



# IdZ-ES Ready for Delivery

Germany's IdZ-ES programme is completing its final acceptance testing ready for series production that could begin in 2012

**Germany's Infanterist der Zukunft (IdZ) system is essentially a two stage programme begun in 1998 as an experimental effort, leading to the first fielded system, the Basic System fielded in 2005. Karl-Heinz Rippert, Project Leader Soldier, responsible for IdZ Equipment, explained, "[The Basic System] was more or less the workhorse to learn what is really needed. After the first approach we realised that a fully integrated system was too heavy and the soldier as a human could not withstand that fully integrated system in a harsh environment. This ended in the requirement for the so called Extended System (IdZ-ES). It is not an extension of the Basic System but something totally different. We also tailored the requirement and it is now a totally modular systems concept. We concentrated on all the different infantry missions; mountain, airborne, dismounted and also armoured infantry; the grenadiers. This is the critical point that this system cannot be in one set up to all the different users. It is also not individual equipment but fits the complete squad."**

Discussing vehicle integration Rippert said, "Don't underestimate it when your soldiers have been fully loaded and carried in existing vehicles, this is a real demand. Normally you won't fit to those vehicles."

The IdZ-ES systems is designed for a 24 hour high intensity mission and a secondary 72 hour mission and the ensemble is literally a bottom-up design, beginning from underwear through various layers and sub-systems with everything adapted to the system including integration with the vehicle and Battle Management System (BMS).

This developmental approach has been characterised throughout by consultation with all parties. Rippert

explained, "After the first phase of development, one of the most important lessons learned is that we have to take into our decision making all those different soldiers early enough so that they can influence industry and also that industry knows what they are really expected to do."

The key tests for IdZ-ES were six main functional tests mainly which focused on clothing, protection and carriage systems, with the last identified as the bottleneck.

When the initial system was put together, the maximum weight was 72kg which could be more than the bodyweight of some soldiers and operationally unacceptable. A decision was made in the Summer of 2010 to split the system and to provide a 110l backpack required for airborne users and others requiring additional loads.

Rippert said, "We realised that to save weight on a mission we had to deeply analyse loads and missions and we have to be so modular that we are able to take things off the system so that we really focus on what is really needed for that specific role and that limits the weight. We also saw that there are so many different soldier needs that we cannot come up with one system so we have parallel solutions, for instance standard dress and a long jacket smock like jacket that can also carry some of the load. The realistic view in our test results was that we needed much more modularity than we expected in the early stages."

The core of IdZ-ES is the Basic Equipment, equipping every soldier. This comprises the complete battledress, load carriage systems, helmet with integrated digital magnetic compass so that the map is always in the right orientation in the soldier's direct view, independent helmet mounted display, night vision goggle with a built in display and third hand display which is also the main operational

unit for the computer. This is linked to data and voice UHF radio IP based and hybrid GPS inertial navigation. The system is powered by two batteries with two sets necessary for a 24 hour mission. When in a vehicle, each soldier plugs into the vehicle's systems at single point, updating C4I data, recharging batteries and using the vehicle GPS so that they have a constant accurate position location, with a three second delay when they leave the vehicle. There are currently no Combat ID systems available although its planned integration means the system is ready to accept it at a later date.

The Commander's system has an additional VHF radio and additional portable control computer to prepare missions and to also receive data from the higher level BMS. There is however currently not a BMS interfaces for IdZ-ES because the desired option is for a NATO based MIP DEM information-transfer and that is not ready. For the VHF radio, the heavy and bulky legacy SEM radio is being replaced by a new hand held radio; either a Thales PR4G or Harris Falcon III radio with certification by early 2012. This decision is being taken outside the IdZ programme office.

Beyond this is mission equipment. This includes a Long Range Rifle and Light Machine Gun. Work on narrowing down weapon accessories is underway from a large variety of devices in service today. On the STA side a recent addition to the suite has been the Jenoptik Bird which will fulfill similar functionalities as the Vectronix Moskito but operating in a different wavelength.

After six years of work the system is down from a weight range of 35-72kg down to 35-45kg. Rippert said, "There is no single weight but the single systems without weapons, will weigh 23kg. If he has a G36 and mission ready he comes to 35kg and the Rifleman is the lightest."

The Modular Clothing for IDZ is flame retardant, features ►

► protection against insects, includes multi-wavelength camouflage and also has NBC protection. Rippert said, "We decided to have everything fully integrated so, there are no straps outside because of ventilation and everything is integrated inside the clothing. Overall there are nearly 92 different items enabling 32 different variations of the system to service nearly every role individually out of this single modular box."

Soft ballistic protection on IdZ-ES is Class 1 upgraded to Class 4 with ballistic plates which are offered to soldiers in at least three different sizes to ensure a good fit. Rippert cited significant problems, now solved, in developing the right neck protection which neither interfered with the weapon lock nor vision by interfering with the helmet. Rippert said, "We had to shrink the outer form to a lesser volume because of problems [with vehicle integration]. For that reason we decided to have a soft ballistic vest directly on the body and this limits the body's ability to evaporate sweat and to stabilise body temperature so we had to implement active ventilation underneath. We realised that in 2004. We had a lot of work to do to develop an effective system and it took us nearly six years." The resulting front and back ventilation system also works in conjunction with NBC kit.

The IdZ-ES helmet is a new design with an all in weight requirement of 1.4kg, fully equipped with electronics including a DMC at the back, with all-moulded fixtures and designed to withstand 640m/s against fragments and defeat 9mm parabellum rounds.

The original load carriage system did not distribute weight between the hips and shoulders easily and also interfered with the seating in the new Puma IFV. The resulting new system uses a 'backbone' which can be adjusted once by every individual soldier for the right fit along with every single element so that every individual can take out what they need to have an optimised set up. It also has a built in rescue pull. The modular load carriage begins at 30l and is then adapted with extra bags and pouches to be loaded up to 110l to optimise it for separate systems. Rippert added, "We think that we are now going to a realistic load when we are coming to lower than 40kg for the average soldier. With technology improvement we could do an additional weight reduction in components like helmets and batteries of up to 20 percent."

Rippert is pleased with the overall integration of the system, "We have complete personal protection with the Class 1 vest and air ventilation under the coat. We can upgrade up to Class 4 armour plates. The infantry can now sit fully equipped in vehicles which was the most critical point for new, very small vehicles."

One of the key requirements was that all C4I operations in a combat mode without taking hands off

any of the weapons used in the system and all have been adapted. Rippert gave the example of how this works on the standard assault rifle, the G36, "We can operate the radio on the PTT and we also have an integrated switch for the laser range finder so you do not have to take your hands off the weapons and operate this device separately. The push to talk button is operated via Bluetooth with back up cabling. Further adaptation of the system's weapons has been made to ensure integration with the new armour.

The IdZ-ES system has been designed for rapid information input; three intuitive button pushes are all that is required activate the laser range finder, laser the target, display it in the situation map and share it within

the squad as object mark in the look-through-display.

At the end of June the first delivery of a 'series' IdZ-ES system with sufficient equipment for a section of ten men took place ready for final acceptance testing due to end in late 2011. The next steps are then dependent of other factors, Rippert said, "We are ready to start with the procurement, nobody know the number of sets we can buy but we want to start in January 2012 and delivery will be early 2013. We hope that by the end of 2013 the first fielding can take place, depending on whether or not we get the funding." ■

*Karl-Heinz Rippert was speaking at Soldier Technology 2011.*



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