FMV Newbuilds & HFMV Designs

Fitjar Mekaniske Verksted AS

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We develop

FMV has been around since 1957. Situated on the Norwegian southwest-coast, between Bergen and Haugesund, we belong to a unique world class maritime cluster. The cluster consists of fisheries & fish farming business, offshore vessel industry and oil&gas industry on land and sea. It all began with the fish and within this branch also fish farming has developed into big business. FMV’s main focus has always been to serve and support the fisherman and now also the fish farmer. We are lucky to be a part of the cluster and proud to serve.

We develop business and have invested a lot of thought, time and money in the development of ship designs, services and construction methods, as well as new infrastructure. Our plan is to offer our customers complete services related to both newbuilds and service/conversions, and I think we are well on our way. Hitherto we have focused mainly on Norwegian owners, but have also delivered “Enterprise” and “Cristina S”. We are currently working on a fleet renewal program with a Peruvian owner, and this time with our own ship designs. Our ambition is to attract more foreign customers within all our market segments.

HFMV design is a partnership between Heimli Ship Design and FMV that started in 2010. Heimli is owned by Asbjørn Vik, son of Mr. Arne Vik (one of the founders of VikSandvik). We respect the traditions and “stand on the shoulders of giants” when we develop new fishing vessel designs, live fish carriers and workboats, and build them. We are able to combine the experience of designer and shipbuilder and together with a good cooperation with the Shipowner/Fish-farmer this gives advantages eg. in respect of arrangements and maintenance of the vessel during the lifetime. FMV has previously built 15 VS (now owned by WSD) fishing vessel designs. Currently we in total have 7 newbuilds under construction, all of which are HFMV designs.

All our workboats are built «at home», from the first plate cutting. This gives our customers, and ourselves, good control in all stages of the design and building, greater flexibility and shorter delivery time. We believe it provides for a product of higher quality, and at the same time to be more rewarding for a shipbuilder. In respect of price we believe to be competitive and we aim to give a higher value. For larger vessels we subcontract the hullbuilding since we don’t have infrastructure to build hulls of more than 30 meters length ourselves.

“We build for the future” also for little Sigmund Shipbuilder. We know there are small Freddie Fisherman’s and Frida Fishfarmer’s growing up too and in time they will carry on the traditions of harvesting from the seas. We plan to support also them when time comes!

Best regards,

Shipyard Manager

«Price is what you pay - value is what you get.»
-Warren Buffet
Investing in a new ship or a whole fleet renewal program is a significant move for most shipowners, and more often than not represents significant uncertainties. Quotas and prices, rules and regulations, “green thinking”, customers and competitors’ actions to mention some. Fisheries and Fish farming are dynamic businesses.

FMV seek to be a trustworthy and reliable partner also in questions like these and are not interested in contributing to eg. the situation we now see within offshore shipping where far too many vessels have been poured into the market. We have no need to “push equipment” because we don’t make any. We are also into service/conversions so we don’t need to do newbuilds whatever the market situation. Through our “HFMV way” (see page 10) we highlight some of these topics and believe this to be a more sustainable approach than some of our competitors.

The first shipowner to build a boat of HFMV design was Stava Sjø AS. So far we have delivered FMV201 “Smaragd” and FMV204 “Safir”, and we are currently building FMV211 “Rubin” and FMV222 “TBN” for them. It is most rewarding contributing to our customers positive development.

**FMV211 Rubin - the new Flagship of Stava Sjø**
**Design: HFMV W22, Vik class. Builder: FMV**
**Chart: 5 years for Grieg Seafood**

“**We work together so tight, that I have had weekly telecons with Mr. Sørftonn. And we have even named our dog after the Shipyard Manager.**”

- Trond Stava
  Diver, chef, entrepreneur and shipowner
Fishing vessels
FMV has delivered 15 ocean going purse seine / trawlers since 1999. Only in these years we see how fast the technology is being developed, eg. the HSG system of FMV35 “Vendla” and the cargo system of FMV36 “Harvest”. Our latest, FMV37 “Don Ole”, is the No. 1 in a fleet renewal program and will introduce new technology into Peruvian fisheries and hence, a very interesting project. Designing and building fishing vessels is our roots and obligation, and naturally our favorite activity. Therefore our ambitions in this market segment are the highest.

Workboats
We entered the workboat / fish farming market in 2010. Since then we have delivered 14 workboats and 3 feed barges, and have currently 5 workboats under construction. All of these are of HFMV design, and built completely “at home” with same quality and workmanship, methods and materials that we use for larger vessels. Together with Heimli we have contributed in setting a new standard for these kind of vessels. Our workboats are robust high capacity vessels, delivered on time. We have been lucky to make some “benchmark designs”, eg. our bestseller the “Sørfonn class”, and we have great belief in our biggest design, the “Isdahl class”, currently under construction as FMV218 “Taupo” to be delivered Spring 2016.

Live Fish Carriers
Fish farming is becoming more important year by year and when FMV entered the workboat market for the fish farming industry we knew that we would also enter into LFC design & building. Now we have, with a bang! The HFMV LFC3600 design is under construction and to be delivered in 2016. It will comprise the newest technology in cargo systems and therefore also be well suited for various fish health tasks. Together with Heimli we are also looking into other LFC designs and will continue our initiatives in this market segment.

Specialized vessels
In 2012 and 2013 FMV delivered two specialized vessels to Kystverket (The Norwegian Coastal Administration), FMV33 “OV Utvær” and FMV34 “OV Skornvær”. These are highly sophisticated, multifunctional ships, eg. with oil spill prevention / pollution control capacities. Kystverket and DNV made a functional specification and FMV + WSD (Wärtsilä Ship Design) teamed up and won the public competition. The purpose of the design was to kick-off Kystverkets fleet renewal program. FMVs experience and track record with design and building makes us well suited for participating in the development and building of specialized vessels. Such tasks are challenging and most rewarding.

Offshore vessels
During the years 2002-2009 FMV delivered 6 PSVs/MPSVs, all of Marin Teknikk designs. Since then we have performed major conversions on 7 offshore vessels, as well as service/overhauls on numerous others. There are many offshore shipping companies in our region but too few shipyards that build ships for them. These days this shipbuilding market is weak, but it will return stronger. And when it does, FMV for sure will find it interesting to serve it.
FMV Fishing vessels
- our bread and butter

We have been around since 1957 and seen a lot. We have done a lot too. Below you see pictures of our fishing vessel deliveries since 1998. Each vessel is unique and some well known. Names like “Hardhaus”, “Libas”, “Christina S” and “H. Østervold” has a ring to them. Except for one, all of them are of VS designs, made in Fitjar. The exception is the latest, FMV37 “Don Ole”, which is a HFMV PS60 design, but also made in Fitjar. Maybe this will be the best known of them all, entering Peruvian fisheries as a novelty in 2016. It is no coincidence that FMV builds purse seine / trawlers and should be no surprize that we have started designing them too.

“May the holes in your net be no larger than the fish in it.”
-Irish blessing
Live Fish Carriers
- the new fish

The Norwegian coastline and currents, our climate and cold, clean waters makes the environment perfect for seabased production of food. Since the beginning in the 1970s, also the start of our oil & gas adventure, fishfarming has turned into big business in Norway. We have succeeded with industrial oceanbased production of atlantic salmon and trout. In year 2000 we produced approx 0.5 mill. tons with a sales value of 12.5 billion NOK. 10 years later the figures where approx 1 mill. tons and 34 billion NOK. The last 20 years the average yearly production growth has been a little less than 10%. Assuming 5% growth in the years to come 2030 production will be 3 mill.tons. Many find this a realistic scenario and it is backed by the Authorities.

FMV began serving the fish farming industry for real 5 years ago. We have laid down much efforts in creating a range of workboat designs. Now we have started our journey within LFC vessels, and the first HFMV design, the HFMV LFC3600 is under construction. We expect the needs and technical development to be just as fast as what we have experienced within workboats, and plan to use the same strategy that has brought us success hitherto; rise early, keep in close contact with fish farmers, work hard and dedicated. We have it in our blood and genes, supporting people harvesting the seas.

Fish farming is our «new fish», and it will continue to grow. FMV will also take part in this adventure.

FMV and Heimli have developed the HFMV LFC3600 design together with Seistar. It took us approx 1.5 years, so this is no child’s play. The first vessel is under construction as FMV38 «Seihav» and will enter operations in 2016. «Seihav» will be able to carry loads of approx 550 tons live salmon worth more than 25 MNOK. This design is developed with both rectangular and sircular cargo holds.
Heimli and FMV have have together with various ship owners and fish farmers developed workboat designs. So far we have designed 6 different classes: 4 catamarans and 2 single hull vessels. For some applications and methods catamarans will be best suited, and for others single hull will be preferable. We see the development within the fish farming industry is taking place rapidly. This is reflected in many ways, for instance “sizes”/capacity of the plants”, technology and rules & regulations (in Norway the Sjøfartsdirektoratet (Coastal Administration) issued new R&Rs in force from 1st January 2015 for cargo vessels 8-24m length). Because of this every HFMV class is designed also with flexibility in mind. This means that arrangement, capacities and equipment can be varied so that the customer’s needs and wishes, present and future, are catered to in the best possible way. It also provides for the opportunity to future conversions being made in a cost- and time effectively way, whether it be e.g. lengthening of the Hull, introducing new deck equipment or re-arranging tank capacities.

The most important decisions in a project are made in the initial stage. The difference between good and “good enough” decisions may be big during the vessel’s lifetime. This is why FMV put great emphasis in our design process. We call it the “HFMV way”.

**HFMV Jodsdal class**
Catamaran, work- and support boat. With main dimensions LxBxD: 15 x 8 x 2.55 m, this is the smallest design class so far, but it still has great capacities. We have built 4 boats of this class, and have one under construction. The design is also built with 9 m breadth. The design has been developed in cooperation with Lerøy Vest/Sjøtroll. Their experience from operation shows that this class has a combination of capacities that cost-effectively meets their requirements.

**HFMV Sørfonn class**
Catamaran, work- and service boat. This is our best seller of which we have delivered 8 and have 2 more under construction. These boats are robust multi-purpose vessels that can do heavy duties, such as mooring and towing, as well as more specialized tasks like cleaning, disease control and diving/ROV. Main dimensions LxBxD are 15 x 12 x 3.9 m, but we have also built this design with both 10.2 and 11 m breadth. The speed is more than 10 knots, deadweight well over 100 tons, bollard pull more than 14 tons and there is ample space for 2 x 20 foot containers on deck.

**HFMV Vik class**
Catamaran, work- and cargo boat. The design is developed in cooperation with Stava Sjø. There was a need for a bigger vessel than the “Sørfonn class”, more deck space and larger crane/winches capacities, as well as more efficient transport over greater distances. Main dimensions LxBxD: 22 x 12 x 4.9 m (or 24 x 12 x 4.9m). The deck load capacity is more than 200 tonnes (there is room for 5 x 20 foot containers), cargo volume approx. 2x50m3 (2 x 75m3 if 24m length), speed approx. 11 knots. We are currently building 2 boats of this design, one of each length.

**HFMV Magster class**
Catamaran, work- and treatment boat. This design is developed with fish-health improvement efforts in mind. The idea is to install various equipment and facilities to treat salmon and trout from diseases and threats, and also for support of biological treatment methods like wrasse, e.g. various cleaning/disinfection equipment. The design is also made with ordinary workboat tasks in mind. Machinery to be diesel-mechanic or diesel-electric dependent on the role of the vessel. Main dimensions LxBxD 25x13x4.5m. This design has not been built yet.

**HFMV Reigstad class**
Monohull, work- and cargo boat. The design is developed in cooperation with Midt-Norsk Kystservice and especially adapted for work under water, e.g. layout of fish-farming plants, mooring and diving. The design will also be well suited for cable laying operations and shallow water oil pollution prevention/cleaning. Main dimensions LxBxD 20x12x4m. Superstructure arranged aft will in most operations give better overview and safer work conditions for deck crew. This design has not been built yet.

**HFMV Isdahl class**
Monohull, work- and cargo boat. Until now the largest HFMV workboat design with main dimensions LxBxD 26.25x11.6x4.35/4.6m. The design is developed in cooperation with Napier and under construction as FMV218 “Taupo”. A monohull will have advantages vs. a catamaran when operating in rough and exposed areas. Deadweight will be above 250 tons (more than 200 tons on deck), cargo room approx. 150 m3. Tonnage below 300 tons. «Taupo» will have diesel-electric machinery plant, great capacities and can be arranged also to be able to do construction support tasks and take on support roles for both LFC- and Process ships.
Whereas many other shipyards have specialized within either newbuilding or service/conversions FMV has decided to combine in order to be a “total supplier” for our customers. This is also the main reason why we have developed the HFMV designs and offer service agreements to some of our customers.

During 2014/15 we have invested close to 50 MNOK in various infrastructure, tools and service methods. Some of these to increase our capacity and efficiency within service/conversions of workboats and feed barges. One of our most notable investments is the Roodberg PHP300 “driving boat crane”. With this machine FMV will be able to serve many boats simultaneously and also take on short-time tasks like disinfection/cleaning. “Karlsvogna” can lift up to 300 tons and will come in handy for both FMV and all serving the fish-farming industry in our region.

FMV has made many conversions, of both smaller and larger vessels. Below you see some examples of larger. Such tasks are challenging since they involve existing vessels, some of considerable age, and most times there is an off-hire element in the equation. In some cases conversions means introducing new technology, like salmon louse treating equipment. For conversions you need good engineers and experienced blue-collars, flexibility, capacity and round the clock efforts. It takes something extra from the shipyard to be able to combine newbuilding and service/conversions.

**Geowave Champion**  
*From trawler to seismic vessel*

**Skandi Chieftain**  
*From PSV to ROV*

**Northeastern**  
*From purse seiner to crab fishing vessel*

**Skandi Commander**  
*From PSV to ROV*
There is nothing a shipowner appreciates like fast, high quality service at a reasonable price. And there is nothing so much disliked as the opposite. Much of the success factors lies in the preparations, work methods and equipment. But the masterkey to success will always be high skilled and motivated employees. This is reflected in the FMV slogan “Better ones!” (in Norwegian: “Berre goe!”).

FMV offers service agreements to some of our customers and we are also able to take on “warehouse” functions to be able to efficient mobilization / demobilization of offshore vessels and workboats to mention two examples.

We have also established a FMV Travel Team to go wherever the customers require. If you can not come to FMV, we may come to you.

«Whether you think you can or think you can’t - you’re right.»
-Henry Ford

The Roodberg PHP300 driving boat crane makes FMV able to take on service/conversion work for multiple customers simultaneously, and at the same time be able to perform short-time assignments like disinfection/cleaning of workboats serving the fish-farming industry.
Our ambition is to offer good designs for workboats, purse seine / trawlers and live fish carriers. All of them to be based on “sound engineering”, operational experiences and state of the art technology. We believe our Shipyard experience contributes to better arrangements and more precise cost/benefit analyses, in addition to also caring for maintenance aspects and flexibility during lifetime of the vessel. Our “HFMV design chart” is a way to present our design methodology. We give attention to the “big issues” early on so that we avoid “the design spiral of death” during later design stages or construction.

The HFMV way:

**Economy:**
- Cost / benefit analysis
- Building cost
- Operational cost
- Sensitivity analysis
- Profitability
- Finance

**Performance:**
- Resistance and speed
- Power and consumption
- Dimensions and strength
- Equipment for cargo and deck
- Redundance and maintainability
- HSE aspects

**Shape:**
- Main dimensions
- Hull shape
- Tank arrangement
- Deck arrangement
- Volume and volume balance
- Weights and weight balance
- Trim and stability

**Function:**
- Cargo systems
- Machinery and propulsion systems
- Ship systems
- Crew and accommodation
- Power / speed
- DWT / draught
- Tonnage
- New technology
- Alternatives

**Result:**
- General Arrangement
- Building specification
- Makers List
- Main arrangements
- Project plan
- Contract

**Mission:**
- Mission and operational area
- Performance and capacities
- Constraints and R&Rs
- Lifetime and flexibility
- Shipowner situation and needs
- Cargo owner situation and needs
- Entry and exit plan
- FMV key figures and experience

**FMV37 “Don Ole”, a HFMV PS60 design made in cooperation with Austral Group /Austevoll Seafood, optimized for Peruvian needs. The vessel will introduce new technology and set a standard for cargo treatment.**
The FMV management team consists of 8 men with the right attitude and experience. Our ambition is to be good individuals and the best team (not necessarily the best individuals) compared to other shipyards. We know that the fight is always ongoing, and in the end it is a matter of good everyday operations and being able to take the right long term decisions.

Die Mannschaft

“FMV does not only design and build ships. We make shipbuilders, contribute to our customers success and a living community. We are responsible of carrying the rich traditions of Norwegian shipbuilding to future generations. I am optimistic in respect of the future of FMV.”

Hugo Strand
We build for the future

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