SWEDISH SUBMARINES

Hans Ellerström
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ON SWEDISH EXPORT SUBMARINES

The Royal Swedish Navy submarines are designed to operate on the border between the two Super power blocks. Silence, shock resistance, endurance and fighting power are necessities. These properties are incorporated also in the Kockums' export submarines. Due to the frequent developments of new submarines state-of-the-art technologies, both Swedish and foreign, are offered giving the customer and supplier alike a guarantee for cost-efficiency and safety.

In June, 1987 the Royal Australian Navy signed the contract for six 2500 ton submarines of the Kockums Type 471.

In the 1300 ton range Kockums is offering the submarine Type 96, a tropicalized version of the latest Swedish development.

Also the Stirling air-independent propulsion system is offered for installation in existing submarines as well as in new classes.

Swedish submarine technologies face an exiting future.

Malmö 1989

Hans Ellerström
TYPE 471

Designer: Kockums Marine, Malmö
Builder: Australian Submarine Corporation
Customer: Royal Australian Navy
Number of units: six
Type of hull: single
Displacement: 2500 tons
Dimensions: length 76 m, beam 8 m
Armament: six 53 cm bow tubes
Propulsion: diesel-electric, one shaft
Speed surfaced: 12 knots
Speed submerged: 12 knots
Complement: 42

TYPE 96

Design: 1989
Designer: Kockums Marine, Malmö
Type of hull: single
Displacement: 1300 tons
Dimensions: length 54 m, beam 6 m
Armament: torpedoes, missiles
Speed surfaced: 11 knots
Speed submerged: 11 knots
Complement: 25
ON SWEDISH SUBMARINES

HISTORY

In National Maritime Museum at Stockholm there is a scale 1:12 model of a submarine intended for use in lieu of drawings. The model was made in 1770 by Mr D P Thunberg but no submarine was built in accordance with the model.

The first Swedish submarines appeared during the latter half of the 19th century. Mr A B Sandahl's submarine was built in 1869 and Mr S V Zethelius' submarine in 1870. Mr T Nordenfeldt became the first submarine designer to attain international reputation with his submarine of 1883. He succeeded in exporting his design but did not manage to interest the Royal Swedish Navy in it.

The first Swedish submarine, the Hajen, was launched in 1904, being designed by Commander (E) Carl Richson, RSwN. Down to the present Sweden has possessed 24 types of submarines which to begin with were designed by the Navy and built at various shipyards. However, since 1914 submarine development was gradually concentrated to Kockums at Malmö which firm since 1950 is the Swedish Submarine Design Authority.

TODAY

Submarines constitute an indispensable part of Swedish Defences and their existence has never been disputed, only their numbers. Owing to financial reasons the fleet of 24 submarines after WW II has been reduced to only 12 - a number which the RSwN are trying hard to increase. The decrease in number is partly compensated for by increasing the efficiency of each submarine. Kockums' ambition is to make each new type of submarine more cost-effective than its forerunner.

It has been found that the minimum size of an efficient submarine lies around 1,000 ton. Submarines of this size is a Kockums speciality even if considerably larger submarines have been developed.
Since 1960 six new types of submarines have been designed and built by Kockums, including a Submarine Rescue Vessel, the URF. The hull of the URF is made of HY 130 steel and the vessel is capable of diving to a depth of 500 m.

In 1988 the Swedish submarine Nåcken, originally launched in 1978, commenced operational sea-trials following the installation of an air-independent propulsion system based on the Stirling engine. The submarine is now a fully operational unit in the Swedish submarine service, and with a substantial immersed endurance.

FUTURE

Submarines have established their versatility and cost-effectiveness in the Royal Swedish Navy. The present number of submarines will be maintained and, if possible, increased.

Design work on the next Swedish submarine, the A 19, has been completed and the new submarine class will be ordered in 1990. Discussions and analyses regarding submarines for the year 2000 and beyond have begun as well as certain experiments.

Malmö 1989

Hans Ellerström
HAJEN

Launched: 1904
Builder: Örlogsvärvet, Stockholm
Type of hull: single
Displacement: 107 tons
Dimensions: length 21.6 m, beam 3.6 m
Armament torpedo: one 45 cm bow tube
Propulsion: surface/ignition engine-electric, one shaft
Speed surfaced: 8 knots
Speed submerged: 6.5 knots
Complement: 12
Rebuilt: 1916

HVALEN

Launched: 1909
Builder: Fiat-Giorgio, Spezia, Italy
Type of hull: double
Displacement: 186 tons
Dimensions: length 42.5 m, beam 4.3 m
Armament torpedo: two 45 cm bow tubes
Propulsion: petrol engine-electric, three shafts
Speed surfaced: 14.8 knots
Speed submerged: 6.3 knots
Complement: 17
Decommissioned: 1919
**UB No 2**

**Launched:** 1909  
**Builder:** Motala Verkstad, Motala  
**Type of hull:** single  
**Displacement:** 138 tons  
**Dimensions:** length 26.8 m, beam 3.6 m  
**Armament torpedo:** one 45 cm bow tube  
**Propulsion:** diesel-electric, one shaft  
**Speed surfaced:** 8.8 knots  
**Complement:** 10  
** Decommissioned:** 1929-1930

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**SVÄRDFISKEN**

**Launched:** 1914  
**Builder:** Kockums, Malmö  
**Type of hull:** double  
**Displacement:** 252 tons  
**Dimensions:** length 45.5 m, beam 4.2 m  
**Armament torpedo:** two 45 cm bow tubes  
**Propulsion:** diesel-electric, two shafts  
**Speed surfaced:** 14.2 knots  
**Complement:** 21  
** Decommissioned:** 1936
**LAXEN**

**GÄDDAN**

Launched: 1914-1915  
Builder: Örlogsvärvet, Karlskrona  
Type of hull: single  
Displacement: 140 tons  
Dimensions: length 26.7 m, beam 3.6 m  
Armament torpedo: one 45 cm bow tube  
Propulsion: diesel-electric, one shaft  
Speed surfaced: 8.8 knots  
Speed submerged: 6.6 knots  
Complement: 10  
 Decommissioned: 1935

**DELFINEN**

Launched: 1915  
Builder: Bergsunds Mek. Verkstad, Stockholm  
Type of hull: single  
Displacement: 260 tons  
Dimensions: length 42.5 m, beam 3.9 m  
Armament torpedo: two 45 cm bow tubes  
Propulsion: diesel-electric, two shafts  
Speed surfaced: 13.6 knots  
Speed submerged: 9.4 knots  
Complement: 21  
Decommissioned: 1930
UB No 1 (Hajen 1904)

Rebuilt: 1916
Builder: Bergsunds Mek. Verkstad, Stockholm
Type of hull: single
Displacement: 111 tons
Dimensions: length 23.4 m, beam 3.6 m
Armament torpedo: one 45 cm bow tube
Propulsion: diesel-electric, one shaft
Speed surfaced: 9.5 knots
Speed submerged: 6.5 knots
Complement: 12
Decommissioned: 1922
Exhibited at Marinmuseum, Karlskrona

ABBORREN
BRAXEN

Launched: 1916
Builder: Örlogsvarvet, Karlskrona
Type of hull: single
Displacement: 174 tons
Dimensions: length 31 m, beam 3.6 m
two 45 cm bow tubes
diesel-electric, one shaft
Speed surfaced: 9.5 knots
Speed submerged: 7.4 knots
Complement: 14
Decommissioned: 1937
HAJEN
SÄLEN
VALROSSEN

Launched: 1917-1918
Builder: Kockums, Malmö
Type of hull: double
Displacement: 422 tons
Dimensions: length 54 m, beam 5.2 m
Armament torpedo: four 45 cm bow tubes
gun: one 75 mm
Propulsion: diesel-electric, two shafts
Speed surfaced: 15.5 knots
submerged: 9 knots
Complement: 30
Decommissioned: 1942-1943

BAVERN
ILLERN
UTTERN

Launched: 1921
 Builders: Kockums, Malmö
Örlogsvärst, Karlskrona
Type of hull: double
Displacement: 472 tons
Dimensions: length 57 m, beam 5.8 m
Armament torpedo: four 45 cm bow tubes
gun: one 75 mm
Propulsion: diesel-electric, two shafts
Speed surfaced: 15.2 knots
submerged: 8.2 knots
Complement: 31
Decommissioned: 1943-1944
VALEN

Launched: 1925
Builder: Örlogsvarvet, Karlskrona
Type of hull: double
Displacement: 548 tons
Dimensions: length 57,1 m, beam 7,1 m
Armament torpedo: four 45 cm bow tubes
                  gun: one 75 mm, one 25 mm
                  mines: 20
Propulsion: diesel-electric, two shafts
Speed surfaced: 14,8 knots
                submerged: 7,4 knots
Complement: 31
Decommissioned: 1944

DRAKEN
GRIPE
ULVEN

Launched: 1926-1930
Builder: Örlogsvarvet, Karlskrona
Type of hull: double
Displacement: 667 tons
Dimensions: length 66,2 m, beam 6,6 m
Armament torpedo: three 53 cm bow tubes
                  gun: one 53 cm stern tube
                  one 10,5 cm, one 25 mm
                  diesel-electric, two shafts
Propulsion: 13,8 knots
Speed surfaced: submerged: 8,3 knots
Complement: 35
Decommissioned: 1943-1948
Ulven sunk by mine 1943
DELFINEN
NORDKAPAREN
SPRINGAREN

Launched: 1934-1935
Builder: Kockums, Malmö
Type of hull: double
Displacement: 540 tons
Dimensions: length 63,1 m, beam 6,4 m
Armament torpedo: two 53 cm bow tubes
two 53 cm stern tubes
Gun: one 57 mm, one 25 mm
Mines: 20
Propulsion: diesel-electric, two shafts
Speed surfaced: 15 knots
Speed submerged: 10 knots
Complement: 34
 Decommissioned: 1953

SJÖLEJONET
SJÖBJÖRNEN
SJÖHUNDEN
SVÄRDIFISKEN
TUBLAREN
DYKAREN
SJÖHASTEN
SJÖORMEN
SJÖBORREN

Launched: 1936-1941
Builder: Kockums, Malmö
Type of hull: double
Displacement: 580 tons
Dimensions: length 64,2 m, beam 6,4 m
Armament torpedo: three 53 cm bow tubes
one 53 cm stern tube
two 53 cm external stern tubes
two 40 mm
Gun: diesel-electric, two shafts
Speed surfaced: 16 knots
Speed submerged: 9 knots
Complement: 35
Decommissioned: 1959-1964
**U 1 - U 9**

- **Launched**: 1941-1944
- **Builders**: Kockums, Malmö
  Örlogsvärvet, Karlskrona
- **Type of hull**: single
- **Displacement**: 367 tons
- **Dimensions**: length 49.6 m, beam 4.7 m
- **Armament torpedo**: three 53 cm bow tubes
  one 53 cm external stern tube
- **gun**: one 20 mm
- **Propulsion**: diesel-electric, two shafts
- **Speed surfaced**: 14 knots
- **submerged**: 9 knots
- **Complement**: 26
- **U 1 - U 3 decommissioned 1960-1964**
- **U 3 exhibited at Sjöfartsmuseet, Malmö**
- **U 4 - U 9 rebuilt 1962-1964**

**NEPTUN**

- **Launched**: 1942
- **Builder**: Kockums, Malmö
- **Type of hull**: double
- **Displacement**: 550 tons
- **Dimensions**: length 62.6 m, beam 6.4 m
  three 53 cm bow tubes
  two 53 cm stern tubes
- **Armament torpedo**: one 40 mm, one 20 mm
- **gun**: three 53 cm bow tubes
  one 40 mm, one 20 mm
- **mines**: 20
- **Propulsion**: diesel-electric, two shafts
- **Speed surfaced**: 17 knots
- **submerged**: 9 knots
- **Complement**: 34
- **Decommissioned**: 1966
HAJEN
SÄLEN
VALEN
BÄVERN
ILLERN
UTTERN

Launched: 1954-1958
Builders: Kockums, Malmö
Örlogsvarvet, Karlskrona
Type of hull: single
Displacement: 720 tons
Dimensions: length 65.8 m, beam 5.1 m
Armament torpedo: four 53 cm bow tubes
Propulsion: diesel-electric, two shafts
Speed surfaced: 16 knots
submerged: 16 knots
Complement: 44
Decommissioned: 1980

SPIGGEN (X 51)

Launched: 1954
Builder: Vickers-Armstrong, Barrow
Gr. Britain
Type of hull: single
Displacement: 37 tons
Dimensions: length 16.4 m, beam 1.9 m
Propulsion: diesel-electric, one shaft
Speed surfaced: 7 knots
submerged: 9 knots
Complement: 5
Decommissioned: 1972
Exhibited at Imperial War Museum Duxford Airfield
Cambridge, Gr. Britain
**DRAKEN**  
**GRIPEN**  
**VARGEN**  
**DELFINEN**  
**NORDKAPAREN**  
**SPRINGAREN**

**Launched**  
1960-1961

**Builders**  
Kockums, Malmö
Örlogsvarvet, Karlskrona

**Type of hull:** single

**Displacement:** 770 tons

**Dimensions:**
- length 69.3 m, beam 5.1 m

**Armament torpedo:** four 53 cm bow tubes

**Propulsion:** diesel-electric, one shaft

**Speed surfaced:** 16 knots

**Complement:** 36

**Draken and Gripen decommissioned 1982**

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**ABBORREN (U 5, 1943)**  
**GÄDDAN (U 7, 1943)**  
**LAXEN (U 8, 1944)**  
**MAKRILEN (U 9, 1944)**  
**FORELLEN (U 4, 1943)**  
**SIKEN (U 6, 1943)**

**Rebuilt**  
1962-1964

**Builders**  
Kockums, Malmö
Karlskronavarvet, Karlskrona

**Type of hull:** single

**Displacement:** 388 tons

**Dimensions:**
- length 49.8 m, beam 4.3 m

**Armament torpedo:** three 53 cm bow tubes

**Propulsion:** diesel-electric, one shaft

**Speed surfaced:**
- 14 knots

**Complement:**
- 23

**Decommissioned**  
1970-1976
Sjöormen
Sjölejonet
Sjöhunden
Sjöhasten
Sjöbjörnen

Launched: 1967-1968
Builder: Kockums, Malmö
Type of hull: single
Displacement: 1125 tons
Dimensions: length 50,5 m, beam 6,1 m
Armament torpedos: six 53 cm bow tubes
Propulsion: diesel-electric, one shaft
Speed surfaced: 10 knots
Speed submerged: 10 knots
Complement: 23

Näcken
Neptun
Najad

Launched: 1978-1979
Builder: Kockums, Malmö
Type of hull: single
Displacement: 1030 tons
Dimensions: length 49,5 m, beam 5,7 m
Armament torpedos: six 53 cm bow tubes, two 40 cm bow tubes
Propulsion: diesel-electric, one shaft
Speed surfaced: 10 knots
Speed submerged: 10 knots
Complement: 19
Näcken rebuilt 1988
URF

Submarine Rescue Vehicle
Builder: Kockums, Malmö
Commissioned: 1979
Rebuilt: 1985
Type of hull: double
Displacement: 52 tons
Dimensions: length 13.9 m, beam 3.2 m
Diving depth: 460 m
Propulsion: electric, one shaft
Speed surfaced: 3 knots
Complement: 3
Rescue compartment: 35

VÄSTERGÖTLAND
HÄLSINGLAND
SÖDERMANLAND
ÖSTERSKÖTLAND

Launched: 1986-1988
Builder: Kockums Marine, Malmö
Type of hull: single
Displacement: 1070 tons
Dimensions: length 48.5 m, beam 6.1 m
Armament torpedo:
three 40 cm bow tubes
six 53 cm bow tubes
Propulsion:
diesel-electric, one shaft
Speed submerged: 10 knots
Complement: 20
NÄCKEN

1988
Kockums Marine, Malmö
single

1150 tons

length 57.5 m, beam 5.7 m
two 40 cm bow tubes
diesel-electric
10 knots
19

TYPE A 19

1989
Kockums Marine, Malmö
single
torpedoes

- submersed:
-
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