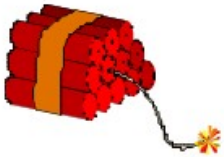


Sektionen för Detonik och Förbränning, SDF
The Swedish Section for Detonics and Combustion
anknuten till/affiliated with The Combustion Institute
www.sdfsweden.se info@sdfsweden.se

SDF Newsletter 2024:1 English

The Section for Detonics and Combustion, SDF, is a non-profit association with the aim of bringing together people in the science and technology fields of detonics and combustion for information exchange and cooperation aimed at promoting education and scientific research within these fields. SDF is affiliated with The Combustion Institute, CI, which is an international, non-profit, educational and scientific society in combustion science with 13 different topical areas. SDF supports the Sprängtekniska Muséet (Explosives Technology Museum) in Karlstad, which shows the history of the Zakrisdalsverken and preserves munitions knowledge and training in the field of explosives.

New members are welcome to SDF. Contact the secretary Håkan Ljungqvist hakan@gumba.nu

Membership of SDF is free, but in order to ensure continued business, SDF would be happy to accept a voluntary contribution to Plusgiro 196 69 42-3.

Chairman's lines

After "the war that would stop all wars" (First World War) ended, Sweden decided in the Defence Decree of 1925 to drastically cut back on defence. Units were disbanded, conscription was halved, stocks were depleted, defence equipment production went into austerity mode and spending was cut by a third to 1.3% of GDP. Things didn't get much better in Defence Decree of 1936 when defence spending was raised to 1.5% of GDP. It was mainly the newly established air force that received money, while the army in particular had to save, among other things on munitions. The knowledge in the munitions industry was drained more and more. Well-stocked stores were no longer needed; After all, Sweden had joined the League of Nations, which guaranteed peace.

When the Second World War broke out in 1939, Sweden was completely unprepared. Our preparedness is good, said the prime minister, but today we all know that it was "fake news". Now there were busy days and money was added. As early as 1942, it was up to over 12% of GDP. The warehouses were to be filled with defence equipment and production was outsourced a little here and there, even to companies that never produced defence equipment. Ammunition was in short supply and you had to step it up to produce. The knowledge had largely been lost, so new operators had to be quickly trained. Already in 1940, the lack of knowledge was manifested when an explosion in the Bofors TNT foundry killed 11 people and injured 40 [see SDF Newsletter 2020-2 October 2020 with report and photo attachment].

We old-timers in the SDF got to see further effects of this rapid production when, in the 1970s, we started working in the defence industry and -authorities. The accidents at Ravlunda shooting range and Grytan shooting range, both in 1969, killed four conscripts and injured many more. Probable causes were ignorance and carelessness in production. Lots of munitions were examined and those produced during World War II contained many defects. The work led to the FMV, with the support

of FOA and the industry, publishing the Munitions Safety Handbook in the late 1970s, which has been continuously updated.

Unfortunately, we learned nothing from the turmoil of the inter war period. After the Berlin Wall fell in 1989, "eternal peace" was once again considered to have come. Defence was "a special interest" and appropriations were continuously shrunk until in 2015 they were down to 0.9%. The necessary research and development regarding munitions and their production stopped in Sweden during the 1990s. However, activities continued in the part of the outside world that did not believe in "eternal peace". This means that a difference has now arisen between the outside world's competence in the field of ammunition and ours. One consequence is, among other things, that the risk of accidents increases.

After Russia's invasion of Crimea in 2014, funding slowly began to increase and after the total invasion of Ukraine in 2022, our politicians woke up. The accession to NATO finally happened and with it new demands on our defence. Recently, it was decided that defence spending will be drastically increased to SEK 186 billion (2.6% of GDP) by 2030, and new munitions have the highest priority. Production in Europe must increase by 700%.

But now, here we are again. We have sold out large parts of the industry and we have allowed the knowledge to be lost after "eternal peace". Remaining industry is now searching with light and lantern for both engineers and operators. But there is no organised training for explosives workers and engineers in Sweden.

Since 1949, the Section for Detonation and Combustion has been an organisation for the exchange of knowledge in the field. Through conferences, courses and meetings, information has been transferred between generations and between industries. Sure, industries compete with each other, but not when it comes to munitions safety. There we can exchange information with each other. But those who are active in the SDF today are getting older and new blood is welcomed. Likewise, money is required to be able to pursue safety issues and train new generations in the field of explosives.

- In 1949, prof. C. H. Johansson formed the Co-operation Committee for Rock Blasting Technology within IVA (Royal Academy of Engineering Sciences). ;= **SDF 75 in 2024**

- In 1954, it changed its name to the Special Section for Detonics within the Swedish National Committee for Mechanics, which belonged to KVA (Kungliga Vetenskapsakademin).

- In 1955 the name was changed to the Special Section for Detonics and Combustion in connection with its adoption as the Sweden Section of the Combustion Institute.

- In 1997, the Swedish National Committee for Mechanics disbands all special sections. The new name will be the Section for Detonics and Combustion. It is now completely independent from IVA and KVA, but still forms the Sweden Section within the Combustion Institute.

Ola Listh, Chairman of the section for Detonics and Combustion, SDF

Combustion Institute: 2024 Recipient of Silver Combustion medal

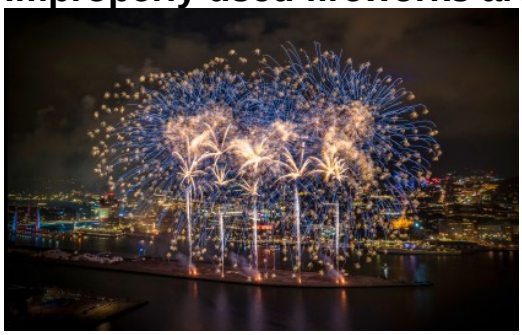
2024 Silver Combustion medal to Francesco Mazza, Leonardo Castellanos and Alexis Bohlin presented by ISOC Nils Hansen.

At this year's symposium, which took place in Milan, Alexis Bohlin and his team were awarded the Silver Combustion Medal for the best scientific contribution of all from the previous Biennale in Vancouver. Their ground breaking research, conducted at the Delft University of Technology in the Netherlands, focused on innovative methods to measure temperature, pressure, and water vapour (all important variables) in hydrogen combustion. They developed a laser measurement technique with extremely high time and space resolution, which makes the measurements very accurate, and the technique is today considered an international standard for measuring temperature in reacting flows. Being able to extract high quality experimental data with low uncertainty is important to be able to validate combustion models where it is hoped that simulations can be used for the design of new combustion technology. Alexis believes that combustion research is highly relevant today, to maintain competence but also to show that we still have a lot to learn because combustion is complicated. He says "I believe that combustion research should be seen in a dual use perspective where it is about both improving the performance of our aircraft but also reducing their climate footprint."

The Delft University of Technology is Europe's largest and most prominent institution in aviation and space research. The faculty was originally founded with support from GKN Fokker and has since become a forerunner in research into aeronautics and aero-derivatives of gas turbines. Alexis Bohlin worked at the faculty as an assistant lecturer 2016 - 2021 before he was employed at GKN Aerospace in Trollhättan.

Alexis Bohlin is also a board member of the Section for Detonics and Combustion, SDF.
https://members.combustioninstitute.org/news_archive_headlines.php?org_id=CMBI&sniid=45344433
https://www.sciencedirect.com/science/article/pii/S1540748922003601

Improperly used fireworks are a deadly weapon



Göteborgs FyrverkeriFabrik AB at Gothenburg's 400th anniversary celebration. Photo: Swedish Drone Guy

Fireworks from a historical perspective

Fireworks of various types have for more than 400 years been a highly valued activity in Sweden in connection with holidays and general celebrations. Especially many fireworks are set off today at New Year's, Easter and Walpurgnis Night celebrations.

The knowledge of production and use of explosive goods already existed approximately 2000 years ago in China and India. Fireworks and explosive goods, such as black powder, came to Europe in the 13th century and the area of use in Europe was then mainly military, so-called Ernstfeuerwerk ("serious fireworks"). Fireworks for fun, so-called Lustfeuerwerk, began to be used more widely in Europe, especially during the 17th and 18th centuries. The development of the chemical industry during the 18th and 19th centuries meant that the possibility of colouring the fireworks increased considerably.

There are basically three main types of fireworks – rockets, bombs and flares.

Rockets

A stick firework rocket contains two main parts: the rocket motor and a pyrotechnic kit that produces the desired light, colour and sound effects. In this context, the rocket engine that launches the rocket into the air is almost always a simple gunpowder engine. The gunpowder is contained in a propellant sleeve, which usually consists of a thick-walled cardboard tube. During combustion, the gunpowder gases flow out through a nozzle of graphite or burnt clay, which sits in the mouth of the drive sleeve.

Almost all firework rockets today use black powder in the engine. Black powder is a mixture of saltpeter, sulphur and charcoal. The design of the nozzle and the rocket, the amount of gunpowder and the composition of the gunpowder are some of the factors that determine the height that the rocket can reach. The temperature that arises when the gunpowder burns depends, among other things, on the composition of the gunpowder and the pressure in the combustion chamber. The temperature during the combustion of gunpowder is often in the range 1800 – 2200°C.

The combustion temperature in the pyrotechnic sets that produce light effects and/or color effects and/or sound effects is usually within the temperature range 1600 - 2500°C, but temperatures above 3000°C may occur. The composition of the pyrotechnic charge has a decisive importance for its combustion temperature. The pyro kits contain various metals and metal salts, which are used as colourants. The combustion of the pyrotechnic charge in the rocket normally starts when the propellant motor has burned out.

The light phenomena and colours depend on which metals or which salts or combinations of metals and salts are used. Sodium salts give, for example, a yellow colour, barium salts a green colour, strontium salts a red colour and copper salts a blue colour. The blue colours are most difficult to achieve. It is therefore often said that the deeper the blue colour achieved in a firework, the more skilled the firework is. The metals and metal salts used in fireworks unfortunately pose an environmental problem. The very unsuitable additives that contain, among other things, mercury, arsenic and lead are therefore no longer used.

Bombs

In addition to rockets, so-called bombs are also used in the fireworks. Bombs are free-flying objects that lack a propulsion engine. The bomb is launched from a type of mortar using a powder charge. The mortar in this case consists of a short tube and the propellant charge is normally black powder. During the launch, a so-called delay kit is also lit, which after a certain time and thus at a certain height ignites the pyrotechnic kit which produces different types of light, colour and sound effects. Combustion temperatures are about the same for bombs as for firework rockets.

Several bombs assembled together form a so-called bomb cake. After igniting the cake, the bombs are launched in a predetermined order and detonated according to a certain schedule to create the desired light, colour and sound image. To make this possible, the bombs are therefore launched at varying intervals and to different heights. In this way, you can create very spectacular light, colour and sound images. To regulate the time between launching the bombs, pyrotechnic delay kits are used in most cases.

Bengal fires

Bengal fires or Bengals usually consist of a cardboard tube containing a pyrotechnic charge. The main contents of the pyrotechnic kit are saltpeter, sulphur and antimony sulphide. When the kit is ignited, the Bengal fire burns with a very bright flame for a few minutes. If the pyrotechnic kit contains barium salts, the flame will be green, and with strontium salts it will be intensely red. The combustion temperature when the pyrotechnic kit burns is approximately the same as with the pyrotechnic kits included in rockets and bombs. There are Bengal fires today with a lower burning temperature, but the temperature is still high enough to cause severe burns to people.

Who has permission to shoot fireworks and what does it look like in reality?

In order to be able to set off fireworks, there are currently a number of restrictions in Sweden issued by, among others, MSB - the Swedish Civil Contingencies Agency. For example, you must be 18 years of age or older to buy and use outdoor fireworks. It is also illegal to provide such fireworks to persons under 18 years of age. Since 2019, to be allowed to shoot rockets with a guidance stick, trained personnel and also a permit are required. Most of the country's municipalities have also issued local restrictions regarding when and where the public may set off fireworks.

Despite all instructions and restrictions issued by MSB and municipalities, among others, accidents unfortunately occur in connection with shooting off fireworks. Improper handling can be a cause of accidents, which then, above all, injures the person shooting the fireworks. If someone were to accidentally or out of malice launch rockets into a house or at other objects or at people, the effect could be devastating, taking into account, among other things, the high temperature of the burning gunpowder in the engine. When the pyrotechnic set is ignited, burning particles and molten metal particles at very high temperatures are also thrown out.

The manufacturer's intention is of course for the rockets and bombs to be launched vertically into the air. The person responsible for this is the one who shoots the fireworks. Unfortunately, mistakes sometimes happen in connection with the shooting. If, for example, a bomb cake were to be poorly anchored or if it were to topple as a result of external influences, the effect would naturally be devastating if the bombs would hit people or buildings. If the bomb cake does not work as planned, sometimes improper troubleshooting can result in accidents.

It is both highly inappropriate and also illegal to use flares or bengals at public gatherings, but unfortunately that doesn't seem to be something that some persons care about. The mischief going on with the throwing of flares at football matches, ice hockey games and other sporting events will sooner or later cause serious personal injury and should be vigorously curbed. The fireworks that today cause the most serious accidents are rockets and bombs.

Unfortunately, not everyone who sets off fireworks follows MSB's restrictions and instructions or the municipalities' restrictions. Unfortunately, it happens that fireworks are left to people under the age of 18, despite the ban. For those people who want to break laws and regulations, it is today relatively easy and mostly harmless to smuggle from other countries fireworks that are not allowed to be bought or used by private individuals in Sweden. We must also realise that there are people who deliberately or out of ignorance aim rockets and bombs at buildings and people. Such procedure is not only illegal but very dangerous and must therefore be vigorously enforced.

Deliberately directing rockets, bombs and flares at people or at buildings and other objects can be considered a criminal act. Within this illegal activity, “blue light sabotage” (i e emergency vehicle sabotage) forms a special type. Rockets and bombs deliberately misused should be considered lethal weapons. For example, shooting a rocket at a person can have the same effect as shooting with a firearm.

Some examples of illegal and dangerous handling of fireworks

- At the turn of the year 2023/2024, a 16-year-old boy threw a piece of fireworks through an open bathroom window in a small town in Linköping city. Fortunately, no one was in the bathroom at the time. However, there was major material damage, but the fire was contained. The firework display caused damage worth close to SEK 60,000. The boy and his guardian were charged with vandalism and were required to pay damages.
- In Tranås, on New Year's Eve 2023, a person in his 20’s fired a rocket at a crowd. A teenage girl was so seriously injured by the firework that she lost her sight on one eye. The man was sentenced to three and a half years in prison for serious assault and two counts of causing danger to another. He must also pay damages of half a million SEK to the girl. The man is to be deported from Sweden after serving his prison sentence. The Court of Appeal amended the sentence and sentenced the man for extremely serious assault to five years in prison and also increased the damages.
- During January this year, some young people "enjoyed" shooting a firework rocket at the driver of a bus in Nacka on the line between Fisksätra and Saltsjöbaden. In the past, the same bus line had been staffed with "security attendants". This time, unfortunately, there were no such persons in place, which presented the opportunity for rocket firing inside the bus. Fortunately, no one on the bus was injured and the driver also managed to keep the bus on the road.
- A 24-year-old man lit flares in the middle of Linköping when a group of Linköping Hockey Club supporters marched towards the SAAB arena at the end of February this year. At that time, the police had decided to have zero tolerance for pyrotechnics and information was given on the spot about what was applicable. The Linköping District Court has now

sentenced the 24-year-old for violating the Public Order Act. The penalty was 70 daily fines totalling SEK 3,500. According to the court, the man's actions entailed "a risk of inconvenience to persons or property".

- During February 2024, a number of supporter groups in the Allsvenskan football series agreed to limit the use of Bengals. Pyrotechnics may not be thrown onto the football pitch or towards supporters, players and officials in the arena. However, pyrotechnics may still be used for mood-raising purposes. It is unfortunately very doubtful whether the agreement has had the intended effect.

In a debate article in SvD in February this year, representatives of the "National Association for Stopping Fireworks for Private Persons" and the "Swedish Animal Protection Association" suggest that the use of fireworks for private persons in Sweden should be stopped and that the use of fireworks must be severely restricted. They also report a number of examples where people and animals have been injured in connection with fireworks.

What to do about the misery?

The incidents described above are just a few examples of the serious problems that occurred with fireworks over a few months at the beginning of this year. It cannot continue like this, something must be done and it must be done quickly.

Fireworks are a much appreciated activity and should continue to be allowed in connection with holidays and general celebrations. However, it is necessary that fireworks are set off in an orderly fashion. Unfortunately, not everyone who sets off fireworks follows MSB's restrictions and instructions or the municipalities' restrictions.

One way to improve the situation would be to define fireworks as weapons. The penalties linked to fireworks will thus be equivalent to the penalties for illegal handling and possession of firearms. Illegal importation and possession of fireworks such as rockets, bombs and flares should also be treated in the same way as illegal importation and possession of firearms, ammunition and explosives.

Professor Emeritus Dan Loyd, Institute for Economic and Industrial Development (IEI) and Department of Mechanical Theory of Heat and Flow Theory (MVS) at Linköping University.

Aftonbladet: The factory in Sweden where the war is decided

An industrial war is being decided on the shop floor. Right now we are losing. In Karlskoga, the foundries work around the clock to produce the explosive shells that Ukraine needs most of all. But seen from here it is obvious, what no politician dares to say: The million shells promised by the EU simply does not exist.

- It is inevitable that Europe will run out of ammunition. The question is how long the supply will be empty, says Nammo manager Björn Andersson.

On 2023-10-26, The newspaper Aftonbladet visited one of the factories where Europe's fate is decided.
https://www.aftonbladet.se/nyheter/a/wAjL9P/fabriken-i-karlskoga-dar-kriget-i-ukraina-avgors

SDF library archive is under construction.

The library will be stored at the Explosives Technology Museum Zakrisdal Karlstad and the library manager is Nils Örnebring

Summary

Archive and library were donated by the widow Göta after Stig Johansson to the SDF, the Section for Detonik and Combustion, where Stig Johansson was the secretary for many years.

Parts of the library that concerned the association TmV, Tändsticksmuseets Vänner, chairman Ingvar Lexbo, at the invitation of Göta, sorted out the material that was of interest to TmV. Contact was made with TmV's chairman after her husband's death and this material has since been donated to Jönköping's city archives.

Background

Ola Listh, as chairman of the SDF, also made contact with the Göta Johansson due to the death of her husband and the great importance he had as secretary of the SFD. The chairman of the SDF association drew up an obituary in agreement with Göta, which was later published in the Jönköpingsposten & the Dagens Nyheter.

In connection with these contacts, the chairman agreed with Göta that all secretarial material belonging to the SDF, after their children had gone through the material and if there was something they were interested in, the rest would be donated to the association SDF.

First trip

On August 3, 2022, the chairman visited Jönköping and collected all the papers relating to the SDF that had been collected. There is approx. one cubic meter that is now in the chairman's garage in Stockholm. On occasion, the chairman of SDF will agree with the superintendent of the Museum of Explosives Zakrisdal SMZ to come down to Karlstad with the material.

The day after the visit, the chairman of the SDF took the opportunity to visit the Husqvarna museum, it is well worth a visit, as well as the Björkenäs moped museum, which was also visited on the journey home.

On September 11 of the same year, the chairman of the SDF had a conversation with Göta regarding the secretary's work computer. There was nothing to do with the computer at the moment as the son-in-law, who was the only one who could open the computer, had gone over to the USA and visited his family. Göta knew absolutely nothing about computers and they could not log on to the computer. We will have to make an attempt to log on to the computer at a later time.

However, Göta offered us to take over large parts of husband Stig's private library; largely scientific literature, some of which are classic works. Ola Listh mentioned that the Superintendent of SMZ might be interested in taking care of them (to include the library of SMZ) and she thought that sounded good because she had confidence in that person. However, her children, grandchildren and nieces and nephews would have the chance to take what they wanted. A number of photographs of the bookshelves were taken and they will be forwarded to SMZ, Karlstad.

On November 1, 2022, the chairman of the SDF came up to Karlstad with the secretary's archive of

what was left of this. It became a station wagon filled with archival material and this was transported to Sprängtekniska Museum Zakrisdal, Karlstad. The curator accepted the visit and after unloading had taken place, the chairman was offered a guided tour of the museum's premises before returning home to Stockholm. There is much more to collect, so further contact will be made with the widow to make up time and collect more books as there were many books left in Stig Johansson's library archive.


The secretarial archive placed in a filing cabinet at SMZ

Second trip

New trip to bring home more books. The trip was decided on 15/16 March 2023 in consultation with Göta. The journey to Jönköping round trip, with an overnight stay at the new hotel MATCH, which can be recommended. The following day, another carload of books was picked up. The books were loaded into the car and taken out on the same day, March 16, in Jönköping and at Sprängtekniska Museum Zakrisdal. Karlstad. The superintendent SMZ and his wife took the trip as a tourist trip to Jönköping. Unfortunately, the match museum was closed for renovations, but the museum will open in June 2023.


Other travel books on their way to SMZ

Third trip

In connection with the annual meeting of Tändstickans Vänner on Wednesday 10 May at 17:30, another trip to Jönköping was made by the superintendent SMZ, who is also a member of this association.

Time had been arranged with Göta to pick up the rest of the books the day after the annual meeting on 16th of May.

It was a sad decision at this annual meeting, the association TmV will be shut down at the next annual meeting due to the fact that the members are old and it is difficult to get people for the board positions. Stig Johansson helped start this association in 1993 and was the association's first chairman.

The books were picked up the next day at Göta's and the car was filled to the brim. There are additional books to load. It may happen later when the opportunity arises in the future, hopefully during this year. The "computer" remained, as it seemed, in pristine condition, and there remains to be investigated whether there is more of interest to the SDF among what is stored in this computer. The children would check this out eventually, Göta promised that the SDF would get information about what might come out of the examination of the contents.

There were just as many books on this trip as on the previous trip.

A book was purchased by the superintendent as a gift, since the SDF had been allowed to take over the archive, the latest book about Andrée's North Pole journey, by Bea Uusma. The book was highly appreciated. It was read the same day it was handed over, May 16, and after a telephone conversation with Göta, after returning to Karlstad, to announce that the trip back to Karlstad had gone well.


That's what's left to get, there might be more….?

There will be at least another, fourth trip to bring home what was left at the third visit, hopefully this year.

Work on organising materials and books will start in autumn 2023.

SDF's members have to be patient as it will take time to get all the collected material in order.

It deserves mentioning that the former chairman Jan Hansson also had an extensive scientific library, many of which were classics in the field of detonics and combustion, several of them first editions and in the original languages English, German, French and Russian. Jan died in February 2001. When the Competence Centre for Energetic Materials (KCEM) was formed in Karlskoga just over a year later, they were contacted to inquire about the possibility of taking over Jan's scientific library. That also happened. However, this library seems to have disappeared over time, as the SDF has not been able to recover it. If Jan Hansson's library can be found, it should also be deposited with SMZ.

At the pen / Superintendent SMZ Nils Örnebring

A little wisdom about explosives

- Explosives may explode by accident, and behind accidents involving explosives there are always people who made the wrong decision, due to incompetence, ignorance or negligence.
- Work with written work instructions
- Make written risk and impact analyses
- Work calmly and methodically
- Observe order and order again
- Companies have no memory, at best archives
- Use protective equipment
- Think before you go ahead
- When working with explosives, always consider the risks of:
  - Static electricity
  - Dust explosion
  - TNT sublimate
- Do not put all explosives in the same basket
- Think before - afterwards it may be too late
- Always assume that a fired weapon or explosive that clicks can go off without warning, at any time
- Haste can quickly become waste, or something worse

Hans Wallin, Dan Loyd, Håkan Ljungqvist, Nils Örnebring

How luxury beliefs came to undermine societal morale and innovation

Over 15 years ago, a team put together when I was at Cranfield University in the UK, which included Hans Wallin of SDF together with others from the energy supply sector in Sweden, Finland and across Europe, received EU funding to look into those elements required to assure the security of the electricity supply in the post-9/11 world.

What we found was critically important. It exemplified the saying that "Culture eats strategy for breakfast". But it would seem the lessons have yet to be learnt, because the key elements had, surprisingly maybe, little to do with terrorism and security, or indeed science and technology, but rather cultural attitudes towards development.

Of course, the electricity supply chain is a complex, interlinked network that crosses international borders and connects people with wildly differing backgrounds, languages, and experiences. But the unifying element was an understanding that our world depended to a considerable degree upon the efficient supply and delivery of energy.

We noted in the conclusions of our report to the EU however, that there was an emerging culture that appeared to stand opposed to these aims and that, by failing to celebrate human ingenuity and technical achievements, could yet come to undermine the moral confidence that underlay the actual resilience of the energy system.

Fast-forward 15 years and we live at a time when it is hard to imagine how or why any ambitious young person would have anything to do with becoming a part of it. Fossil fuel production, which continues to power most of the electricity used by those who critique it, remains a core and essential component, but who now looks to go into it?

When the British government, for instance, announces that it will phase-out the installation of gas boilers in homes in favour of far more costly, space consuming and less efficient heat pumps, you

have to wonder what is to become of those who trained for years to be expert gas fitters. And this effect is replicated across many sectors today.

If cars are all to become electric (despite Swedes knowing how these fail to work in cold weather), and the public are to be penalised (directly or indirectly) for not buying these, then inevitably, businesses too look to slow down their innovation rate and begin to close down their facilities everywhere with a concomitant impact on jobs.

The much-vaunted 'Green New Deal' has simply failed to materialise. And so, rather than looking to ways to increase the efficiency of energy production (the consumption of which has always been a measure of civilisation), we are continuously exhorted to reduce our demand. Today must be the first age in which 'less' has come to be a radical demand.

Right across the board, as energy comes into question, and its supply less reliable, as we are chastised for our supposed profligacy in its use on the grounds that the planet cannot take it, so human energies and passions turn elsewhere or become attenuated. Businesses in Germany are quite literally relocating to the US or closing down for good.

In such circumstances, it behoves those of us who refuse to live in a future neo-feudal era (as one perceptive, American commentator has called it) to push back, and to push back hard. What is most missing on the horizon today is another cultural factor – moral courage. There are many who see what the problem is but are reluctant to act.

But those who hope to have a quiet life will have anything but. Science, technology and security are human issues first and foremost. Accordingly, it is time to get political before it is too late!

Professor Bill Durodie

Chair of International Relations

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Five years in prison - had 11 tons of explosives

Two men in Haparanda were sentenced to prison after storing tons of explosives without permission. A 70-year-old man who was accused of having stored eleven tons of civilian explosives on an industrial premise in Haparanda was sentenced to five years in prison, local media reports. A man in his 40’s was also sentenced to four years in prison for a particularly serious crime against the Act on Flammable and Explosive Goods.

The newspaper Dagens Nyheter 2024-04-22

Webinar

- Tuesday 2024-12-03 at 19.00: Leif Jilsmo "Pansarskott m/86 (AT4) - 40 years of development"

Study visit

- 2025-01-29: Yara AB in Köping which, among other things, manufactures ammonium nitrate

Suggestions for activities, webinars or study visits are welcome.

Some suggestions we are working on: Orica at Gyttorp, FOI shock wave tube IV and the Swedish Armed Forces' dog service unit (FHTE), Hanssons Pyrotekniska in Lindesberg, Kiruna with a visit to Esrange, LKAB's tourist mine/[Kimit], Epc-Groupe at the Hugelsta shooting range - Cesium AB - Vingåkersverken, FOI at Grindsjön, ???

Translated to English by Google Translate and Bo Janzon

Editing of the newsletter: Håkan Ljungqvist Secretary SDF hakan@gumba.nu