

= Prinz Adalbert @-@ class cruiser =

The Prinz Adalbert class was a type of armored cruiser built for the Imperial German Navy in the early 1900s . Two ships of the class were built , Prinz Adalbert , and Friedrich Carl . Friedrich Carl was commissioned first , on 12 December 1903 and Prinz Adalbert followed on 12 January 1904 . They were an improvement upon the design of the previous unique armored cruiser , Prinz Heinrich . Their armor belts were the same thickness but were more extensive than that of their predecessor . The two ships were also armed with four main guns in twin gun turrets , as opposed to the two single gun turrets of Prinz Heinrich .

Both ships saw extensive service with the German Navy ; Prinz Adalbert was used as a gunnery training ship for the entirety of her peacetime career , while Friedrich Carl served with the fleet until 1909 , when she was withdrawn to act as a torpedo training vessel . At the outbreak of World War I in August 1914 , both vessels were mobilized and assigned to the cruiser squadron in the Baltic . Friedrich Carl was sunk by Russian naval mines off Memel in November 1914 , though most of her crew was safely evacuated . Prinz Adalbert was torpedoed twice by British submarines operating in the Baltic ; the first , on 1 July 1915 , caused serious damage that was ultimately repaired . The second , on 23 October 1915 , caused a catastrophic explosion in the ship 's ammunition magazines that destroyed the ship . Six @-@ hundred and seventy @-@ two men were killed , the greatest single loss of life for the German Navy in the Baltic during the war .

= = Design = =

The Second Naval Law in Germany , passed in 1900 , envisioned a force of fourteen armored cruisers intended for overseas service in the German colonies . However , the German Navy required cruisers for operations with the fleet as well , and attempted to design ships that could fulfill both roles , primarily due to budget constraints . The first product of the 1900 Naval Law , Prinz Heinrich , was an alteration of an earlier vessel , Fürst Bismarck , equipped with fewer guns and thinner armor in a trade @-@ off for higher speed and lower cost . The subsequent design ? that of the Prinz Adalbert class ? prepared in 1899 ? 1900 , was an improvement on Prinz Heinrich . Four quick @-@ firing 21 cm (8 @.@ 3 in) guns were substituted for the pair of slower 24 cm (9 @.@ 4 in) guns mounted on the older vessel . Armor thickness remained similar in strength to that of Prinz Heinrich , though it was made more comprehensive .

= = = General characteristics = = =

The ships of the Prinz Adalbert class were 124 @.@ 9 meters (410 ft) long at the waterline and 126 @.@ 5 m (415 ft) overall , and had a beam of 19 @.@ 6 m (64 ft) . The ships were designed to displace 9 @,@ 087 metric tons (8 @,@ 943 long tons ; 10 @,@ 017 short tons) , but at full combat load displaced up to 9 @,@ 875 t (9 @,@ 719 long tons ; 10 @,@ 885 short tons) ; they had a draft of 7 @.@ 43 m (24 @.@ 4 ft) forward and 7 @.@ 9 m (26 ft) aft . The ships ' hulls were constructed from transverse and longitudinal steel frames , over which the steel hull plates were riveted . The vessels contained fourteen watertight compartments and a double bottom that extended for 60 percent of the length of the hull .

The German navy regarded the vessels as good sea boats , with gentle motion when the ships ' lower fuel bunkers were full . The ships were responsive to commands from the helm . They lost up to 60 percent speed with the rudder hard over , but suffered only minimal speed loss in heavy seas . The ships ' casemate guns were placed too low , which rendered them exceedingly wet even in a slight swell . They had a transverse metacentric height of .734 m (2 ft 4 @.@ 9 in) . The ships had a standard crew of 35 officers and 551 enlisted men , though when serving as a squadron flagship this could be augmented by another nine officers and 44 enlisted men . The ships were equipped with several boats , including a pair of picket boats , a launch , a pinnace , two cutters , two yawls , and two dinghies .

Prinz Adalbert and Friedrich Carl were powered by three vertical 3 @-@ cylinder triple expansion

engines ; the center shaft drove a three-bladed screw 5 m (15 ft) in diameter , while the two outboard shafts powered four-bladed screws 8 m (16 ft) in diameter . The engines were supplied with steam by fourteen Dürr boilers produced by Düsseldorf Ratinger Röhrenkesselfabrik . The propulsion system was rated at 16,200 indicated horsepower (12,000 kW) for Prinz Adalbert and 17,000 ihp (13,000 kW) for Friedrich Carl and top speeds of 20 knots (37 km / h ; 23 mph) and 20.5 knots (38.0 km / h ; 23.6 mph) , respectively . Both ships reached higher horsepower figures on trials , though their speeds were not significantly improved . The ships were designed to carry 750 t (740 long tons ; 830 short tons) of coal , though storage could be increased to 1,630 t (1,600 long tons ; 1,800 short tons) . This enabled a maximum range of up to 5,080 nautical miles (9,410 km ; 5,850 mi) at a cruising speed of 12 knots (22 km / h ; 14 mph) . Electrical power was supplied by four generators with a total output of 246 kilowatts (330 hp) at 110 volts .

== Armament ==

Prinz Adalbert and Friedrich Carl were armed with a main battery of four 21 cm (8.3 in) SK L / 40 guns in two twin turrets , one on either end of the main superstructure . The four guns were supplied with a total of 340 rounds of ammunition , or 85 shells per gun . The turrets could depress to 5 ° and elevate to 30 ° , which provided a maximum range of 16,300 m (53,500 ft) . The 21 cm gun fired a 238-pound (108 kg) shell at a muzzle velocity of 780 m (2,560 ft) per second . The ships ' secondary armament consisted of ten 15 cm (5.9 in) SK L / 40 guns , all placed in the sides of the hulls . Three guns were mounted in casemates amidships on either side , with a pair of gun turrets above them . These guns were provided with a total of 1,400 shells , or 140 per gun . These guns fired an 88.2-pound (40.0 kg) projectile at a muzzle velocity of 800 m (2,600 ft) per second . The guns could elevate to 30 ° , allowing a maximum range of 13,700 m (44,900 ft) .

The ships also carried twelve 8.8 cm SK L / 35 guns for close in defense ; these were arranged in groups of four in shielded pivot mounts . Four guns were mounted around the forward conning tower , four were emplaced around the rear two funnels amidships , with the last four guns placed on top of the rear superstructure . These guns fired a 15.4 lb (7.0 kg) shell at a muzzle velocity of 770 m (2,530 ft) per second . They could elevate to 25 ° and could engage targets out to 9,090 m (29,820 ft) . The vessels ' armament system was rounded out by four 45 cm (18 in) submerged torpedo tubes . They were mounted in the bow , stern , and on each broadside , and supplied with eleven torpedoes .

== Armor ==

The steel armor used on the two ships was produced by the Krupp firm . The main belt armor consisted of a layer of teak that was 50 mm (2.0 in) thick , covered by 100 mm (3.9 in) thick steel plating in the central section , which covered the ships ' machinery spaces and ammunition magazines . The belt was reduced to 80 mm (3.1 in) on either ends of the central portion ; the bow and stern were unprotected . The armored deck ranged in thickness from 40 mm (1.6 in) to 80 mm . Sloped armor , which ranged in thickness from 50 to 80 mm , connected the deck to the armored belt . The ships ' casemate guns , which were placed above the main belt , were protected by 100 mm thick armor plating , as were the 15 cm turret guns . The two 21 cm guns had 150 mm thick sides and 30 mm roofs . The forward conning tower was protected by 150 mm (5.9 in) sides and had a 30 mm (1.2 in) thick roof . The rear conning tower was much less thoroughly protected , with only 20 mm (0.79 in) worth of armor protection .

== Service history ==

Prinz Adalbert was laid down at the Imperial Dockyard in Kiel in 1900 , under construction number 27 . She was ordered under the contract name " B " . The completed hull was launched on 22 June

1901 , after which fitting out work was effected . The ship was finally completed by 12 January 1904 , the day she was commissioned into the German Navy . Friedrich Carl was ordered as Ersatz König Wilhelm and assigned to the Blohm & Voss shipyard ; her keel was laid in 1901 . She was launched on 21 June 1902 , almost exactly a year after her sister ship . After fitting out work was completed , Friedrich Carl was commissioned into the Navy on 12 December 1903 , a month before her sister ship .

Prinz Adalbert went into service as a gunnery training vessel for the fleet after her commissioning , while Friedrich Carl served with the cruiser division of the battle fleet . In 1909 , Friedrich Carl joined her sister ship as a training vessel , being used as a torpedo training ship . The two ships were re-mobilized after the outbreak of World War I in August 1914 . Both ships were assigned to Admiral Behring 's cruiser squadron in the Baltic Sea , with Friedrich Carl serving as his flagship . The squadron was based in Neufahrwasser in Danzig . Behring was ordered to undertake actions against the Russian port of Libau , which was believed to be acting as a staging area for British submarines . On the first assault on the port , on 17 November 1914 , Friedrich Carl struck a pair of Russian naval mines off Memel . The ship 's crew managed to keep the cruiser afloat long enough to allow nearby vessels to take off the entire crew ; only seven men were killed in the attack . The operation proceeded as planned , however , and several blockships were sunk in the harbor entrance .

After the sinking of Friedrich Carl , Behring shifted his flag to Prinz Adalbert . The ship conducted several operations against Russian forces , including bombardments of Libau . In May 1915 , she supported the German Army attack that captured the city . On 1 July 1915 , the ship sortied to reinforce a German minelaying operation that had come under attack by a Russian cruiser flotilla . While en route with the armored cruiser Prinz Heinrich , Prinz Adalbert was torpedoed by the British submarine E9 . The damage was severe , though the cruiser was able to return to Kiel for repairs .

Repairs were finally completed by October 1915 . Prinz Adalbert was steaming some 20 miles west of Libau in company with a pair of destroyers on 23 October when she was intercepted by the submarine E8 . E8 fired a spread of torpedoes at a range of approximately 1 @, @ 200 m (1 @, @ 300 yd) , which detonated the ship 's ammunition magazine . The massive explosion destroyed the ship , which sank immediately with the loss of 672 crew . There were only three survivors . The sinking was the greatest single loss of life for the German Baltic forces for the duration of the war .