

### 1. What is HIT-FLON®

➤ **HIT-FLON®** helps to restore engine performance. **HIT-FLON®** is good for every engine; even laymen can improve their engines by using a technique which previously was reserved for space technology and motor racing. – **HIT-FLON®** is always a good investment.

### 2. How does this improvement show, the investment pay off?

➤ Engine design varies a lot from one to another and are subject to very different kinds of service. It is not easy to make a statement that is generally applicable to all engines. Consequently there are many different ways in which **HIT-FLON®** can improve an engine.

The reason for all the possible improvements, however is always the same: **HIT-FLON®** ensures that the pistons run more smoothly in the bores, with less friction. Consequently, the engine runs smoother. Diesel engines, in particular, no longer “knock” to such an extent. Compression is better balanced or improved, resulting in increased performance and top speed, if you drive at the same speed, you will save fuel. Remarkable oil savings can also be obtained. – Emission of air polluting exhaust gases are reduced. – Engine wear is considerably reduced. – Finally, an emergency lubrication is ensured which has already saved a lot of engines and may even save lives.

THUS ONE CAN EXPECT AT LEAST ONE IMPROVEMENT FOR EVERY ENGINE: IF NOT SEVERAL.

### 3. Where and when should HIT-FLON® be used?

➤ Wherever operating characteristics of an engine are to be improved, i.e. in gasoline or diesel engines, except for two-stroke engine and those with oil-bath clutches. – As a rule, brand new engines need no improvement. In order to decrease wear and ensure long life for the engine, however, **HIT-FLON®** should be added at the first

oil change (when there is no more swarf production). A noticeable improvement can be expected after at least 1,666 miles or 50 operating hours.

### 4. How does HIT-FLON® work?

➤ Its effect is based on polytetrafluorethylene (PTFE) sold under the brand name of Teflon or Fluon or Hostaflon which have become well known in everyday life.

### 5. What are the characteristics of PTFE?

➤ PTFE shows the least frictional resistance of all known materials. The amazing thing is, the higher the pressure the less friction! That is whole secret of **HIT-FLON®**. Furthermore, PTFE is anti-adherent, thermally extremely stable, chemically entirely neutral, absolutely non-flammable and totally corrosion proof.

### 6. What led to the development of HIT-FLON®?

➤ The pure research findings have been known and tested for more than 40 years. Malte Huth applied this technique to motor racing. To start with he had to introduce PTFE in a sintering process. Malte Huth twice became European hill-climb vice-champion with his PTFE improved engine. Afterwards HUTH INDUSTRIE TECHNIK developed a method suitable for every “do-it-yourselfer” wanting to treat his car engine with PTFE: i.e. the formula of **HIT-FLON®**.

### 7. Could you call HIT-FLON® an additive?

➤ Yes. But **HIT-FLON®** differs from all the usual types of additive in as much as it is not flushed away with the next oil change, but leaves a stable PTFE film on the piston and cylinder assembly. No scientific proof of coating has yet been furnished for any other competitive product by a scanning electron microscope, only for **HIT-FLON®**, resp. Liqui-Flon, the concentrate.

### 8. How is the stable PTFE film achieved?

➤ The PTFE is carried by top quality of chemicals. Under pressure, friction and heat, a solid PTFE coat is built up which both lowers the sliding friction of the piston in the cylinder and reduces unnecessary play at the same time.

### 9. How long does the cleansing phase take?

➤ It depends on the degree of contamination of each individual engine. Generally speaking, a car should have run for about 1,200 miles, while a stationary engine needs about 200 operating hours.

### 10. Will HIT-FLON® clog up oil filters?

➤ No. Oil filters usually have pores of diameter 10 to 15  $\mu$  (microns). The PTFE particles, in HIT-FLON® however, have only a size of 1 to 3  $\mu$  – The case of very dirty engines, however, we strongly advise you to change the oil filter 1,250 miles after the first application of HIT-FLON®, owing to the accumulation of contaminants in the cleansing phase.

### 11. Is HIT-FLON® compatible with other oils?

➤ Yes. In Germany there are about 500 different brands of engine oil on the market. Some of them are very poor reprocessed qualities. These can impair the effect of HIT-FLON®. Thus we advise the use of better types of oil such as API/SF CC or CD.

### 12. Will HIT-FLON® damage the engine?

➤ It must not be used in two stroke engines (see question 3) or in those engines in which manual gearbox and clutch are served by the same lubrication system. The clutch could slip, owing to the extremely high lubrication capability. Naturally, manufacturers of

engines will not extend their guarantee to cover the use unknown engine oils where it cannot be proved that they reach the required quality.

HIT-FLON® is by no means unknown, nevertheless, HIT-FLON INTERNATIONAL Techniques insurers provide a guarantee up to 5 million € in any one case.

### 13. How often has the insurance had to meet this commitment?

➤ Never!!!

### 14. Is HIT-FLON® compatible with other additives in the engine?

➤ Yes, there is no problem there. First of all, you should change the oil before HIT-FLON® is added, so nearly all the existing oil is drained out of the engine, and secondly, even though a contact with old oil would not cause any harm.

### 15. Is HIT-FLON® harmful to health?

➤ No. It neither irritates the skin nor does it produce toxic vapours.

### 16. When is a follow up treatment with HIT-FLON® required?

➤ After 30,000 km for cars and 60,000 km for trucks.

### 17. Why is such a small amount of HIT-FLON® needed?

➤ Only the minute peaks of the metal surfaces of pistons and cylinders – not visible to the bare eye – get scuffed. There is a sufficient surplus of free PTFE particles in the circulating oil. Only a very small quantity is required to restore the coating on the scuffed parts. The coating as a whole is thus preserved in the long term.

### 18. What are the consequences of excessive use of HIT-FLON®?

- There aren't any, except for the cost of the product.

### 19. Do I need to carry out fewer oil changes when using HIT-FLON®?

- No, follow the manufacturer's instructions regarding oil changes.

### 20. What is meant by emergency lubrication?

- It is said, that no engine can run without lubrication. However, after coating with HIT-FLON® this is possible for a certain period, since the dry PTFE film prevents direct contact between piston and cylinder. Thus the cylinder can not seize up immediately.

### 21 Who recommends HIT-FLON®?

- Certainly not people, who want to sell fuel, lubricants or engines. These people are fundamentally scared by the improvements achieved by HIT-FLON®. Powerful lobbies would like to block the market for HIT-FLON®, but due to increasing environmental consciousness and the goal to preserve rather than to throw away will pave the road to success.

### 22. Are there any other engine oil additives containing PTFE which produce a coating?

- None for which scientific proof is being furnished (see item 7).

### 23. What is the substance contained in HIT-FLON®?

- PTFE = POLY-TETRA-FLUOR-ETHYLENE  
Chemically, it is a compound of carbon and fluorine. This compound is one of the most stable minerals,

is chemically inert, and has a very low coefficient of friction.

### 24. What does "chemically inert" mean?

- It cannot oxidize, melt or burn, will not turn brittle and does not react with other substances.

### 25. Does heat have an effect on it all?

- It does; at a maximum temperature of 250 C it becomes ductile, above about 300 C it turns into a soft mass. However, it does not melt like wax.

### 26. What are ductile particles?

- They are extensible, malleable soft particles. PTFE is ductile. Under pressure and heat you can roll it out like pastry. In this way the PTFE particles are rolled onto the metal: the engine is coated.

### 27. Can HIT-FLON® possibly turn lumpy?

- No. Thanks to a patented manufacturing method, the PTFE particles in HIT-FLON® have been rendered electrochemically neutral. They can agglomerate up to a size of 5 micron, which will not cause any problems at all with oil filters with pore size 10 to 15 µ (see question 10).

### 28. How do the ductile characteristics of PTFE in HIT-FLON® adapt to the engine?

- The smooth metal surfaces of the engine still shows roughness in the range of 2 to 10 micron. The pistons glide over the tiny pits and crevices forcing PTFE particles into them. These have been chemically activated and adhere to the surface.

### 29. Where was PTFE first used?

➤ As a coating material for high and low temperatures in the chemical industry, medicine and armaments technology. Since nothing sticks to PTFE, it was also used in frying pans.

### 30. What led to the idea to “micronize” PTFE ?

➤ Starting in 1975 PTFE was ground to a fine powder and added to paints, which gave the non-stick surface. Its dirt rejecting effect led to a further development, so called “anti graffiti paint”. Oils and lubricants were also produced using this micronized powder, which was also added to highly stressed materials. Lubricants, improved this way soon led to better performance of machines.

### 31. What kind of problems first prevented the production of HIT-FLON®?

➤ To start with it was necessary to find a way to micronise PTFE to 0.2 micron, i.e. 2 ten-thousandth of a mm, which is the final size required for manufacturing. This ultra fine powder is non-sticky and is also not “wetted” by oil. Many trials were necessary before a method could be found to overcome the oil-rejecting properties of PTFE and bring it into suspension in oil.

### 32. Does PTFE float in the carrier fluid of HIT-FLON®?

➤ No! PTFEs specific gravity amounts to 2.8 compared to 0.9 for oil. – Consequently PTFE forms a deposit which can easily be shaken.

### 33. What is hydrodynamics?

➤ The mechanics and behaviour of fluids.

### 34. What is meant by break down of lubrication film?

➤ This happens when an oil film no longer separates the moving parts. They then start to rub against each other. Further movement results in seizing up (see item 20).

### 35. How can you best explain this to a non-expert?

➤ If a water skier is towed as speed, the water effectively acts as a lubricant on which his skies glide (hydrodynamics). The ski or a heavier person sinks somewhat lower in the water. As the speed is reduced, the water skier sinks further and further, until he reaches the bottom; that’s the end of hydrodynamics and the beginning of wear.

A lubrication film can likewise be overstressed and becomes incapable of ensuring further gliding. Direct contact of the moving water skier with the bottom can rip out stones, and he loses his balance, which corresponds to the beginning of wear and the dreaded seizing up.

### 36. How can seizing-up be prevented?

➤ One could use a thicker oil or keep the existing oil viscous by providing better cooling. Otherwise the engine would have to run at a lower speed. – With these considerations in mind, oil experts arrived at PTFE as the best of all possibilities, i.e. at the very moment the water ski touches the bottom, the protective lubrication action must come into play for both the water ski and the bottom of the lake. The piston must not make direct metal to metal contact with the cylinder wall; this would result in wear and abrasion. A film of PTFE particles is needed to prevent that. That was the basic idea of HIT-FLON®.

### 37. How are the PTFE particles activated?

➤ No coating takes place by pouring **HIT-FLON®** into an engine at standstill. Frictional energy is imperative for activation. With the engine idling, **HIT-FLON®** works its way between the moving parts, is activated by pressure and heat to the point of friction, and consequently forms a coating.

### 38. Why does this not happen "straight away"?

➤ Because a certain period of time is needed till all the particles are distributed evenly in the engine. For this reason, **HIT-FLON®** offers particularly promising results when added before starting a long trip – with the engine running of course.

### 39. Why does the automobile industry not use PTFE?

➤ The leading car manufacturers have certainly not failed to notice the positive effect of the best lubricant of all, and consequently they have been using PTFE for several years. – However, their application technique is different; the micronized PTFE particles are sprayed on the parts of a new car.

### 40. Are the improvements due to **HIT-FLON®** limited?

➤ Yes, since you can only return the engine to its best performance level – you cant do more!!! Applying **HIT-FLON®** cant improve the design of your engine; you cant get more out of it than it was designed for.

### 41. How much fuel does an engine consume internally?

➤ Engines designed some time ago use about 10 – 16 % of fuel just to keep running. The newer generations have narrower bearings, squatter pistons and a shorter piston

way (short stroke engines) and have a maximum internal consumption of 6 – 7 %.

### 42. Why should you possibly avoid the term "additive" in connection with **HIT-FLON®**?

➤ An additive is a substance which is added. Spirit in the windshield washer system, for ex., or antifreeze for the bonnet are additives. **HIT-FLON®** has an effect that is completely different from additives on the market, and therefore it should not be placed on the same level with those.

### 43. What does it mean that **HIT-FLON®** was granted a patent?

➤ The patent protects the process of producing a PTFE dispersion as a lubricant or lubricant additive. The patent is registered under the name of Dipl. Ing. Malte Huth, number P3642617.2.

### 44. Why is this patent so very important?

➤ **HIT-FLON®** is a dispersion, because it consists of solid particles in a carrier fluid. All engine oil additives are emulsions without solid particles and are therefore incapable of producing a solid film. Scientific proof of a coating has been furnished for **HIT-FLON®** (see item 7). ■