday 16 <sup>th</sup> October

### Equipment Supplied:

#### 2 x Azcue Close Coupled Side Channel Pump

Model:	MO19/20
Material:	Bronze
Application:	Hot Water Circulation Pump
Fluid:	Hot Water
Flow:	1.8 M2H
Discharge Pressure:	25M Head
Pump Body:	Bronze
Connections:	1 ¼"

### Enquiry:

- ✓ Castle pumps received an enquiry from a large and well known ship repair company who were in urgent need of a pump for their customer on a subsea support vessel. The subsea support vessel required a replacement pump for urgent delivery and installation whilst it docked without any downtime being incurred. The pump the vessel was currently using had suddenly failed, and we later found out that the pump was a cheap replica model which had failed just a year after its installation.
- ✓ The replacement pump they required was to be used for hot water circulation on board a vessel, which at the time of the enquiry was out at sea and due to dock on Sunday 15<sup>th</sup> October. The pump needed to be delivered on Monday morning, ready for its installation.

### Solution:

- ✓ At Castle Pumps we hold a number of our most popular pump models in stock, meaning we are able to supply a pump without waiting for manufacturer lead times, something which often incurs a few weeks vessel downtime. So when the customer's enquiry came through, we were able to see which of our 'from stock' models matched their requirements – this way, their urgent enquiry could be dealt with as quickly as possible so that the pump was delivered on time.
- ✓ The customer's enquiry came through at 5pm on Friday 13<sup>th</sup> October and as a result we dealt with the enquiry out of hours. Customer service is key here at Castle Pumps and by dealing with the enquiry out of hours it meant we could ensure that the customer didn't have to dock any longer than was scheduled.
- ✓ Three pump options were suggested to the customer which we could offer from stock, and these options were presented to the customer within twenty minutes of their enquiry coming through. The customer went away to discuss the options with the vessel and we awaited further instructions.
- ✓ On Saturday – a day the business is usually closed, but had opened to deal with this emergency enquiry – we received further information regarding specifications from the customer and as a result we offered a different pump from our 'from stock' range within the hour. A few hours later we received the go ahead and the pump was packed in our warehouse equipped with spare seal, ready to be dispatched on a same day delivery service on Monday morning. The pump was collected at 6am on Monday morning and delivered the same day to the customer's customer.
- ✓ The reason behind the urgent requirement was that the vessels original pumps failed – cheap Chinese models that failed within a year of being installed, evidence that buying cheap and/or replica models means repeat purchases of the same product time and time again. People may think that by buying cheaper models you are saving money, but by investing in a higher quality model like Azcue, is cheaper in the long run.



## Aquaculture - Case Study



### Case Study Information

Customer	Aquaculture
Location	UK
Enquiry Received	8th November
Order Placed	9th March
Order Dispatched	20th April

### Equipment Supplied:

#### 2 x AN-EP65-125

Type approved horizontal self priming centrifugal pump in bronze, with bronze impeller and control panel operating at 120M<sup>3</sup>H, 20M head.

### Enquiry:

- ✓ Castle pumps received an enquiry from a fish farming customer looking to farm fish on land. They required a pump for seawater transfer to obtain seawater from the sea to fill tanks, as well as circulate seawater within tanks and refresh every 24 hours.

### Solution:

- ✓ As the pumps would be mounted some distance from the sea, a self priming centrifugal pump with tank was selected to enable the pump to prime 135M. The pump was fitted with pressure gauges to enable the customer to easily determine if the pump was running on curve, and pressure switch to enable automatic priming if the suction pressure should drop. A bespoke control panel was supplied with running, tripped and warning lights, as well as amp draw, voltmeter, anti-condensation heater and hour counters to enable the customer to determine service intervals.

The AN pump is perfect for this application having a twin bearing heavy duty design ensures the pumps have long service intervals of 4000 hours, ensuring little or no downtime. The pumps were manufactured, assembled and tested in 6 weeks.



## Marine Services - Case Study



### Case Study Information

Customer	Marine Services - Crab Vessel
Location	United Kingdom
Enquiry Received	19th January
Order Placed	27th January
Order Dispatched	1st March

### Equipment Supplied:

#### 2 x Bombas Azcue Monobloc Horizontal Inline Pumps - Complete with motors

Model	MN100/160
Application	Sea water transfer pump for crab vessel
Installation	Monobloc Horizontal Inline
Fluid	Sea Water
Flow	150 m3/h
Discharge Pressure	5m
NPSHr	2.94m
Suction/Discharge Diameter	125/100mm
Pump Casing	Bronze
Impeller	Bronze
Shaft	Stainless steel
Seal	Mechanical
Power Supply	400v, 3 Phase, 50Hz
Power	4kW
Speed	1450 RPM

### Enquiry:

- ✓ Castle Pumps received an enquiry from a new customer in the UK that wanted to find a robust sea water transfer pump for their crab vessel.

### Solution:

- ✓ We selected a MN100/160 Azcue pump in order to fulfill the duty requested by the customer, and so that the materials of the pump were able to resist the fluid - meaning the pump will be long lasting and robust. The selection for the pump is the most important part of the process so having the correct information is vital to ensure that the customer not only gets a pump that works, but a pump that is efficient in saving money in power and spares over the lifetime of the pump. Both pumps were manufactured in Spain and delivered in fewer than 5 working weeks.



## Marine Dredging - Case Study



### Case Study Information

Customer	Marine Dredging Company
Location	United Kingdom
Enquiry Received	5th June
Order Placed	9th June
Order Dispatched	21st July

### Equipment Supplied:

#### 1 x Bombas Azcue Self Priming Centrifugal Pump - For Sea Water containing Sand

Model	CA-100-50
Type	Monobloc Centrifugal Self-Priming Horizontal Pump
Fluid	Sea Water containing Sand
Flow	75 m <sup>3</sup> /h
Total Head	5m
NPSHr	2.94m
Power	125/100mm
Voltage	Bronze
Frequency	Bronze
RPM	Stainless steel
Execution	Mechanical
Seal	400v, 3 Phase, 50Hz
S/discharge	4kW
Pump Casing	1450 RPM
Impeller	Bronze
Shaft	Stainless Steel
Closed Impeller (10% Maximum Sand Content)	
SiC/SiC Hard Faced Mechanical Seal	

### Enquiry:

- ✓ We received an enquiry from a Marine Dredging Company that required a self-priming centrifugal pump for transferring sea water containing small amounts of sand. They specified to us that the casing material be cast iron to save costs, we normally recommend bronze for sea water applications. They required the pump to have 4" ports and transfer 75m<sup>3</sup>/hr at 12m head.

### Solution:

- ✓ We selected a horizontal self-priming centrifugal pump with a cast iron casing and bronze impeller from our CA range. The impeller type fitted to this pump allows passage of 10% sand content in the sea water. This pump has a 4" suction and discharge and we fitted a hard faced mechanical seal to cope with the abrasive sand content.



## Sea Water Treatment - Case Study



### Case Study Information

Customer	Sea Water Treatment OEM
Location	United Kingdom
Enquiry Received	11th September
Order Placed	30th September
Order Dispatched	31st October

### Equipment Supplied:

#### 1 x VRX 80/160-8.6 - Horizontal Non-Clogging Centrifugal Pump w/ Oil Bath for Mechanical Seal & Bottom Bearing Lubrication

Fluid	Sea Water w/23mm Soft Rubber Balls
Capacity	40 m <sup>3</sup> /h @ approx. 1 bar
Suction/Discharge	DN100/DN80 - PN16
Motor	8.6kW / 480v / 4 Pole / 60Hz / IP55 / Class F
Construction	Bronze



### Enquiry:

- ✓ One of our existing OEM customers who specialises in Sea Water Treatment and Pipework Anti Fouling within the marine market contacted us with an enquiry for some solids handling sea water pumps to be used on one of their automatic ball cleaning systems. The required pumps are used to circulate the below detailed 23 mm dia cleaning balls round a UV Reactor Line to clean the inside of reactor's quartz sleeves of biological residue that builds up over time. The balls polish the surface of the sleeves, gently removing any residue and also polish the inside of the chamber ensuring that its reflective surfaces are kept pristine.
- ✓ The client's existing pumps were proving to be fairly costly and on lengthy lead times so we were asked to supply interchangeable equivalents with a better price and lead time which the client could ultimately pass onto their end users in the form of improved deliveries and ultimate system pricing.
- ✓ The challenge wasn't just to match the small dimensions of the existing pumps (as they are mounted into a larger skid arrangement with little available extra space) but also to supply a sea water resistant solids handling pump that could pass the 23 mm balls at the required capacity. Furthermore, the client's own systems are up scalable, meaning that according to the end users UV reactor sizes, larger and smaller capacities would be required for their systems. As a result we needed to be able to also ensure that we could cater for these varying capacities with differing sizes of the same pump type. Essentially presenting the customer with a scalable pump range which could cater for their exacting requirements.

### Solution:

- ✓ We were able to offer a monobloc, surface mounted, non clogging centrifugal pumps with a vortex impeller from our VRX range. Their simple construction, which has the impeller axially displaced from the pump suction enables the free passage of solids. Therefore, these units are able to handle liquids with high solids content almost as large as the pump discharge diameter. The monobloc or close coupled versions of these pumps feature a back pull out design, enabling the pump to be serviced whilst still connected to the pipework. In addition the mechanical seal can be oil cooled to extend the life of the seal and bottom bearing lubrication when pumping solids laden or abrasive fluids. This feature also protects the pump from running dry for certain periods.
- ✓ Standard materials are cast iron or marine bronze they are perfectly suited for fish pond drainage, pumping sea water with fish waste, black water, sewage, water with solids in suspension as well as sand and other solid wastes.
- ✓ With capacities up to 360 m<sup>3</sup>/hr and discharge pressures up to 2.5 Bar they are perfectly suited to a wide range of applications and our offering required very little modifications to their existing skid systems and our price was almost half which they were currently paying elsewhere! With an improved lead time offered on top of this the client has now standardised their systems to include our pumps and has never looked back!



## Shipping - Case Study



### Case Study Information

Customer	Shipping Company
Location	United Kingdom
Enquiry Received	10th September
Order Placed	16th September
Order Dispatched	21st November

### Equipment Supplied:

#### 2 x Centrifugal Vertical Immersion Pumps w/ Vortex Impellers - Azcue VRX Range

Application	Sea Water Sanitation
Liquid	Sea Water
Flow	40 m <sup>3</sup> /h
Total Head	12m
Casing	Bronze
Impeller	Bronze
Shaft	Stainless Steel
S/Discharge Ø	DN100
Power	8.6 kW
Voltage	440v-III
Frequency	60Hz
RPM	1750

### Enquiry:

- ✓ A UK based marine shipping company contacted us needing to upgrade their sea water sanitation system. Their current system, used to empty a sump where the sea water and waste solids collected, was over 15 years old and was becoming unreliable. The sea water contained soft solids and they needed a more reliable system to avoid any more problems for their engineers on board ship.

### Solution:

- ✓ Castle Pumps have a wealth of experience with marine applications and we were confident that we could offer a more reliable system. We wanted to ascertain all the facts to ensure we selected the most suitable pumps possible; it was important for us to know the sump depth and the maximum size of the solids.
- ✓ To make the system as reliable as possible, we advised using two pumps in a duty/standby operation to ensure that there was a backup pump in case of any failures. We selected vertical immersion pumps with vortex non-clogging impellers to cope with the soft solids, the pump casings and impellers were in bronze to avoid corrosion in the sea water.
- ✓ These vertically immersed centrifugal pumps can be supplied with various column lengths to fit sumps of any depth, the pump head is totally immersed in the fluid ensuring that the pump is always primed and there is no risk of cavitation. Vertical immersion pumps also have the added benefit of the motor being situated above the fluid, which avoids any possible overheating of the motor that arises with the use of fully submersible pumps.