Interview conducted in Sydney, March 1978,

between: Mr. STEPHEN HORVATH and Mr.I.C.Hacon.

MR. HORVATH: We believe that we have thermonuclear fusion in the car. But you do not have to look at it like in the text book that you have an energy level of the Sun, or at least the heat of the Sun. If you control the fusion PROCESS, the amount of energy which you put out is always equivalent to the law of EINSTEIN, when you are converting certain amounts of mass into energy. If you can control that to a very small quantity the energy you gain indeed can be very small; it does not have to be the strength of the hydrogen bomb; though the process itself is very very similar, because you are doing the same thing, you are fusing hydrogen together.

What we do with the system here, we are using the hydrogen and these isotopes - it goes through a reactor. In the reactor we are changing it, the increasing deuterium level many hundred times. As you increase the deuterim level, you are increasing the probability of the fusion; that is the key to it. It has become a fully ionised gas, a lot higher deuterim level in it. We are creating a spin flip through that process and are using current between the ANODE & CATHODE to create a plasma and then from there we are sending the plasma into an air mixing unit; we are adding oxidising gas to it - air. From there it would go into the cylinder - in the case of the car, that is what we use. In the cylinder it is under compression: you are bringing the atoms closer to each other, you are increasing the probability further, to create fusion. Then you have to develop a large amount of heat energy for a very short period of time, to put the two deterium together. We do that with a special igniter. It is made out of special material. If you put current through that material it will disassociate the hydrogen molecules; it will become only a H - hydrogen only. That is unstable. When it reaches the surface of any material, we try to draw another hydrogen out of it, to form a molecule. By doing that, it will develop a tremendous amount of heat: heat enough to melt tungsten.

MR. HORVATH CONT'D: That is the heat which we are using. But at the same time when you have created heat you provide an electrical means to accelerate the particles in the plasma. So you do two things: you have a heat, the same as a normal thermonuclear fusion; over and above that you create an acceleration which holds the two deuterium together, plus a chemical burn of the oxygen and the hydrogen. Now you are gaining energy from the three first factors: you are gaining control of the length of the acceleration, the duration of it, and the quantity of hydrogen and oxygen you burn AWAY But all these plasma are already enclosed in one combustion chamber. Therefore it cannot progress any further. You are automatically creating a situation that there is an interruption with one process and the next one; exactly the same way as the pistons in the car works, the same order as it used to be, before. Obviously a large amount of energy has to be used to start that, but as soon as you are converting mass into energy you can afford to use certain amounts to keep the process up.

When you look at the car overall, you are looking at an efficiency, 60%; it does not mean that it cannot be higher, it could be, but the engine would not be extended. Now, when you see the set up out there, what we do with the car is start it off and we are virtually monitoring THE helium output, we can monitor the neutron output, we can monitor the radiation around the car for health reasons and obviously the energy output of it; we can monitor the amount of hydrogen that goes in, the amount of air that goes in, we can - looking at air-fuel ratio. From that you can develop that - your input is ex-BTU.

Looking at the output of the vehicle - perhaps the torque of the vehicle, you know that you need to have so many BTU to have that, and you find that that the input would not cater for that unless there is something else happening. If you convert mass into energy and you are looking at the total amount of energy of what you really have got, you find that you are only 60% efficient - the rest of them is lost in a form of heat. But the overall efficiency of the vehicle is virtually increased from 38%, which is the normal internal combustion engine, to 60%, but you have to be

MR. HORVATH CONT'D: very, very careful when you analyse it: it is not the engine efficiency, you cannot get more out of the engine that it was originally designed to provide. If it is so many horse-power, it is so many horse-power. But you can get that many horse-power with a lot less BTU, so your efficiency is a converted efficiency, rather looking at the cost factor to run it than the final output of the vehicle, because it cannot provide more than it has originally been designed to do. If you want to provide more you are going to destroy the engine; it is just technically impossible. You can raise it a few horse-power here or there, you can do that with the petrol car - the same thing applies here: grind down the head, and do that, do that, but in all cases you increase the quantity of the fusion or the time length on the fusion, and by that you are providing more power. But certainly it does not do much good to the engine - I can tell you that now.

MR. HACON: What if the engine were to be, perhaps, redesigned to specially suit the purpose?

MR. HORVATH: You could raise the efficiency considerably.

MR. HACON: Would they be radical changes to be done, as we know it?

MR. HORVATH: Not really. Not really, you need a longer, slower arc in an engine, rather going back to the old fashioned type of cars, whereby you can allow a longer time because of the stroke length. If you can imagine, you can allow a longer time for the process to progress further and you can have a larger quantity air and a larger quantity gas in there - per explosion. By doing that you can raise your efficiency considerably. But I think that probably what one would face is the type of material you can use at that point of time, because then your heat - FACTOR it would start to rise very very quickly and very very sharply. As it is the engine, HEAT it is equivalent or perhaps a little bit less than, that is on the normal petrol car - that is the outside temperature I am talking about. The explosion temperature inside the cylinder, it is obviously a lot higher, that is where you get the ~~original~~ efficiency from the car.

MR. HACON: How would it affect the valves, burning out of valves and things like that?

MR. HORVATH: It does not. It is a clean fuel. It has no deposit of any kind and no carbon or anything packs around it. And your output is STEAM; this STEAM is virtually acting as a cooling agent, through that process. So, so far we did not experience a major problem with the work, lubrication of the valve stems are obviously creating some problem but it is very very minor, you can just about say you REMOVE THE rubber seal on the top of it allow some oil to go in there, and it will cater for it. If an original manufacturer would use the system or accept the system and start to design the car, with that system tiny little things like, that you must take into consideration. There is no modification on the car, it is standard as it goes. The only thing we changed is, we blocked one hole in the manifold to make sure we are not heating the gas; it is no longer needed. And we changed one piston RING, virtually added one RING. The top compression ring which you have there, you know the gap between the rings when the ring is closed, allows the steam to pass, fall down into the sump, it does not do much good there. What we did virtually using two very narrow RINGS and turned them two 180 degrees to each other so you have a full 360 degrees seal over it. But it is not an unknown method; they use that in better performance cars interstate, IN THE STATES all over the place, indeed there are ready made kits you can buy with that type of ring. That is about the only modification. Timing of the vehicle is obviously different, that is ON TOP dead centre, almost ON TOP DEAD centre. There is no VACUUME ADVANCE vent needed, it is simplified in fact. There is no fuel pump needed, which is saving in cost again. As far as the carburettor is concerned, it is completely off: it is replaced with the reactor and the air mixing unit. The radiation tube works at 40,000 volt, therefore quite a complicated ELECTRONICS is connected to the car. The total cost we believe would be between six and $800, taking the Australian labour content into consideration; if it goes out of the country, perhaps it will be cheaper. That is based on 100,000 units, if you

MR. HORVATH CONT'D: make this type of system by the millions it will become cheaper than that. Comparing to the saving, that you save, by not putting certain equipment on the car plus getting rid of the pollution control system, the car could be cheaper than now or at least the same price with an unpolluting fuel and an everlasting fuel. So far as the hydrogen is concerned, for the purpose of testing we are using standard hydrogen as it comes from CIG. We are even using the CIG bottles to make sure if any scientist or anybody who comes along, he can take his own sample, he can test it and draw comparisons between our helium levels and whatever he finds there and whatever he finds in the air. As you know, in the air we have got 5.2 parts helium per million. We are burning a certain amount of oxygen out of the air, so that can give you a little bit higher reading then, about 6.2, 6.3 parts per million after the oxygen is withdrawn there. Our reading can go as high as 12, 16 parts per million which means we are producing quite a quantity of helium.

MR. HACON: What would be the overall effect if, say, the majority of the World went over, it would mean putting out a massive amount of helium?

MR. HORVATH: Tremendously beneficial. Very, very beneficial. You see, the upper atmosphere is virtually full of helium. It is an inert gas. It does not do any harm to anyone. It would get rid of the "greenhouse" effect ROUND THE WORLD. It would clean the atmosphere. It would be a beneficial result. And indeed, it will create a proper ratio for radiation between the Sun and the World, less helium we have there the more ultra-violet we are going to get down into the Earth, the more we have here we are bringing the whole balance back into consideration; obviously it will take hundreds and hundreds of years before you can ever reach this stage but it is beneficial. There is obviously steam which comes out of the car. It does not do much harm.

MR. HACON: Regarding the exhaust systems, would that be a high promotion to rusting out?

MR. HORVATH: It is stainless steel. It would have to be changed. It would have to be stainless steel - yes it would have to be

MR. HORVATH CONT'D: stainless steel and the muffler would have to be a special one to condense the water. That is all to it. It does not cost much more with the stainless steel, the running costs.. You find that many of the new cars are already with stainless steel mufflers on them. But it is preferable -

MR. HACON: It is, well pure STEAM is it, would that have any effects in high density situations do you feel?

MR. HORVATH: No it does not, it is absolutely pure. There is a bit of helium in it, there is a bit of nitrogen-oxide in it, obviously you are burning oxygen out of the air, you are eating it up; you must have some nitrogen-oxide from that, which is the laughing gas as you know but the quantity is so small that it would not make you laugh. We have some carbon, we have carbon monoxide because of the lubrication oil, it is about one part per million - well below the pollution level.

MR. HACON: What are the present levels of carbonmonoxide?

MR. HORVATH: In our vehicle?

MR. HACON: No, in normal -?

MR. HORVATH: Parts per million 600, 650.

MR. HACON: And yours would be?

MR. HORVATH: About one. You have to be careful when you quote these figures, as I said it is approximately. Because you are getting carbonmonoxide virtually from the petrol and from the lubricating oil, and it can be quite high, especially if the car is badly worn and all that sort of thing; some of them obviously well above THAT FIGURE but a very good tuned car will be somewhere in that figure.

MR. HACON: I suppose it would be necessary to replace the rings sooner than some people normally do once you start putting water in the oil

MR. HORVATH: Well I honestly cannot tell you. The car ran 1000 hours continuously and we cannot really see any tear and wear on it, all right it is a big V8, you would not expect to see anything after a thousand hours anyway, but we believe it did not even run in the engine. That is about what you see. It is hard to say: you have to have it on the road at least for a couple of years before you can really see what effect it will create. It is a further effect which one will have to take into consideration ..

MR. HORVATH CONT'D: is the brittlement of the metal from the hydrogen. But some of the metal will react on the hydrogen, some of the metal will not. Stainless steel will definitely not, cast iron will not, polomium could, and will create a surface brittleness in after four or five years; you'll probably finish up with tiny little cracks on the surface here and there.

MR. HACON: This is on the head?

MR. HORVATH: Well if you had an aluminium head, yes, that is the reason why I am saying there is a lot of good going for it, but there are things one has to take into consideration, because there are materials that are not suited - the old cast iron is a lot more suitable than the aluminium, as far as the head is concerned. As far as the engine is concerned, it does not really matter, because you have no connection to it. You are using a little bit more current than in the normal car because you are driving the radiation tube which takes up round about 18 to 20 amp. but the normal car is capable to replace or produce it as you are running. Body life, I guess it would be about the same, maybe a little bit shorter, slightly shorter than the normal car. Otherwise the car functions exactly the same, in the same way; you start it the same way, drive it the same way. There is no modification on any of the safety systems, known safety systems. There are to it, a system which cuts the high voltage in the case of short circuit or burnt cable or burnt filament in the radiation tube your high voltage stops. In the case of an accident, you are cutting the hydrogen flow, so you do not create any damage.

Going back to the hydrogen: when the car is on the road, you are going to use a hydride tank. By using that you provide more safety than a petrol tank could ever provide. You see while you have the hydrogen in a hydride tank there is no oxygen really that cannot - it is absolutely pure hydrogen. While the hydrogen is pure, you cannot burn it. Nothing can happen to it. Now hydride aborbs the hydrogen altogether, even if you cut the tank open - or unless you deliberately start to heat the hydride to get the hydrogen out of it..

MR. HACON: Sort of an absorbant type of sponge, type of thing?

MR. HORVATH: That is correct, that is right, it stays in there. So it cannot create danger in any form or any shape. To fill up a hydride tank is the same as to fill up a petrol tank; you go to a station where they sell hydrogen, they put it in there, make sure that there is no air in the pipe, it would have to be pure hydrogen, put it on a couple of hundred psi, and you could fill it up; on that pressure the hydride absorbs. When you start THE CAR, you are heating the hydride, you are drawing the hydrogen out of it, but if the -

MR. HACON: Is there an element in it or something like that?

MR. HORVATH: You can have an element in it or you can use the exhaust pipe to heat it; either way it will work. Now, when you reach, say, 200 psi, if the heat is too much the hydride start to absorb again because you reach the absorbing pressure, you maintain an equilibrium in the tank all the time. So when you stop your car there is a small quantity of gas standing by, ready to start next time and by the time you run out of that, your element is heating or your exhaust pipe is heating or whatever the situation you choose to use there. That is the principle of it, that is how it works. Now you can make it at home, because you are converting mass to energy. If you are looking at a pure hydrogen and oxygen car, it is less efficient than a petrol car. It is because we WENT A STEP FURTHER WITH IT, AND THE EFFICIENCY is obviously there. Now if you go further around, looking at power stations, power generators, and aeroplanes and shipping, and things like that, well your efficiency can be boosted to many, many hundred times - that is like the hydrogen bomb, many million times efficient, because you are converting virtually everything, all the hydrogen that is within it, all the mass that there is in it, converting into energy. Now obviously you will never do that, aeroplane with a power generator but you will be able to raise the efficiency to a level which you still can control as far as the heat is concerned, as far as the surrounding is concerned, then you will find that the efficiency will be such that one can pay for it - it makes it economical to use

MR. HORVATH CONT'D: but you still are going to use quite a lot of hydrogen and you are still going to use a chemical burn with it; that way you can control it. If you get rid of the chemical burn there is no control, and without control there is no fusion process. The type of fusion they think about in the States, to set up, it will finish up like the Sun; the chain reaction will go further and further and further and then you just cannot stop it, it goes out of control. I think the maximum length I achieved was a portion of a second, and we played around and got it ALL THE a thousands OF hours. We had our ups and downs in the beginning but we are quite safe, quite good now

MR. HACON: Could we, touch on the radiation, WHEN you mentioned nuclear fusion or something like that people immediately become wary. What is actually the radiation emission?

MR. HORVATH: We believe it is well below the medical standard. We are certainly facing a problem. I like to give you the honest truth relevant to that matter. There is not an International standard set on neutron emission. Now, we worked with the system, all of us for a long time, we all here are happy and healthy. We know that it is difficult to read whatever comes out, is that low, indeed it is very very difficult. We have to go to a lot of trouble to prove the existence of the neutron. That is the way the process is set up there, but it is there. It is well below the standard which they set for fusion reactors - you know fusion reactors have quite a bit of neutron there, and there is a level set for that. We have got about 100% less than that. But I would not like to say that an International body or the Health Organisation in Australia will accept our level; they have to make the decision, I cannot. I honestly can recommend that that is safe and suitable, but the decision has to be made by others. Now that decision has to happen before that car can go on the road. We cannot take it out of here, we cannot sell it REALLY you on theory - UNTIL A government or an International body makes a decision that, yes, that level is acceptable. Now, we are working on that now: through the Press release. Deliberately I did not

MR.HORVATH CONT'D: want you to talk much about, or even mention the neutron level, because it would create more harm than good knowing that the level is low enough and knowing that there are independent scientists engaged to work that out and indeed applications are rolling in relevant to THAT MATTER now. I have heard that I will come better of if I leave it alone. Now I wish I would not, because it really is - if there is neutron, there must be a neutron reaction. Neutron is something you can't get from anywhere else, THERE HAS to be a nuclear reaction to get it and the lifetime of it or the half life of it is a bit above 12 minutes. So it is not something which will last for five or 600 years.

MR. HACON: I see. So this would not be accumulative?

MR. HORVATH: Oh God no. No, after 12 minutes it is gone. That is standard. It is only there for 12 minutes. The what we are using through the radiation tube, it is only there while the car is running. Again, it is shielded -

MR. HACON: Like a T.V set?

MR. HORVATH: That is right, and it is well below the level of a T.V. set, at least that is outside; inside it is a very massive radiation, obviously. It is a very strong radiation. Now, it cannot get out of there because it is a permanent, (SEALED) that sealing between the walls of the reactor; nobody can remove it, nobody can do anything with it. If somebody removes the tube, it is totally disconnected. To do any harm to himself, he would have to deliberately wire up the whole lot outside, which is a very difficult job; yes, then he will be hurt, but you can deliberately light up your petrol tank and kill yourself at the same time. So that is the type of problem that you would be facing with radiation. The radiation tube has a lifetime: it is about 1200 hours. After that you can throw it away. You have to put a new one in there, it is a very simple process to (EX)change it; it is not dangerous at all. It is not RADIOACTIVE obviously. You remove the glass envelope and push the next one in position, connect the wire and forget about it. The cost of it, to buy the

MR. HORVATH CONT'D: seal now is about $16, which is almost equivalent to a few spark plugs or something like that, and in a family car what would that represent, about three years or somewhere round that then every few years you would plug a new tube in. That is about all that I can tell you about the radiation, it is harmless. Now, when you come to a power generator or a larger unit, stationary unit your neutron plus density will grow and it will grow very fast and it will have to be shielded, but there are suitable shielding materials for that purpose.

MR. HACON: Is this neutron in the helium atom or where would that actually be -?

MR. HORVATH: No, when you go through a reaction, you start with a deuter to deuter reaction, then you go to a deuterium to deuterium reaction which will produce a helium atom plus a neutron. That is the product of the fusion. You produce a free neutron. That free neutron will, like light, radiate it in every direction, it goes out of there. Now, if it had to pass through a certain amount of matter, cast iron or whatever you have got there, it is already slowed down. Then you have got water jacket in the car, it acts as a moderator, it slows down even further, tremendously. Then it has to pass through a second layer of cast iron before it can come out, and then it perhaps an energy level to travel another 20, 25 centimetres or something like that. By that time, its energy level is so low that it is totally harmless. And it is a matter of time before it disappears altogether. That is the way you see it. But when you are looking at a large reactor where you would probably produce, I do not know, hundreds and hundreds mega or something like that - yes, the neutron density is high. But there you have the probability to put a shield around it, a moderator around it, if it had to be a metre, it is a metre, it does not really matter, but you can contain that round the area and when you stop the system, 12½ minutes later you have no problem. So you are not looking at a radiation waste where you have to store for many hundreds of years. That is the difference between that type of radiation and the fission. When you are looking at

MR. HORVATH CONT'D: fission, that is a very very good energy source but it is a very dangerous energy source, and it is only dangerous because of the radioactive waste. Is there anything else in your mind which you would like to put on the tape?

MR. HACON: Yes, getting onto the production of hydrogen - One other question: would it more efficient to use it for a steam car for the energy that you would get?

MR. HORVATH: No way, no.

MR. HACON: You would not?

MR. HORVATH: You see you would virtually have to produce a heat producing unit; you would have to create the thermonuclear fusion to heat the water to create steam and to drive it. So you are talking about an interface and you are going back to a fairly old fashioned type of engine. I know the development - Pritchard - they are working on and I really appreciate his effort and the time he has put into it and I think he is doing a marvellous job on that steam engine. The problem obviously that you still have to use fuel, which is a polluting fuel, becomes scarcer and scarcer every day; you have to produce steam: you have to go back to a principle which has been outdated a hundred years ago, well about. You have to convert it into a modern concept. Now, technically he might be able to achieve that; how he will achieve acceptance for it from the public it is a difficult thing to believe. But with our system, if you are thinking to develop an interface and use an engine similar to that engine, which I believe is fairly good and fairly efficient, you would suffer a loss in cost. You will still have to use the hydrogen, you will have to use a burner for it, you will have to use the same amount of product if not more than what you use in the car and then you use the water and then your efficiency rate will become lower, So there is no need for it. You simplify the whole lot because your end product is steam anyway, through that process, but it is not sufficient to drive a car; it is only because you are burning hydrogen and oxygen it cannot produce anything but steam. But your energy that you gain it is several times higher than the energy which you could gain from the steam.

MR. HACON: Do you burn as much oxygen as you do now in the normal car?

MR. HORVATH: We burn as much oxygen as we burn in a normal car - probably we burn a little bit more.

MR. HACON: How would you envisage the mass production of the hydrogen fuel?

MR. HORVATH: There is a lot of known technology for that. You can advertise that in any form or any shape. We have a number of patents relevant to the hydrogen production.

MR. HACON: Would it be possible for the individual to produce his own fuel?

MR. HORVATH: Yes - the answer is quite -

MR. HACON: Well it is quite feasible?

MR. HORVATH: Yes it is quite feasible. Originally we started off looking at AN ON ROAD production. With the fusion, it seems that it might become technically possible, say 50 or 100 years from now. Probably what you are facing is the revenue to the government. I do not want to stop it. I do not think it would be wise. You would put a lot of people out of work. I would like to put more people back into work rather than take them out of it. So, I think the wise decision is to use the hydrogen as the energy source and set up big plants, hydrogen producing plants which will use a lot of extra labour, a lot of extra equipment. You can use solar energy, you can use off peak power, you can use radiolysis you can combine the whole of radiolysis, electrolysis plus magnetic field around that, which ROOTS the production OF COMPOSITE electrolysis plant - there are so many different kinds, yOu can use and simply produce it from water. Now, sea water or ordinary water, it does not make any difference. The only good thing about sea water is that it is electrolyte to some extent; the normal water it is not, you would have to put some additive to it to make it right. You can produce hydrogen from there bank it in the form of a hydride tank, a huge hydride tank, carried from one place to the other, the same way as you do the petrol today, fill it into an underground hydride tank and when someone comes along, fill the car up from that tank. So what I am

MR. HORVATH CONT'D: saying briefly is that you establish a very wide, very large industry to produce energy and every country, developed or underdeveloped, can produce its energy that it needs to fulfill its requirements, locally. You do not have to go anywher to buy it. It will keep people working. Over and above that, you must have a distribution channel. Now, it may be a pipeline, it may be cars carrying it from place to place, but it will use additional people at it. It creats additional work. At the same time the old production is still needed; it still can work parallel with that for I do not know how many years, probably five, six, seven years, before one or the other will be phased out. But the oil even then, will be and can be used, plastic, medicine, lubricati oil and about another 160 different materials that we can produce from crude oil which we cannot get from anywhere else. So, the danger that we are facing at the present time; we are not only running out of oil, but petrol. We are going to run out of plastic, and that and that, and that, and at the same time, people do not seem to realise that, but it is actually, it is true; there is a limitation- about another 16, 20 years and we will be in a very critical problem. We can extend that period by supplementing the old fuel with something else, and I do not care who the person will be - it can be our company or somebody else, but somebody somewhe has to come up with an alternate method. We do our bit. And that is all that we can do. Unfortunately in Australia we do not get the reaction that we would like to see, it is totally different overseas.

MR. HACON: How much would the hydride tanks cost, say for a normal petrol tanker, would it carry the same amount of fuel?

MR. HORVATH: Yes it would, it would give you approximately the same road distance as the normal car.

MR. HACON: No, what I meant was, of carrying it, for instance by tankers, would that be a similar shape type of thing, bulk transport?

MR. HORVATH: Yes, very big brick, if you look at it that way, that is the way it would look, really about the same size; it would carry probably a bit more.

MR. HACON: Would it matter if it got smashed in hydride -?

MR. HORVATH: No if a tank like that turns over on the road, well it turns over - that is all to it. It certainly would not spill. If the hydride goes out of there, they can be shovelled nicely together and put back into another one, by that means -

MR. HACON: They are not made in Australia at the moment, the tanks?

MR. HORVATH: No it is not. Some Melbourne University professors experimented with some hydride tank in the last ten years, I honestly do not know how far they progressed with it.

MR. HACON: How much would that cost do you think?

MR. HORVATH: Not much more than a normal petrol tank.

MR. HACON: What is the actual substance?

MR. HORVATH: It is a metal hydride, it can be aluminium hydride, it can be iron hydride; it is like [illegible] - if you like, it will be filled up in layers - they usually make it in bricks, they compress it together and they pack them out, they put heated plates in between them pipes in between them to [illegible].

MR. HACON: That would be quite heavy though would it not?

MR. HORVATH: The old fashion type hydride tanks were very very heavy, indeed it was not feasible until about a year ago since they came up a bit, very small, very efficient hydride tank. The most efficient to our knowledge is developed in South Africa.

MR. HACON: So it is available now?

MR. HORVATH: Yes.

MR. HACON: Say you pull up at a normal - hydride gas station, what would be the time of filling?

MR. HORVATH: Very good question. Definitely more than the petrol. It is a little bit more time consuming. You can imagine a car like, say like a V8, a Fairlane or something like that, it would take you about 15 minutes to fill a car - 10 to 15 minutes, somewhere round that area. Now were it petrol you would probably finish up in six, seven minutes. So it is about double the time.

MR. HACON: Would it be possible to -

MR. HORVATH: Speed it up - no.

MR. HACON: /Well, have a bigger tank?

MR. HORVATH: It is possible but you would pay the penalty of the weight. The way it seems to us, from the knowledge that we have available of the hydride tanks, if you like to reach the same distance as the present car, well it is my concern the weight ofthe hydride tank would be very near the same as a fully filled petrol tank, but the weight of the hydrogen in it would be somewhere round the 10, 15 kilogram; which means the fluctuation of the weight, as far as the car weight is concerned, it is only a few kilograms, while in the normal car it is a couple of hundred pound. Now, to design a car for road haulage with an equal weight, a known factor, it is possible and it is easy. While with a fluctuating weight and a weight which will transfer from left to right, it is a lot more difficult. There are additional benefits which you could get out of the hydride tank but you would have that constant weight.

MR. HACON: So if there is a smash or something well the circuitry would be interrupted to be producing the hydrogen?

MR. HORVATH: You have no other alternative but to replace your hydride tank, if you have a serious accident at the back of the car and it is completely damaged, if any air went in there you would have no alternative but to replace it. The only difficult part in the production of the hydride tank is, you have to "crack the hydrides". When the tank is completely finished and just before assembly, they heat the complete tank up to about 800 degrees C. that is by the manufacturer, and he is getting all the impurity out of it, making sure that there is no oxygen or other impurity in that tank and he fills it with hydrogen. He seals it and that is the way it stays. It will operate for, I do not know, hundreds of years. You can fill it, you can release it until you put air or impurity in it. If you do that you do not have to throw it away but it will have to be re-cracked, re-heated, cleaned and you are back in business. You see the advantages and disadvantages - I think the advantages are outweighing the disadvantages more and more.

MR. HACON: Could you summarise the progress is so far, and what your hope for the future is, perhaps getting it underway and perhaps cooperation with the oil companies - what hope there is there?

MR. HORVATH: Yes I can.

MR. HACON: And who are the key people?

MR. HORVATH: Well those are difficult questions. We certainly have no reaction from the Australian Government. They have a formal invitation from us to come and see the tests. At that stage there is no reaction, that is to the Prime Minister's Department. We did receive a telex from them which comes from another Department probably on instruction from the Prime Minister's Department, where they were saying that they are "watching the progress with interest", so that is all that we got. As far as manufacture is concerned, yes we have approaches from very very WIDE manufacturers. As far as overseas' countries are concerned, there are several who have made approaches, three of them virtually ready to sign on the dotted line.

MR. HACON: The local manufacturers such as GM-H and Ford, they would be willing to put it underway once it was approved would they?

MR. HORVATH: I cannot make a comment on that. I honestly cannot. Unfortunately you cannot deal with the local manufacturers. You have to realise neither GM or Ford, they are not Australian organisations, they are controlled from America. As soon as you try to talk to them you are talking to Detroit. And because of that I cannot say that Australia would take priority to using that. Sure - they are interested about it, but they are interested about it on a worldwide basis.

MR. HACON: What hope is there of the oil companies taking it up, as far as the distribution outlets or would you have to start a whole new set up?

MR. HORVATH: No, as far as the fuel distribution is concerned, if the oil companies have a tiny little bit of commonsense they will take it up, because they have an existing distribution channel. We are not intending to go into hydrogen manufacturing; we do not want to do anything with it, we would like to make sure that oil companies or governments or other people whoever want to be involved with that sort of business; they can start, they can distribute, they can do whatever they want to do. We have a system which can use the hydrogen very very economically. If based on the theory of

MR.HORVATH CONT'D: nuclear fusion, it is controlled, it is safe. That is the only game we are interested about; we are interested about it in the car, interested about it in aeroplanes, shipping, power generation obviously, smelting - wherever you need heat, we can apply it. That is the game we are interested in. We are not only interested really about Australia, but we are interested about every country in the world. In my imagination the whole world needs something and we are there to give it to anyone. I do not really care if it is Red China or America, or whoever; we are all men, we are all people, we all need something. And our intention is to use it and to distribute it, provided they use it for the interests of mankind; if they try to turn it into something nasty -

MR. HACON: Like the atom bomb?

MR. HORVATH: No licence, it is just not on. At least so far as I am concerned, I do want to use it only for peaceful purposes. That is the intention I have had.

MR. HACON: Would it have any potential for other purposes?

MR. HORVATH: Well obviously if you use it for aeroplanes, who can differentiate what they use that aeroplane for.

MR. HACON: How would it be harnessed in an aeroplane as far as propulsion -?

MR. HORVATH: It is quite easy, it is probably the easiest application out of it all.

MR. HACON: In jets?

MR. HORVATH: In the jets, yes.

MR. HACON: Just getting back to the production of hydrogen, if you are using electrolysis, you also get chlorine and things like that which is poisonous, is there any way of producing it without other pollutants, or -?

MR. HORVATH: No you can produce it. If you produce electrolysis say by potasium hydroxide, use potasium hydroxide as your electroly you will have hydrogen and oxygen output which you can separate through the production - the oxygen can go -

MR. HACON: The oxygen would go in anyway.

MR. HORVATH: That is right, the oxygen can go back into the air to replace whatever the system uses up elsewhere and enrich the oxygen level of the world which is really needed.

MR. HACON: Would there be sufficient quantities though?

MR. HORVATH: Oh yes, oh yes you can make it in tremendous quantity. I donot know if you ever heard about Professor Buckhouse, he is one of the leading men in the world as far is hydrogen production is concerned. He is based in Adelaide? - Western Australia, in one of the universities and he is a member of the International Hydrogen Energy Association in Miami. I am a member of that too. He is doing a tremendous amount.

MR. HACON: Yes, I heard there was an organisation actually behind it?

MR. HORVATH: Yes. He is doing a tremendous amount of work on that. He is certainly one of the most advanced round the area, he is looking at solar energy as one of the energy inputs. That is a very very wise step, because it is a cheap way to produce it; you can produce it all day through. During the nighttime there is the off peak power, you can use that so that you have a continuous production plant when producing anything in this quantity Looking at radiolysis, where you use radiation to produce it, it is more expensive. It is only economical if you are looking at a tremendous quantity then it would become - but the known technology to that involves uranium. I cannot really say much for that, at this point of time. I think electrolysis is the right way to do it, it is the safe way to do it. The area what -

MR. HACON: How quickly would the production be?

MR. HORVATH: Well the United States produces enough now virtually to put a system like that on the road. You could. You see hydrogen is used very widely in this State, even in refineries, they use it in the oil refinery process and burn it off. All those things that are burned off can be quite nicely used and they are producing a lot too because of the space program, obviously. And that can be turned into a commercial use and can be increased very very quickly. It is relatively cheap, so faras the production plant is concerned. It is certainly far away from the price of an oil rig;

MR. HORVATH CONT'D: you cannot even compare it. You can establish a hydrogen producing plant probably for a tenth of an oil rig that you set up, especially if it is an off-shore one, and it is there to produce year after year after year, without creating any pollutions.

MR. HACON: What sort of power requirements would you think, just roughly -?

MR. HORVATH: Oh, a tremendous quantity of electricity that you are going to use up. You have got Faraday's Law unfortunately in your way there and the current which you are putting through the water is virtually - controls the quantity of gas that you are producing and you can improve it by technical means here and there, but the Law still applies.

MR. HACON: So if you are burning more COAL

MR. HORVATH: That is correct yes, but it can be done. I cannot really see any problem to get enough hydrogen to run the whole world with hydrogen, I think it is quite easy. As a matter of fact, to my knowledge many large manufacturers could get into production tomorrow if there would be a system that can use it - and can use it economically. There are so many experiments going on around the world with hydrogen cars, all over the place; severa of them in Australia, hundreds of them in the United States, quite a few in Japan and several of them in England; they all run into the same problem - efficiency problem. We have not got that efficiency problem - that is where the difference between the individual processes. I think we have just about told you everything we can about the system. The only rational thing we can do is let you have a look at it.

MR. HACON: Yes.

MR. HORVATH: In that case I think we will go and start the car.

CONTINUED NEXT PAGE

The following comments were made during
a demonstration of an engine using Mr.Horvath's system.

MR. HORVATH: That whistle that you hear is THE HIGH VOLTAGE CONVERTER.

When you are looking at the engine the way it STANDS there, I do not know if you have ever watched a V8 before, there is no resonation whatsoever because you have got a complete balance between everyexplosion that you have in there - you have got a tremendous amount of energy and because it is hydrogen, you know that FIRING is so tremendously fast, that the duration of every explosion is portion of a NANO second, comparing to the petrol one. That is how you control the whole lot, bringing it down to such a short time you are not allowing the heat to be radiating OUT of the metal, otherwise you would run into a very serious problem. Obviously the control is through the electrolytes and through the timing that you have in the vehicle is very important and very vital. Now they are all solid state components so nobody can play around with it; nobody can increase it, nobody can decrease it. We can, we have some of the equipment on that car adjustable, to give us the chance to set it to the right level and virtually develop the value of some of the components that we have to have there, but that is the way she runs.

MR. HACON: What is that there? Is that a standard alternator?

MR. HORVATH: That is a standard dymo - the alternator is on the other side, there is a power steering. It is a standard car that comes to us from Ford.

MR. HACON: How does it react to a fast acceleration?

MR. HORVATH: The same as the normal car, there is nothing different; it is easier, because you see hereyou are dealing with gas you do not have to convert the liquid into gas and if it is cold or hot or anything like that it is already gas. HAVE A LOOK AT THE BACK

MR. HACON: These are the gas cylinders, just standard. Here is the steam coming out of the exhaust pipe.

MR. HORVATH: Absolutely beautiful.

'They once laughed at Einstein, didn't they?'

When the laughing stops in a couple of weeks time, Brookvale scientist Stephen Horvath will allow himself a secret smile, his publicists say.

By SPENCER RATCLIFF

Not that he's the smug type — far from it.

The 49-year-old Hungarian-born inventor is a modest man but as a scientist he's more than accustomed to sarcasm, disbelief, laughter and even outright ridicule.

Just a few days ago, Mr Horvath lifted the lid off his 35-year-old dream when he introduced the world to his revolutionary Hovarth Energy System.

Invitations

It was shrouded with secrecy and surrounded by security, and it all provided a field day for dozens of bemused journalists.

But after the initial scepticism Mr Horvath says several foreign governments have invited him to their countries for talks and he believes the Australian Government will hold a full inquiry on his energy system.

Mr Horvath's new energy source — called Interrupted Controlled Thermonuclear Fusion — was launched with the aid of a massive world-wide publicity campaign.

The PR blurb claimed the invention provided mankind with "the opportunity to survive" and said the "genius Einstein would be proud of this breakthrough".

It also claimed civilisation could enter a new era and a lessening of world tension would result.

In a nutshell, the media didn't really know what to write about it all, so they quoted the scepticism of leading Australian professors and scientists. One expert even described the invention as "absolute nonsense."

Not that it worried Mr Horvath.

In the words of his PR man, Mr Roger Henning: "We anticipated it would be beyond the intellectual capacity of the majority of people invited to the unveiling.

"I expected the reaction I got. They once laughed at Einstein didn't they? They gave him a difficult time."

To those professors and experts who are laughing at the Horvath Energy System, its inventor says: "They are perhaps a little ignorant, but they will not be laughing in a couple of weeks time."

While his claims and aspirations may have proved too much for most people to grasp, several aspects of the publicity exercise were simple to follow.

Details of the launching were sent to editors some time ahead of the big day, and they were asked to adhere to a strict news embargo plus various "secrecy agreements".

One involved not briefing reporters unless absolutely necessary.

They were backed up by an unusual threat.

Astonishingly, the PR blurb said: "Any direct media approach to any member of the development team or the Horvath family will result in all access being denied to the organisation involved."

And it added: "Such approaches will be regarded as an intrusion of privacy and referred to the appropriate authorities" — whoever they may be.

Such control of access — coming from the scientist who five years ago invented the Access Control magnetic key system now in the world-wide use — is perhaps understandable.

Observing the correct and proper channels, we soon secured an interview with the inventor who turned out to be a thousand times more obliging and friendly than his PR image would have one believe.

'Running a car on sea water'

"You cannot mix a bunch of journalists with a bunch of scientists."

Mr Horvath was a little kinder in his choice of words.

As he put it: "I don't blame the press although I'm a little disappointed to some extent. The system is very scientific, very complicated and extremely difficult to explain to the media.

Expertise

Stephen Horvath was born in Hungary in 1929. He specialised in aeronautical engineering, and at the end of World War II he ended up in Austria as a displaced person.

By 1949 he was in Australia where he was forced to go back to his studies because his qualifications were not recognised in this country.

Other Horvath inventions listed in the blurb include "spaghetti and brick manufacturing machines".

He is also recognised for his expertise in electronics, computer design, electro chemistry and nuclear physics.

And if his claims are proved correct, in a few weeks his name will go down in history in bold capital letters.

"I first thought of my energy system when I was 14," said MR Horvath. "I've been working towards my dream for 35 years and last week's press conference was the culmination of millions of hours of hard work.

Inexpensive

"The media didn't quote the scientific material at all. They reported that I had invented a method of running a car on sea water, but that's not exactly what it's all about.

"It is a whole new energy system we are discussing. It is pollution free, inexpensive, everlasting and developed in Australia on behalf of international companies.

"The system uses hydrogen and its isotopes and the principle of the system can be applied to all known projects using heat for energy.

"It can be used for power stations, aviation, shipping, trains, smelters and cars."

Mr Horvath says he has received "a tremendous response" from overseas and several invitations from foreign governments to be flown to their countries for talks.

"The Australian Government is showing interest and I think they will hold a full inquiry into it," he said.

"Several Australian scientists have also contacted me and they claim I am right."

Full tests

Full-scale tests on the Horvath Energy System are due to begin "in the very near future."

He added: "It will change the balance of power and energy in the whole world and I intend to make sure that the whole world will benefit.

"The benefits to everyone will be tremendous, particularly to Australians because thousands of jobs will be created."

The invention already has more than 500 patents in 52 countries and, if government approvals are given, the system could be in full production within 16 to 18 months.

STEPHEN HORVATH ... a smile.

The development team comprises seven leading figures — all from the Manly-Warringah district.

The PR consultant and "special adviser" to the project, Mr Henning, uses more emotive words than his client.

"When I first heard of Mr Horvath's claims, I fell off a chair, picked myself up, dusted myself down and thought 'is it really possible?'" he said.

"The cat is now among the pigeons. When the so-called experts and professors are proved incorrect by the release of more material in the next few weeks, they are all going to look a little bit silly."