AN OPTIMISTIC OUTLOOK FOR 2014

As we enter into 2014 Nammo has just finished another great year in many respects. We have continued to grow our already wide portfolio of products and at the same time successfully produced and shipped more than any other year in the history of Nammo.

We are proud to see the successful growth in our rocket motor activity as well as in certain ammunition segments. The company continues to put substantial efforts into R&D, which in turn results in more advanced products and sometimes also new solutions in our customers toolbox.

In spite of a more challenging market with substantial more pressure on defense budgets, we continue to offer attractive solutions and thus maintain Nammo’s strong and growing position in the ammunition and rocket motor business. We will continue to grow in the coming year, but in a more challenging market we will have a cautious and realistic approach.

In all aspects of our business we will strive to still improve. Only by doing that can we continue to offer attractive and affordable solutions and at the same time strengthen the overall reputation of Nammo. It is my hope that you will all enjoy the content of this Bulletin, and that we will see you at one or more of our many events throughout the year.

Edgar Fossheim, President and CEO

EDITORIAL

Throughout 2013, economic and political instability greatly affected the international business community. The defense industry was no exception.

Delays and contract cancellations led to budget-tightening and cuts. This resulted in a number of lay-offs within the defense sector, and it’s unlikely we will have seen the end of it. Nammo was also affected by the national budget cuts, with some of its production sites forced to reduce employee numbers.

Fortunately, due to our diverse product range, we have had considerable success in areas such as energy, rocket motors and demilitarization. Our ongoing technological programs are moving forward, and we are optimistic for the future. In parallel, we have been active within Mergers and Acquisitions (M&A), and concluded the year with three new acquisitions. You can read more about them in the following pages.

Nammo’s participation in the UN Global Compact gives us valuable support and insight, helping us to improve our work within Corporate Social Responsibility. We take this duty seriously and have decided to focus our work around four topics of importance, which are presented in this issue.

At Nammo, we are committed to strengthening our production lines, and improving our cross-country cooperation to become an even stronger and more united company.

The articles in this issue of Bulletin reflect and highlight our core values.

Regardless of what challenges 2014 brings, we will continue to deliver on time successfully produced and shipped more than any other year in the history of Nammo.

Sissel Selum, Senior Vice President Communication, Nammo Group

OUTLOOK FOR 2014

Although we have faced challenges in the defense industry, we continue to offer attractive solutions and maintain our strong position in the global market. The company is committed to improving in all aspects of our business.

NAMMO

The Nammo Group, headquartered in Raufoss, Norway, is a technology driven aerospace and defense group specializing in high-end products.

CORE BUSINESS

The core business of the Nammo Group is the development, testing, production and sale of military and sport ammunition, shoulder launched munition systems, rocket motors for military and space applications and leading global services for environmentally friendly demilitarization.

ORGANIZATION

Nammo is present in nine countries with a total of 21 production sites and four sales offices.

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MAXIMIZED FIREPOWER

By Peter Høskov, Technical Marketing, Small Caliber Division

As Nordic countries evaluate new armament for their helicopter door gunners, Nammo’s 7.62 mm ammunition is being put to the test.

Mounted on the side of helicopters, 7.62 mm Miniguns have a firing rate of 3,000 to 4,000 rounds per minute, providing extreme shot density that can suppress and defeat multiple targets in a short time period. To maximize the effect of the weapon, the Nordic Defense Forces have chosen to test Nammo 7.62 mm BNT High Performance (HP) rounds and Infrared (IR) Tracer rounds.

A standard lead core 7.62 mm bullet-round has very little effect on targets beyond 500 meters, and has reduced or no effect behind lightweight protection such as car doors or light walls. However, the Nammo 7.62 mm BNT HP round carries a steel core, giving the gunner maximum force against all types of targets.

Aiming at and following targets is far more difficult from a moving aircraft, so the gunner must use tracers for guidance. Tracers play a very important role in the ammunition mix because it is almost impossible to use a sight whilst airborne.

The ability to fire accurately from a helicopter in darkness is also critical – especially during take-off and landing, when the door gunner must distinguish between friend and foe. Standard tracers can disturb Night Vision Devices (NVDs), create a halo effect, and limit the door gunner’s awareness of the combat scene. They also disrupt pilots and other crew members.

Nammo has solved this problem by developing 7.62 mm IR Tracers. The 7.62 mm IR Tracer will not impede the door gunner or the helicopter crew during firing. It also has a long trace distance of 1,250 meters, which enables the gunner to engage a greater range of targets.

Helicopters can only carry a limited supply of ammunition, but with the accuracy and power of the HP and IR Tracer ammunition, engagement from the air is more efficient. This helps to conserve bullets, while remaining effective against a large number of targets protected in various ways.
The Nammo MP-symposium may have been postponed to 2014, but with developing challenges in the marketplace, increasing competition and defense cutbacks, action must be taken. That’s why Nammo hosted a training camp for its global representatives from September 17–19 in Raufoss, Norway. Almost 30 Nammo representatives participated in the training camp. They were briefed on product statuses and the latest developments in Nammo’s range of military ammunition. They were also informed of Nammo’s ambitions to grow and improve the business, as well as the high quality levels they expect everyone to meet in order to achieve this.

The training camp involved a combination of product presentations, demonstrations, and briefings on subjects such as ITAR, import/export regulations and future munition development projects to inspire and encourage the Nammo representatives.

Nammo’s product and sales managers also joined the representatives to help them gain a deeper insight into the company’s portfolio, and understand why it is superior in the marketplace. The Ammunition Handbook was specifically developed to support this.

The representatives were reminded that Nammo’s customers operate with a long-term perspective. Their decisions are made based on quality, reputation, effect-on-target, price and delivery time – and Nammo must continue to deliver on all of these.

**A GROWING AMBITION**

By Berend van Hoek, Sales & Marketing Director, Medium & Large Caliber Division

Nammo’s 2013 training camp for its worldwide representatives reinforces the company’s market leadership.

The Nammo MP-symposium may have been postponed to 2014, but with developing challenges in the marketplace, increasing competition and defense cutbacks, action must be taken. That’s why Nammo hosted a training camp for its global representatives from September 17–19 in Raufoss, Norway. Almost 30 Nammo representatives participated in the training camp. They were briefed on product statuses and the latest developments in Nammo’s range of military ammunition. They were also informed of Nammo’s ambitions to grow and improve the business, as well as the high quality levels they expect everyone to meet in order to achieve this.

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**PRECISION AT A DISTANCE**

By Thomas Danbolt, Program Director, Medium & Large Caliber Division

The Norwegian Armed Forces have selected Nammo to develop and deliver new 40 km range, standard 155 mm ammunition.

Having long relied on Nammo’s precision ammunition for use in a variety of battlespace scenarios, the Norwegian Armed Forces are now adding the enhanced 155 mm to significantly strengthen their artillery. The newly developed ammunition will enable Norwegian forces to counter threats more efficiently at greater distances.

The ammunition is currently undergoing testing and is due to be delivered by 2016.

**SAME AMMO, BETTER RESULTS**

The new 155 mm ammunition will be developed in collaboration with BAE Systems Bofors. This partnership will see the ammunition updated and modified to suit the specific needs of the Norwegian Armed Forces. The high explosive round travels up to 40 km when fired from a gun with an LS5 barrel. Through enhanced fragmentation, the ammunition better penetrates lightly armored vehicles, delivering greater impact on the enemy.

With improved IM capabilities, the ammunition’s sensitivity will also be greatly reduced, making it safer in transportation, storage and operational use. The combination of its long range and IM-properties makes this round superior to other conventional non-IM rounds on the market.

**DARK LIGHT AND SMOKE SCREENS**

In addition to the high explosive 155 mm ammunition, Nammo will also deliver smoke and illumination rounds to the same precise standards, improving the distance and effectiveness of both.

The 155 mm smoke round travels up to 40 km and burns for no less than 120 seconds. Based on a Swedish design, the round has been modernized for typical Scandinavian conditions, with wings developed to ensure the round lands smoke-side up and stays there, making it effective even in heavy snow.

Nammo has also developed illumination rounds with Scandinavian climates in mind. The round is capable of reaching up to 40 km, and is extremely effective in low-lying cloud cover. The infrared illumination round is only visible to those wearing night vision goggles, and has been developed for the Norwegian army, enabling them to better combat low-tech enemies without infrared capabilities.

Both the two illumination rounds and the smoke round can travel twice the distance of other products on the open market, making them far more effective in operations.

Nammo’s global team consists of engineers in Norway, Finland, and Sweden – all working together to develop and deliver a new complete family of long-range artillery rounds. It is all part of the One Nammo philosophy.
APEX AMMUNITION PUT TO THE TEST

The APEX program carries out a successful firing test with an F-5 Freedom Fighter aircraft.

In September of this year, APEX ammunition was tested at Nammo’s test center in Raufoss, Norway, following the donation of an F-5 Freedom Fighter aircraft from the Norwegian Defense Forces.

A total of seven rounds were fired: two at the wings, two at the tail wing, one at the front fuselage, one at the cockpit and one at the fuel tank.

Each round caused lethal damage to the aircraft. In fact, if the aircraft had been airborne, each shot would have caused it to either crash or need to land. The last round, fired at the fuel tank, caused a fire that completely devastated the aircraft.

The aircraft was comprehensively damaged due to the way in which the 25 mm APEX ammunition is designed to function. Traditional ammunition detonates the moment the round hits the target, but a mechanical fuse in APEX ensures the round detonates with a delayed reaction after it has penetrated the target.

In addition to the fragments and detonation pressure, APEX also has an incendiary effect. This makes the ammunition incredibly effective against air targets, and in air-to-air combat situations.

The ammunition is also very effective against all types of ground targets, including semi-armored vehicles.

The development phase of APEX ammunition was completed in August 2013, and the ground qualification phase is currently in progress. The 25 mm APEX ammunition is being developed for the GAU-22/A Gatling gun on the new F-35. It will be aircraft-certified for all three variants of the F-35: Conventional Take-Off and Landing (CTOL), Short Take-Off and Vertical Landing (STOVL) and the Carrier-Version (CV).

For decades, Lapua’s Scenar bullet has been the first choice for target shooting competitions. But a few years ago, Lapua decided to challenge its own capabilities and develop a new family of bullets that would outperform all others on the market, including their existing Scenar bullet family.

By using an entirely new approach, Lapua was able to design the unique ScenarL.

Lapua began by analyzing every step in the manufacturing process, developing new tools for its state-of-the-art machines, and creating new standards for raw materials. The new bullets featured redesigned ballistics and tighter tolerances. Even the measuring systems were upgraded to achieve the highest level of accuracy – a first in bullet manufacturing.

The new ScenarL has since proven to be the perfect choice for serious match shooting. At the Norwegian Championship Landskyttersammet 2013 in Norway, all major titles were won using the 6.5 mm ScenarL. Odd Kolsrud became double champion of field and range, Mette Isene was crowned Shooting Princess, and Kim-André Lund won the title of Shooting King.

The success of ScenarL was the result of Lapua’s dedication to precision and performance. As Kim-André Lund said at Landskyttersammet 2013: “The ammunition is incomparable.”

By Eva K. Friis, Program Director APEX, Medium & Large Caliber Division

Lapua’s new ScenarL bullet has proven to be the perfect choice for competitive shooting.

Lapua’s Research and Development department chose to create the new bullet family using the most challenging caliber – 6 mm. By working with the manufacturing team, they succeeded in reducing the group size from 50 mm to 30 mm, whilst retaining its 300 m range capability.

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Lapua’s new ScenarL bullet has proven to be the perfect choice for competitive shooting.
New product represents a technological leap for naval and ground operations.

In order to minimize collateral damage in the field, it is vital that ordnance energy is delivered on target, and impact energy is released exactly where it is required. Nammo uses computer simulation tools to optimize munitions, and this continued effort in developing precision ammunition is central to limiting additional casualties.

Tailored towards anti-material requirements, Nammo product developments and performance specifications are fully compliant with NATO and MOPI standards. The products are optimized to stop vehicles, fire through walls and impact a variety of other structures.

Nammo is able to react fast to meet special requirements from international operations by using its own test facilities, and taking advantage of its design and engineering skills to qualify new products more quickly.

**ADVANCED AMMUNITION**

In a recent program for U.S. Defense Forces, represented by the U.S. Navy and NSWC (Naval Surface Warfare Center) Dahlgren, it was concluded that the Mk258 mod 1 APFSDS-T Swimmer round is one of the most advanced ammunition technologies available.

The novel projectile design of the Mk258 mod 1 enables precision shooting in-air and in-water, expanding the lethality of ship-based cannons like the MK44. Previous analytical studies of water-penetrating projectiles concluded that a normal spin-stabilized projectile is ineffective at maintaining stability after water entry. This means immediate stoppage of the projectile and zero impact on a submerged target.

But the Mk258 mod 1 projectile is a fin-stabilized projectile. It is based on the same components as the MK258 mod 0, which was originally designed for use with the Norwegian Armed Forcuss OVF03IN combat vehicle. The only modification made is the nose shape of the tungsten penetrator.

The nose-shaped configuration was originally patented by the U.S. Navy and NSWC Dahlgren, but was never turned into functional ammunition. Nammo, NSWC Dahlgren and FFI (Norwegian Defense Research Establishment) carried out a comprehensive study that resulted in the final design configuration of the penetrator nose.

Today, Nammo’s Mk258 mod 1 ammunition is used on board the LPD-17 and LCS class of U.S. Navy ships. This has significantly increased the fleet’s capability to defeat aerial and surface threats, as well as submerged threats like torpedoes and mines.

**EXCALIBUR DEMANDS PRECISION PROTECTION**

Nammo’s Utah operation is awarded a competitive contract from Raytheon for the manufacturing of an all-metallic canister for the Excalibur precision projectile program.

Excalibur is used by the U.S. Army and U.S. Marine Corps artillery. It’s currently being developed in a program run by Raytheon (USA) and BAE Systems (Sweden). Raytheon claims that it takes at least 10 conventional munitions to accomplish the same effectiveness as one Excalibur round.

High-performance munitions, such as the Excalibur, require robust canisters for protection during transportation. Traditionally, protective ammunition canisters are government-furnished materials. Today, Department of Defense customers are increasingly looking for munitions manufacturers to provide their own canisters.

The Excalibur product line fits well within Nammo’s existing launch canister offerings. This includes the integrated composite and metallic Tube-launched, Optically-tracked, Wire-guided (TOW) missile case, which was developed in just under 18 months between Nammo’s Utah team and Raytheon. The TOW case development and affordability program resulted in Nammo winning a Raytheon Missile Systems’ supply chain customer service award for 2012. Nammo’s Utah operation also developed the inner and outer launch canister for the Non-Line-of-Sight (NLOS) program under contract to Raytheon.

The current Excalibur order includes fabrication of more than 2,700 canisters. They are made from multiple steel stampings, which are welded and then painted with a corrosion protection solution. The canisters feature non-metallic gaskets and windows that are Electromagnetically (EMI) shielded and the entire canister is Insensitive Munitions (IM) compliant.

Nammo CS (Composite Solutions) business unit has been operating in Utah for over 20 years. It provides lightweight, carbon-fiber reinforced aerospace components to tier 1 aerospace firms such as L-3 Communications and Raytheon Missile Systems. However, Nammo CS has a diverse portfolio of recreational component customers, such as Cannondale bicycles, Really Right Stuff camera tripods, and Two Brothers Racing motorcycle exhausts. It also provides components to the energy exploration and energy storage industries.
PERFORATION PERFORMANCE

By Brian Pitstick, Product Line Director, Energetic Material Solutions, Nammo Talley

Nammo Talley breaks into the oil and gas market with new proprietary perforation technology – saving time and money for American exploration companies.

Extracting oil and gas can be extremely expensive and time-consuming, so exploration companies are constantly seeking out new technologies to support more efficient and reliable processes. One such process involves the perforation of rock using specialized perforating guns which use pre-positioned explosive shape charges to create passages in the underground rock formation to release oil and gas. Nammo Talley has launched a new product line called Nammo Energy Solutions (NES) with two new products to address the energy industry demand for higher performing energetic devices.

The perforating process starts with an upwell initiating signal that activates a percussion primer, that ignites a time delay fuse. The purpose of the time delay fuse is to delay the transfer of the energetic pulse for a set period of time, typically 6 minutes or 10 minutes, to offset the firing of each gun when they are connected in series. After the time delay fuse functions, a High Pressure Initiator (HPI) ignites a booster charge which initiates the detonating cord connected to the shape charges. Each element of the perforating tool set must function correctly or the entire tool set must be removed from deep within the well bore, replaced and repositioned back into the well, which is very expensive. Therefore, the perforation process must be reliable with minimal performance variation. Developing a product with improved reliability was a challenge that Nammo Talley accepted in order to enter this highly competitive market.

Using innovative, proprietary technology, Nammo Talley has developed a pyrotechnic time delay fuse and High Pressure Initiator which triggers the perforation gun at a higher reliability and with less variation than competitor products - this results in a time and money savings for the customer.

Perforating gun technology is used in both oil and gas wells where drill depths can exceed 1,500 m and temperatures can be as high as 225 C. As well depth increases, so does the temperature, which creates a very demanding operating environment for an energetic device. The higher temperatures cause the duration of the time delay event to vary widely in competitor products. The NES time delay solves this problem with an innovative fuse manufacturing process.

Nammo Talley technological capabilities have enabled the development of world-leading solutions in a number of industries, and the future could bring much more for Nammo Talley in this ever-changing market.

Brian Pitstick, Product Line Director for Nammo Talley Energetic Material Solutions acknowledges the potential benefits, but insists there are still challenges ahead: “There are certainly a lot of opportunities in this market. However, for us to reach those opportunities, it’s critical that Nammo provides a good product and develops strong customer relationships,” he said.

As technology in the energy market continues to evolve, so do the challenges. It means more and more businesses in this sector are looking to companies like Nammo Talley for new, innovative solutions.

Figure 1: Perforating process

Figure 2: Perforating gun energetic train

Figure 3: NES time delay fuse

Figure 4: NES High Pressure Initiator

PRECISION ENGINEERING THAT PILOTS RELY ON

By Brian Pitstick, Product Line Director, Energetic Material Solutions, Nammo Talley

Nammo components stand strong as pilots eject to safety in a B-1B bomber crash.

On August 19, 2013, a B-1B bomber crashed in Montana while performing a training exercise. All four crew members ejected safely from the aircraft thanks to the ACES II ejection seat, and the Nammo components inside. The airmen sustained non-life-threatening injuries.

Nammo Talley manufactures three critical components for the ACES II seat. The seat is also used on the F-16, F-15, A-10 and F-22. Nammo Talley also manufactures the B-1B escape hatch rocket motor.

“These events remind us how important our work is to service members, their families and our country,” Brian Pitstick – Product Line Director for Nammo Talley Energetic Material Solutions

Nammo Talley’s advanced propellant technologies and manufacturing capabilities were the cornerstone of the company when it was founded over 50 years ago. Today, that expertise continues to drive the company forward, ensuring the production of world-leading solutions in the aircrew escape system market.

“Each time our airmen buckle into their aircraft, they are counting on our dedication, precision and care to build these products right, every time.” Brian Pitstick, Product Line Director for Nammo Talley Energetic Material Solutions.

Ejections are thankfully rare, but when ejection seats are activated by pilots, each component must perform its job flawlessly. Since the company was founded, Nammo Talley has had components in nearly every major US aircraft.

The B-1B crew was instructor pilot Major Frank Biancardi II of Middletown, Massachusetts; Instructor Pilot Captain Curtis Michael of Albion, Nebraska; Instructor Weapons Systems Officer Captain Brandon Packard of Ashland, Kentucky; and Instructor Weapons Systems Officer Captain Chad Nishizuka of Kailua, Hawaii.

Nammo Talley also manufactures the B-1B escape hatch rocket motor.

By Brian Pitstick, Product Line Director, Energetic Material Solutions, Nammo Talley
INVESTING IN THE FUTURE

By Hans Fredrik Hansen, Vice President Marketing & Sales, Missile Products Division

New facilities will enhance Nammo’s growth and improve our security of supply.

August 28, 2012 is a date to remember in the history of Nammo Raufoss. On this day, the new Rocket Motorcase factory was officially opened by Roger Ingebrigtsen, Secretary of State at the Ministry of Defense, and Edgar Fossheim, CEO of Nammo.

Many honorable guests were present during the opening ceremony, including Nammo customers, officials from the Ministry of Defense, local mayors from the county of Vestre Toten and Spikvik, and employees of Nammo Missile Product Division. The ceremony even made it into national news and television.

Topping NOK 75 million, the new factory represents Nammo’s biggest investment to date. To build the factory, it took: more than 5,800 kg of explosives; over 4,000 truckloads of various rock, gravel, and crushed stone; approximately 500 truckloads of concrete; more than 200 tons of steel; and around 30 man years.

Careful planning was at the core of the project. It was this scheduling that ensured the factory was opened on time, personnel were trained and competent in new processes, and new machines and equipment were installed and ready for use.

The construction of the building and its infrastructure took only seven months – an incredibly short timescale when considering all the logistics involved.

As well as being acoustically sound, the factory has been designed to operate with minimal environmental impact. A heat pump for keeping the building warm and air recyled from the ventilation system, together with new light bulb technology combine to create an incredibly energy efficient factory.

Everyone involved in the project performed at the highest level, ensuring Nammo’s core values of dedication, precision and care were upheld throughout the process. And although the construction site was extremely busy and crowded, there was a 100% safety record throughout the project.

Today, a little more than a year since the opening, production in the new factory is running according to plan.

The production processes have been fine-tuned and qualified, and the first AMRAAM with an all-Nammo-motor has been successfully delivered.

ROCKET MOTORCASE MAKES HEADWAY

By Tom Snipstad, Program Manager, Missile Product Division

A little over a year ago, the Rocket Motorcase factory was opened at Nammo Raufoss. The factory is now in full production delivering rocket motors.

By Hans Fredrik Hansen, Vice President Marketing & Sales, Missile Products Division

In June 2012 Nammo decided to expand its current rocket motor plant at Raufoss by adding a second production mixer and a parallel assembly line adjacent to the existing mixer and assembly line. The new manufacturing facility will be completed and ready for series production from 2nd Quarter 2014.

The plant was originally established in 1979 for production of Sidewinder AIM-9L, and has flawlessly produced thousands of advanced rocket motors for air-to-air, ground-based forces had the honor to push the button to ignite the hybrid rocket motor.

Forces had the honor to push the button to ignite the hybrid rocket motor. LtGen Jarmo Lindberg from the Finnish Defense Secretary of State Roger Ingebrigtsen and CEO Edgar Fossheim cut the ribbon and declare the Rocket Motorcase factory open.

In June 2012 Nammo decided to expand its current rocket motor plant at Raufoss by adding a second production mixer and a parallel assembly line adjacent to the existing mixer and assembly line. The new manufacturing facility will be completed and ready for series production from 2nd Quarter 2014.

The plant was originally established in 1979 for production of Sidewinder AIM-9L, and has flawlessly produced thousands of advanced rocket motors for air-to-air, ground-based air defense and anti-ship missiles, as well as space applications. The existing mixer and assembly line is still in very good shape, but it has been our strategic goal for many years to also have a second mixer and a parallel assembly line which can expand our product portfolio.

The additions will offer great market potential for further business growth by providing the capability to produce high volumes of Class 1.1 min-smoke propellants, PBX, and other types of explosives. It will also serve as a backup for the main mixer and enable double mixing capacity if needed for conventional composite propellants.

The current main mixer, a Baker Perkins 300 gallon, has proven to be extremely robust and reliable so the new mixer was ordered to be mechanically and functionally identical. With the new twin mixer operational, Nammo will significantly improve our security of supply as we can run uninterrupted production in case of needed maintenance/repair or in worst case severe damage to the main mixer. This is a feature we know is very important for our customers.

HYBRID TEST FACILITIES

Nammo has been working with hybrid propulsion technologies for 10 years, and significant progress has been made in developing space hybrid rocket motors that utilize hydrogen peroxide, including long-term storage facilities and data recording equipment. The facilities enable testing for a full range of hybrid rocket motors, from small-scale lab motors (1kN), up to large motors for two-stage sounding rockets (500kN). This test facility is unique in Europe, and puts Nammo in a good position to compete for further contracts.

The primary market segment for hybrid rocket motors is currently space applications. Nammo has already been awarded several contracts from the EU and the European Space Agency (ESA), including a recent development contract for the Future Launchers Preparatory Programme (FLPP). In the EU-supported Spartan program, Nammo is already responsible for a hybrid rocket motor for a moon landing vehicle.

The new investment, hybrid testing can now be performed in Raufoss.

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ENSURING SAFE AMMUNITION DISPOSAL

By Christoph Rüssel, President Nammo Buck

Switzerland sign demilitarization contract with Nammo

Nammo has received an order from Switzerland to dispose of its ICM 155 mm munition beginning in December 2013 until 2017. The ICM 155 mm is a cluster bomb containing between 49 and 84 small bomblets. Cluster munitions are particularly dangerous because they remain unexploded, posing a delayed threat to civilians working and living in the surrounding areas. In 2008, the Convention on Cluster Munitions outlawed cluster bombs, prohibiting their production and use and establishing a framework for their removal and destruction. As part of the contract, 5,000 cluster bombs will be delivered every month to Nammo’s demilitarization site in Pinnau, Germany.

Nammo will first begin its demilitarization procedure with opening the shell. Next within a safety cell the bomblets will be separated (as shown in the picture), fuzes are cut and incinerated, eventually being put aside for scrap metal. The disassembling and disposal process is fully automatic, and is monitored from a control room, which minimizes risk to personnel. The warhead is also thermally treated at a specialized, low-emission plant using certified technology.

With its dedicated demilitarization division, Nammo is the leading supplier of demilitarization services for ammunition and explosive products. It has a broad range of in-house technologies and equipment to ensure environmentally friendly recycling and disposal processes. Nammo has extensive experience and has already demilitarized more than 350,000 cluster bombs for Germany, Japan, the UK and the Netherlands since the convention was signed.

MODULAR GRENADES FOR CHANGING BATTLEFIELDS

By Brian Pitstick, Product Line Director, Energetic Material Solutions, Nammo Talley

Nammo awarded contract with US Special Forces for a scalable grenade – enabling more flexibility and modularity for the modern day warfighter.

Founded in 1912 to produce propellants and explosive materials, the Nammo Vihtavuori factory in Finland is now a world-leader in hand grenade production. The Vihtavuori plant manufactures, among others, grenades that do not produce fragments – so when they are thrown in a confined space, only a blast effect is created. These non-fragmenting grenades are referred to as “Offensive Grenades” since they are used in offensive operations where the desire is to minimize unintended destruction of structures and assets typically caused when lots of metal fragments are generated. Nammo has been providing a limited number of users within the U.S. Special Forces community with a couple of sizes of these offensive grenades for several years with great success. Users have come to know these grenades as “Nammos”. Now the customer wants to expand their deployment of grenades.

The U.S. Special Forces require a grenade that is modular and flexible – something they can adapt on-the-fly to suit a specific situation. Under a newly awarded contract, Nammo will deliver a unique scalable grenade that consists of multiple modules that can be attached together. This means users can modify the grenade to suit the mission – selecting fewer modules for a smaller blast, and more for a greater blast. It provides an incredible integrated capability for the warfighter. By having the right amount of blast effect, it’s easier for soldiers to control collateral damage while still ensuring target defeat, making operations more effective and efficient.

Winning the customer was a tough task, but through the spirit of “One Nammo”, the contract was successfully won. Brian Pitstick, Energetic Material Solutions Product Line Director, explains: “It was a competitive bid, and we had some very tough competition, but through the cooperation between the team here in the US and in Vihtavuori, we were able to prepare a very competitive package and we ultimately won the contract.”

Without close communication between Nammo Lapua Vihtavuori and Nammo Talley, it would not have been possible to develop a proposal and deliver initial samples that met all of the customer requirements. This particular customer required that working product samples be submitted along with the proposals. Setting the samples built, tested and shipped from Finland to the U.S. by the proposal deadline was quite a challenge. Nammo Talley’s expertise, with the customer combined with the technological ability of the Vihtavuori plant allowed the customer to get exactly what they required.

The grenade is currently in development, and first qualification samples are expected to be ready by June of this year. The potential of this new modular grenade is vast. When the Special Forces start to use new technologies, it won’t be long before other areas of the military take notice. This could be the catalyst for other players requiring Nammo’s specialized hardware and advanced technology – and the start of another fruitful relationship with a world-leading customer.
BREAKING BARRIERS, BREAKING RECORDS
By Sissel Solm, Senior Vice President Communication, Nammo Group

In December 2013, Nammo announced its partnership with the BLOODHOUND SSC – supersonic car – project.

The BLOODHOUND SSC project is Britain’s latest attempt on the World Land Speed Record with a car capable of 1,000 mph (1,609 kph). The project will inspire future generations to pursue science, technology, engineering and mathematics – showcasing these subjects in the most exciting way possible in schools, colleges and universities.

Nammo’s role in the project is to supply the hybrid rocket technology for the BLOODHOUND supersonic car which is currently being constructed in Bristol, UK.

BLOODHOUND’S Chief Engineer Mark Chapman said: “Nammo is a great addition to our team. Their technology is outstanding, as are their test facilities. Most important is their enthusiasm for being part of this unconventional, high-profile engineering adventure. They share our passion for inspiring the next generation of engineers and innovators.”

One of Nammo’s main strategies within its sponsorship guidelines is to focus on technology and education within science and engineering. The BLOODHOUND engineering adventure is a project that matches this strategy perfectly.

STRONGER TOGETHER
By Jeff Stephens, Vice President Integrated Supply Chain, Nammo Talley

In true spirit of the “One Nammo” philosophy, the Executive Vice Presidents and Procurement Leaders from each business unit are working together to leverage the company’s purchasing power and overcome its supply chain challenges.

The Nammo Global Procurement Forum was conceived in April 2013, when Procurement Leaders from four of Nammo’s divisions collaborated at a supplier conference in Mesa, Arizona. From this initial meeting, the participants had many cost-saving ideas, and they began initiatives to gather and compare information. During a later meeting in August 2013, the fifth division was added.

The Nammo Global Procurement Forum participants are: Dla Pikner – Demiil Division, Paul Erik Hattsedt and Iver Myrhagen – Medium/Large Caliber Division, Per Olav Moen and Rolf Vidar Gunnarrud – Missle Products Division, Don McShane, Jeff Stephens, and Al Yaruss – Nammo Tallay, Mika Miettalo and Pete Charninski – Small Caliber Division. A representative from Pocal Industries (recently acquired by Nammo) will join in the near future.

Nammo is committing many resources to the Procurement Forum project. The diligent work of the participants and the support of Nammo as a whole will ensure it lives up to its mission statement: “Nammo strives to secure the future by functioning as a ‘One Nammo’ procurement body. We aim to conduct the best ethical practices and leverage Nammo’s position with our global supply base in order to yield best value for all Nammo divisions.”

The groundwork put in place is certain to lead to future success. However, some of the forum’s achievements are already clear. They include: stronger, more productive relationships between division procurement departments, ensuring that common purchase order terms and conditions are applied across divisions, global mapping of energetics and packaging procurement suppliers, and implementing an active Nammo agreement with one supplier covering all purchases for three Nammo divisions.

Future plans include establishing a common information base to share key strategic supplier data, sharing successful existing price agreements, continued management of the current rolling action item list, and establishing reporting methods and standards for the Global Procurement Forum goals.

GROWTH THROUGH ACQUISITION: POCAL INDUSTRIES
By Ola Skrivervik, Senior Vice President Business Development, Nammo Group

Pocal Industries joins the Nammo family, strengthening the group’s mortar ammunition business.

Growing through acquisition is an important part of Nammo’s business strategy. These processes come under the responsibility of Business Development in Nammo Corporate, and include a target search phase, an execution phase and a closing phase. The acquisition processes are complex, so the risk must be fully understood and the pursuit of a specific target must be carried out with dedication and professionalism.

The opportunity to acquire Pocal Industries emerged by coincidence rather than a normal search phase. Pocal Industries, with its 64 employees, has now become a part of the Nammo family.

Pocal has two business sites: one in Scranton, Pennsylvania, USA where an advanced machining center is located together with the company’s administration; and one in Moscow, Pennsylvania where energetic products are manufactured. The company also possesses engineering and test capabilities.

Pocal is located close to the U.S. Army Picatinny organization. They enjoy a close relationship, which helps them to understand future U.S. Army needs. An important part of the business is its Indefinite Delivery/ Indefinite Quantity (IDIQ) contracts with the U.S. Army, and in spite of present budget uncertainties, we share Pocal’s optimism about the future. Hard work is needed in Pocal to sustain and develop this part of the business further.

Nammo Pocal, as the new entity is called, is led by Vince Fedele who has worked for the company for over 25 years. He leads the business in a lean, hands-on and efficient way, and reports directly to the Nammo CEO and the board.
THE PERFECT MATCH
By Kjell Ringvåg, Executive Vice President, Medium & Large Caliber Division

Nammo enters Spain to broaden its small and medium caliber product portfolio.

On October 16, 2013, Nammo took over the Palencia ammunition factory in Spain, which has a long history of supplying Nammo with 12.7 mm and 30 mm cartridge cases.

Nammo Palencia, as it is now called, is currently producing a new range of standard products for Nammo’s small and medium caliber product portfolio, such as 12.7 mm M33 ball and M17 ball-traced ammunition.

The procurement comes in light of customer demand for suppliers who can offer packages with both specialty and standard ammunition, covering a complete range of different requirements. By acquiring the Palencia ammunition factory, the company is now well-positioned to meet this need. Its current range of specialty ammunitions is now supplemented with Nammo Palencia’s range of standard munitions.

Nammo Raufoss has also collaborated with Nammo Palencia to deliver 30 mm x 173 mm ammunition to the Spanish market. The acquisition of the factory secures these supplies and encourages increased internal sourcing to other Nammo units.

Nammo will continue to develop the Palencia operation as a competitive ammunition supplier to Spanish and international customers. It will be fully integrated with the Nammo Group as a whole.

As a hub for activities in Southern Europe, South America and several markets in Asia, the Spanish market is an excellent addition to Nammo’s current operations in Northern Europe and the U.S.

Nammo Palencia employs around 200 people.

SECURITY OF SUPPLY
By Raimo Helasmäki, Executive Vice President, Small Caliber Division

Following the acquisition of a propellant plant in Finland, Nammo aims to continue supplying the Finnish Defense Forces with a range of services.

Nammo is currently in the process of acquiring Eurenco Vihtavuori Oy propellant plant, as part of an investment strategy that is geared towards strengthening the future of the company and the customers it serves.

For 91 years, the plant has been the main supplier of propellants and powders to the Finnish Defense Forces (FDF) – providing components used in Finnish artillery, mortars, and medium and small caliber ammunition.

For Nammo, attaining Eurenco Vihtavuori Oy could result in the establishment of a long-term agreement with the FDF for the continued procurement of ammunition. The contract could ultimately contribute to a security of supply in Finland, with factories already in place in Vihtavuori and Lapua.

The agreement could go beyond the supply of new ammunition. With many of Finland’s munitions nearing the end of their lifecycle, Nammo’s demilitarization capabilities could be called upon to help recycle and safely dispose of the FDF’s obsolete arsenal. The processes put in place by the Nammo Demilitarization Division encompass the highest standards of safety and environmental consideration, making the division a perfect partner for Finland.

Although the agreement is still in a nascent stage, negotiations are progressing. Nammo is confident the acquisition will go through soon, setting the stage for a secure chain of supply.
ARCHITECTS OF A BETTER WORLD

By Berit Pålreud, Senior Vice President Human Resources, Nammo Group

SVP Communication and SVP Human Resources represented Nammo at the UN Global Compact’s Leaders Summit in New York, 19–20 September, 2013.

Nammo’s ambitions. It was very interesting to see the united determination within large international companies, and among governments and authorities, all with the view to develop international business in line with the 10 principles. Without strong cooperation between governments and local and international business operations it will be very difficult to meet the ambitious targets that UNGC has set for the future. The Leaders Summit showed that cooperation is improving, and that the development is going in the direction of the goals set by the UNGC.

Nammo will continue its strategic CSR work in line with the 10 principles and we will have a special focus on four elements:

- Empowering women
- Fighting against corruption
- The abolition of child labor
- Environment

THE UNGC PRINCIPLES ARE AS FOLLOWS:

**Principle 1**: businesses should support and respect the protection of internationally proclaimed human rights; and

**Principle 2**: make sure that they are not complicit in human rights abuses.

**LABOR**

**Principle 3**: businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; **Principle 4**: the elimination of all forms of forced and compulsory labor; **Principle 5**: the effective abolition of child labor; and **Principle 6**: the elimination of discrimination in respect of employment and occupation.

**ENVIRONMENT**

**Principle 7**: businesses should support a precautionary approach to environmental challenges; **Principle 8**: undertake initiatives to promote greater environmental responsibility; and **Principle 9**: encourage the development and diffusion of environmentally friendly technologies.

**ANTI-CORRUPTION**

**Principle 10**: businesses should work against corruption in all its forms, including extortion and bribery.

UN Secretary-General Ban Ki-moon was Chair of the Summit and opened the program. CEOs and other business leaders from companies worldwide participated in the Summit, renewing their commitment to responsible business practices and setting the direction for the UN Global Compact’s (UNGC) future priorities and actions. This included all three pillars of sustainable development – social, economic and environmental.

Nammo has supported UNGC’s 10 principles for many years, and has participated in UNGC since 2012 - demonstrating that Corporate Social Responsibility (CSR) is a highly prioritized area to further develop the company.

The key areas that the UNGC Leaders Summit focused on were in line with Nammo’s ambitions. It was very interesting to see the united determination within large international companies, and among governments and authorities, all with the view to develop international business in line with the 10 principles.

Without strong cooperation between governments and local and international business operations it will be very difficult to meet the ambitious targets that UNGC has set for the future. The Leaders Summit showed that cooperation is improving, and that the development is going in the direction of the goals set by the UNGC. Nammo will continue its strategic CSR work in line with the 10 principles and we will have a special focus on four elements:

- Empowering women
- Fighting against corruption
- The abolition of child labor
- Environment

**THE GLOBAL COMPACT**

WE SUPPORT

Nammo’s support for the UNGC Compact’s Leaders Summit shows Nammo’s commitment to leadership and service.

SUPPORTING PAT’S RUN

By Gary Ostendorf, Senior Manager of Business Development and Marketing, Nammo Talley

Nammo Talley employees work up a sweat for charity.

Nammo Talley supports the local community by sponsoring several charitable events throughout the year, while also supporting the health and fitness goals of its employees. For the second year in a row, the company sponsored a team to take part in Pat’s Run, the signature fundraising event for the Pat Tillman Foundation. The charity was launched in memory of the NFL football player of the same name, who put his career with the Arizona Cardinals on hold to serve his country.

The Tillman Military Scholars program aids all former service personnel, specifically the ever-growing population of veterans of post-9/11 conflicts. Pat died in 2004 while serving with the U.S. Army’s 75th Ranger Regiment in Afghanistan. Following his death, his family and friends established the Pat Tillman Foundation. It is a charitable organization, and a national leader in providing resources and educational scholarship support to veterans, active service members and their spouses. The Tillman Military Scholars program aids all former service personnel, specifically the ever-growing population of veterans of post-9/11 conflicts.

Pat’s Run attracts more than 35,000 participants, volunteers and spectators from across the country. Together they run or walk to honor Pat’s legacy, while raising important funds for the programs created to pay tribute to his commitment to leadership and service.

More than 30 Nammo Talley employees participated in the event. In preparation for the run, Nammo Talley management secured personal training sessions with Durapulse Performance Company, a multisport coaching organization based in Arizona. These sessions included running drills, strength exercises and stretch routines for all levels of runners and walkers. Nammo Talley team members also had the opportunity to meet one-on-one with coaches from Durapulse to discuss their personal fitness and nutritional goals.

In addition to personal training sessions, Nammo Talley employees attended group fitness classes at the Durapulse Center. Nammo Talley employees work up a sweat for charity.

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CELEBRATING THE TALL SHIPS 1812 TOUR

By Yves Pelletier, President Nammo Canada Inc.

Nammo Canada Inc. sponsors a reception aboard the Sørlandet tall ship to launch the gathering of historical ships.

On June 21 2013, the Norwegian ship Sørlandet hosted a reception for 200 guests for the launch of the Tall Ships 1812 Tour at the Harbourfront in Toronto, Canada. The tour forms part of the Tall Ships Challenge at the Great Lakes.

The reception was proudly sponsored by Nammo Canada Inc. During the event, traditional Norwegian food and entertainment was enjoyed by all. June 21 is also the Canadian Armed Forces’ birthday, meaning that it was particularly important for Nammo’s guests, all of whom have either served in or are affiliated with the military.

Tall Ships 1812 Tour sailed to Canada to commemorate the bicentennial of the war of 1812, featuring ships from around the world. With the blessing of Norway’s Ambassador to Canada, Mona Elizabeth Brøther, Nammo’s representative Yves Pelletier dressed in an authentic British uniform, as worn by Sir Isaac Brock, the General who commanded the British Forces in Upper Canada (Ontario) in 1812.

The Sørlandet is the oldest, full rigged tall ship in the world, and will be the largest ship in the tour’s fleet. It was constructed in Kristiansand, Norway in 1927 and participated in the Chicago World Fair in 1933.

By Yves Pelletier, President Nammo Canada Inc.

Nammo Canada Inc. sponsors a reception aboard the Sørlandet tall ship to launch the gathering of historical ships.
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