Newsletter - September 2012

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The New Command Station - MX10

A small-batch production (10 units) of the new digital command station will be used at the exhibitions in Leipzig and Vienna (September and October 2012) as a test and demonstration. The start of actual production is planned shortly thereafter, as well as the announcement of the recommended retail prices.

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Controller MX32

Rail Manager for Smartphone

For use with the new MX10, there is the ZIMO MX32 (available for some time already) and (in future) the Rail Manager app for smartphones and tablets from W. Marschmann.

The picture of the Smartphone App (on the left), shows a new approach to control: a control knob, in place of the "classic" slider for speed steps, which allows control over driving the train and braking power, as well as the instrumentation with 2 displays, and a bar for the distance to the destination, as in many real electric and diesel locomotives.

Expansion of the ZIMO Decoder Palette, in the coming weeks and months, the following types:

MX633 – with more functions than other decoders

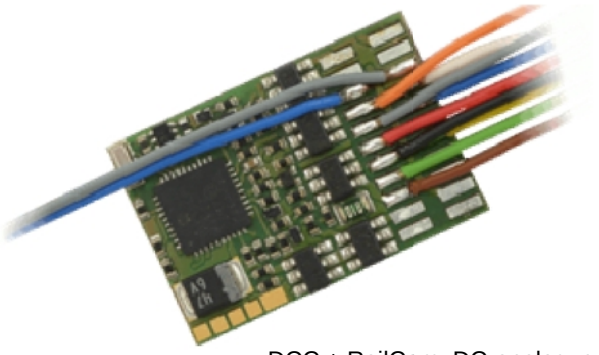
delivery soon

A Non-Sound Decoder, with some important features not available until now:

+ 10 Function Outputs (Total load 0.8 A, distributed as you wish),
+ in PluX22 Version: inexpensive replacement for MX645P22 when No Sound is required,
+ Energy storage interface with 16 V, for 7-Goldcap-Packs (GOLMRUND, etc.) provided.

Type ***MX633:*** 11 wires and solder pads for more functions
Type ***MX633R:*** NEM652 (8 pin plug) on wires
Type ***MX633F:*** NEM651 (6 pin plug) on wires

Type ***MX633P16:*** PluX-16
Type ***MX633P22:*** PluX-22



DCC + RailCom, DC-analogue, MM, AC-analogue
22 x 15 x 3.5 mm
1.2 A Motor-, Total Current
10 Function Outputs (Lv, Lr, FA1 … FA8)
2 Servo Control Lines or SUSI
Interface for external energy storage (**Elko 16 V or 7 Goldcaps in series**)

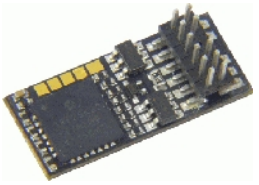
Of course, with all the standard ZIMO properties including update capability, safety, engine management and control system, functions, train control and feedback.

Price: RRP € 39.00 (MX633P16) up to RRP € 42.00 (MX633 wires).

The three **ZIMO decoder families MX623, MX630, and MX633** now form a series of wired or PluX decoders with increasing characteristics, but functionally identical properties:

MX623 → MX630 → MX633

0,8	→ 1	→ 1,2 A
4	→ 6	→ 10 Function Outputs
12-	→ 16-	→ 22- Pin Socket (PluX)
26,00	→ 31.00	→ 39,00 EUR (RRP)



MX618 and MX658 – with "Next-18" Interface

around. November/December 2012

These two types – **MX618N18: No Sound** and **MX658N18: Sound Decoder –** meet the increasing demand for new decoders with the VHDM ("Rail Community") standard interface for small scales ("RCN-118"), intended to be used in N and TT scale vehicles.

Both the dimensions – 15 x 9.5 x 2,8 mm or 25 x 9.5 x 4 mm – as well as the function outputs (4 "normal" and four "logic level ") are also specified by the standard. Nevertheless, the ***MX618N18*** and ***MX658N18*** are real ZIMO decoders, because the technology is derived almost entirely from the MX622 or MX648 types which have been produced for about a year (modern, but already proven). All outstanding ZIMO driving properties (for the MX658 also sound), and update capability, automatic train control, and RailCom and ZIMO feedback is thus equally available.

The MX618 and MX658 are available only with the "Next" interface (N18.), since there is already the "wired versions" in the form of the MX622 and MX648 types (with even smaller dimension than these standard decoder), other versions are not necessary .

Price: RRP € 26.00 (MX618N18) or. RRP € 86.00 (MX658N18),

In total, in the ZIMO Palette of **Loco Decoders** for "small scales" (N, H0e, TT, H0, 00, small 0) there are 13 families with 53 types:

	Miniature Decoder **(0,7 A)**			"Normal Size" Not Sound Decoder **(1 - 1,6 A)**					"Normal Size" Sound & Miniature Sound Decoder				
Family	**MX618**	**MX621**	**MX622**	**MX623**	**MX630**	**MX631**	**MX632**	**MX633**	**MX644**	**MX645**	**MX646**	**MX648**	**MX658**
Dimensions	15 x 9.5	12 x 8.5	14 x 9	20 x 8.5	20 x 11	21 x 15	28 x 15	22 x 15	30 x 15	30 x 15	28 x 11	20 x 11	25 x 10
Function Outputs	4	4	4	4	6	6	8	10 (9)	8	10 (9)	4	6	4
Low Voltage Function	-	-	-	-	-	-	Yes (1)	-	-	-	-	-	-
Wired Types	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	-
Direct 6 pin	-	Yes	Yes	-	-	-	-	-	-	-	Yes	-	-
PluX-xx	-	-	-	PluX-12	PluX-16	-	-	PluX-22	-	P-16, 22	-	PluX-16	-
MTC-21	-	-	-	-	-	MTC-21	MTC-21	-	MTC-21	-	-	-	-
Next-18	Yes	-	-	-	-	-	-	-	-	-	-	-	Yes
Energy Storage	-	-	-	-	-	Yes (25)	Yes (25)	Yes (16)	Yes (25)	Yes (16)	-	-	-

Fu outputs = number of function outputs including headlights, front / rear (example: 4 = front, front / rear / FA1 / FA2)
not included, however, are: logic level outputs or servo outputs (most decoders also have two of them),
the decoder with 22-pin PluX interface have to be 10 ft outputs, of which "only 9 are available at the interface connector
Pin types "yes" means that each of 3 types to choose from - free wires, 8 pins at wires by NEM652 6-pin NEM651 at wires.
Energy Storage = "yes" means that up to 5000 uF capacitors (fixed voltage 25 V or 16 V) can be connected directly to the decoder (MX633 also Gold-cap).

....and **Function Decoders** with 4 families with 18 types:

More Info on www.zimo.at, under Menu "Decoder" !

	Miniature Function Decoder			
Family	**MX681**	**MX685**	**MX686**	**MX687**
Function Outputs	6	8	8	8
Low Voltage Function	-	-	-	Yes (1)
Wired Types	Yes	Yes	Yes	Yes
Direct 6-pin	Yes	-	-	-
PluX-xx	-	PluX-16	-	-
MTC-21	-	-	MTC-21	MTC-21
Next-18	-	-	-	-
Energy Storage Interface	-	-	Yes	Yes

... and **Large Scale Loco Decoders** with 2 Families and 8 Types (soon 2 more families):

	Large Scale Sound Decoder (4 - 6 A)			
Family	**MX695**	**MX696**	**MX697**	**MX698**
Function Outputs	up to 14	up to 14	Soon	Planned
Low Voltage Function	up to 3	up to 3		
Pin Types	Yes	Yes		
Screw connections	Yes	-		
American	-	-	Yes	-
PluG	-	-	-	PluG-16
Energy Storage	Yes	Yes	Yes	Yes

Family MX820 – new Accessory Decoder in 6 versions

around. November 2012

The MX820 is the long awaited sequel to the MX82 family ("accessory decoders") and at the same time it offers a lot more:
+ modern, robust technology (higher voltage tolerance- 35 V) ,
+ inputs (especially the forced switching) with built-in filtering (no longer required external capacitors)
+ easier configuration because the MX820 is NO longer used at the same time as a servo decoder *).

*) For servo drives, there will be (soon) a specialized type, with 5 V - Power supply and without "ballast" for other types of drives.

Type ***MX820E:*** for a switch (coils, motors, EPL drive) or 2-begriffiges signal
Type ***MX820D:*** as MX820E, sealed against water (closed shrink tubing)
Type ***MX820V:*** for two turnouts (drives as above) or signals

Type ***MX820X:*** as MX820V, but an additional 8 outputs (open collector, 100 mA) for signal lamps or LEDs
Type ***MX820Y:*** as MX820V, but an additional 16 outputs (open collector, 100 mA) for signal lamps or LEDs
Type ***MX820Z:*** without output for turnouts, instead "only" 16 outputs (open-collector) for signal lamps or LEDs

The outputs of the types MX820V ...-Z offer a totally new, highly affordable way to connect light signals, for example, 8 2-aspect signals on a single decoder (MX820X or MX820Z) or 2 signals with 8 lights, and any mixture. However: there is for these "additional outputs" no finished wires or screw terminals, only pads for self-wiring. The low cost will therefore be "bought" by a loss of convenience for wiring.

Price: from RRP € 25 (MX820E) to RRP € 43 (MX820Y), minus seasonal and other discounts.

"Swiss Mapping" – the "Swiss Army Knife" of Function Mapping

from SW Version 31.0 in ZIMO Decoders (Non Sound and Sound)

The (perhaps only temporary) name for this **new way of "lighting mapping"** based on

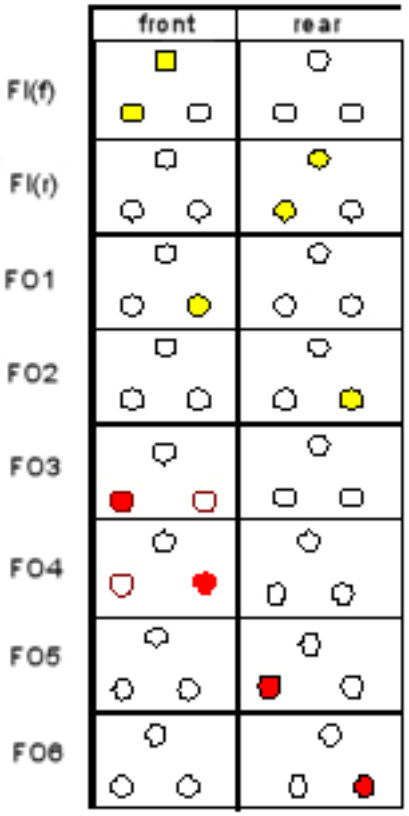
1) the association to "Swiss Army Knife" as a tool with known special functionality, and
2) the fact that the development was stimulated by requirements for a Swiss Roco Model (SBB Re442)

But of course, the "Swiss mapping" approach can be used for lighting systems of other countries.

The "Function mapping" is well known for many years as a source of dissatisfaction, in all locomotive decoders that are on the market. The existing insufficient "NMRA function mapping" has been extended in various ways (including from ZIMO), and / or replaced without covering all the requirements. Although, the newly created "Swiss Mapping" is one such extension: not everything has been implemented, but it's another great step in the right direction.

The "Swiss Mapping" and other extensions of the decoder software (see next page) are, of course, far beyond the capability of a simple "engine and lights" decoder. ZIMO decoders and sound decoders are for "higher" functions predestined, since most types have 6, 8, or 10 function outputs available. The impetus for the concrete development of the "Swiss Mapping" was part of the planned configuration for ZIMO decoders (creating CV sets and sound projects) for large and small volume manufacturers, but priority should be given for a Roco SBB Re442, which can for the first time represent all Swiss lighting variants, and which with the previous CV structure would not be possible.

Therefore, this case is also used to illustrate (for example) what can be achieved with the "Swiss mapping", the left chart shows which lights are connected to which function outputs of the decoder and the right table shows the different operating conditions, the lighting conditions which are to be switched, and what combination of function keys on the controller are to be used. F0 thus serves as a general on/off switch for the lights, in combination with one of the keys F15 ... F20 is for each specified operating conditions.



Function Key	Output	Description	Front	Rear
F0 forwards, (In direction of No.1 Cab)	F0(forwards) F01 F06	Light Engine		
F0 backwards, (In direction of No.2 Cab)	F0(back) F02 F04	Light Engine		
F0 + F15 forwards (In direction of No.1 Cab)	F0(forwards) F01 F02	Normal train move stock coupled to Cab 2 no driving trailer		
F0 + F15 backwards (In direction of No.2 Cab)	F0(back) F01 F02	Normal train move stock coupled to Cab 1 no driving trailer		
F0 + F16 forwards (In direction of No.1 Cab)	F0(forwards) F01	Normal train move, stock coupled to Cab 2, with driving trailer or 1st loco of multiple locos		
F0 + F16 backwards (In direction of No.2 Cab)	F03 F04	Shunting move, stock coupled to Cab 2, with driving trailer (since Year 2000)		
F0 + F17 backwards Cab 2 leading	F0(backwards) F02	Normal train move, stock coupled to Cab 1, with driving trailer, or 1st loco of multiple locos		
F0 + F17 forwards Cab 1 leading	F05 F06	Shunting move, stock coupled to Cab 1, with driving trailer (since year 2000)		
F0 + F18 forwards Cab 1 leading	F06	Shunting move, stock coupled to Cab 1, with driving trailer, or last loco in multiple locos (until year 2000)		
F0 + F18 backwards Cab 2 leading	F04	Shunting move, stock coupled to Cab 2, with driving trailer, or last loco in multiple locos (until 2000)		
F0 + F19 forwards Cab 1 leading	F02	Normal train move last loco in multiple locos stock coupled to Cab 2		
F0 + F19 backwards Cab 2 leading	F01	Normal train move last loco in multiple locos stock coupled to Cab 1		
F0 + F20 forwards or backwards	(none)	Middle loco in multiple locos		

The configuration of the required lighting conditions are represented by several CV groups, each consisting of 6 CVs, a total of 10 such groups (i.e. 60 CVs), are available in the new decoder software, 8 of which are actually required for the specific project. The basic principle is simple: the first CV of a group contains a function number (1 to 28), function key F1.. F28, then the other CVs of the group defines which function outputs are switched on by pressing this key, each dependent on the direction of travel. If two outputs are not enough, then just use a second CV group for the same function (up to 4 outputs per direction).

	Contents	Value Range	Explanation
# 430	F-Key	1-28 for Keys F1-F28, 29 for F0	With the defined "F" key the following defined outputs (A1, A2) are turned on, for example, the code for F15 is "15"
# 431	M-Key	1-28 for Keys F1-F28, 29 for F0	The "normal function mapping" for the "M" button is disabled by the "F" key, "Normally" the code for F0 is entered here, and bit 7 = 1, i.e. "157".
		CV # 431, Bit 7 = 1:	Defined below outputs are switched on by F and M function keys (the "M" key should work as a general on/off switch).
# 432	A1 Vw	1=FA1, 2=FA2 ..14=FA0v, 15=FA0r	1. Output which is to be switched in the direction of travel forward
# 433	A2 Vw	1=FA1, 2=FA2 ..14=FA0v, 15=FA0r	2. Output which is to be switched in the direction of travel forward
# 434	A1 Rw	1=FA1, 2=FA2 ..14=FA0v, 15=FA0r	1. Output which is to be switched in the direction of travel backwards
# 435	A2 Rw	1=FA1, 2=FA2 ..14=FA0v, 15=FA0r	2. Output which is to be switched in the direction of travel backwards
# 436	F-Key	The second CV Group	
etc. (9 further CV Groups each with 6 CVs)			

In the practice, the "Swiss mapping" has some other options, such as dependencies on standing still / locomotive moving, switchable flashing and dimming the brightness. The "NMRA function mapping" is still useful in combination, for example, to switch a shunting light..

For the above example of the Roco model SBB Re422 the following configuration can be used (detailed explanation soon in the manual):

CV		# 33 = 133	# 34 = 42				
		# 430 = 15	# 431 = 157	# 432 = 14	# 433 = 1	# 434 = 15	# 435 = 1
		# 436 = 15	# 437 = 157	# 438 = 2	# 439 = 0	# 440 = 2	# 441 = 0
		# 442 = 16	# 443 = 157	# 444 = 14	# 445 = 1	# 446 = 3	# 447 = 4
		# 448 = 17	# 449 = 157	# 450 = 5	# 451 = 6	# 452 = 15	# 453 = 2
		# 454 = 18	# 455 = 157	# 456 = 6	# 457 = 0	# 458 = 4	# 459 = 0
		# 460 = 19	# 461 = 157	# 462 = 2	# 463 = 0	# 464 = 1	# 465 = 0
		# 466 = 20	# 467 = 157	# 468 = 0	# 4695 = 0	# 470 = 0	# 471 = 0

… and New Features, special for Sound Decoders

also from SW Version 31.0

ZIMO sound decoders already do a great deal, but there are ways to make the sound experience even more impressive. The new software version implements three of them:

New Algorithm for Drive Switching

The rapid movement of a drive switch has not yet been reproduced fully, because overlapping of each sound sequences was not possible, given a minimum interval requirement, and also they all sounded alike. In the new version, there are up to **32 different levels** of switching noise (stronger, weaker ... like in real life) that may follow in rapid succession. In addition, on request, the "big step" can be assigned to a flash of light - typically with a blue LED in the engine room of the present loco ..

Diesel speed steps influenced by regulator levels (+ / - 1)

The speed steps of the diesel engine, which are to be assigned automatically depending on driving conditions, can now also be influenced by small changes of speed levels (which we have barely seen in the speed at 128 steps).

Reducing the chuff rate at high speed

This is not really a good exemplary of ... but still useful: Bit 4 in CV # 158, that from about the half the maximum speed (according EMF measurement, not evaluated by the speed control), the impact rate is no longer proportional to grow with speed, but to a lesser extent. This sounds like the sound "better" because the individual steam blows are perceived separately from each other more, perhaps better than the original ....

New Miniature Loudspeaker LS8X12

If the proven and successful LS10X16 (10 x 15 x 8 mm with an integrated sound box) is too big, there is now also the rectangular miniature speaker **LS8X12 (8 x 12 x 8 mm, also with integrated sound box, 8 ohms (1 watt)**. Relative to its size, this speaker (derived from the production of mobile phones, but with special ZIMO sound box) is amazingly powerful, of course, slightly weaker than the LS10X15, so both types are offered by ZIMO side by side.

ZIMO miniature speakers can also be connected in parallel, 2 speakers give an impedance of 4 ohms, which may be driven easily by the ZIMO decoders MX644 and MX645, and the MX648 is only recommended when the volume is reduced (otherwise interference from a supply shortage can occur).

WARNING: The miniature speaker (both LS10X15 and LS8X12) are NOT suitable for large-scale decoders (which have too high an output voltage at the audio output).

Overall, the ZIMO range of speakers includes

2 "ZIMO Special" rectangular miniature speaker (just the new LS8X12 and LS10X15)
3 Standard round speakers (20, 23, 28 mm),
4 "ZIMO Special" Rectangular bass reflex speaker (either 8 ohms or 4 ohms, 2 watts), and
5 VISATON Loudspeakers for the large scale decoders

. . . .

Energy storage solutions for all cases

ZIMO offers a number of sets (capacitors and gold caps) and memory modules (gold caps), please see product price list and information on www.zimo.at menu -> decoder -> energy storage. Thus all decoder types and sizes are covered, both those that have a special connection system, where the external components (apart from the capacitors themselves) are superfluous ("small" decoders from MX631 upwards, most sound decoders and all large scale decoders), as well as those that do not include these components (mainly miniature decoder).

The above-mentioned "special connection system" ensures that the energy storage causes no large charging currents ("inrush current"), and that when programming decoders, the HLU and ZIMO loco number recognition and RailCom are not blocked.

For the "small" decoder (i.e. for scales N, TT, H0, 00 ...) energy storage solutions based on capacitors or tantalum capacitors are used up to a total capacity of 5000 uF, with tantalum capacitors much less space is needed (see pictures below left). Gold caps would create to0 large and too long lasting current supply for the small decoder. The MX633 is the exception: as this decoder can also handle ZIMO Goldcap modules.

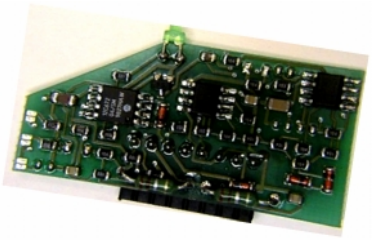
As energy storage for large scale decoders, ZIMO offers solutions using both capacitors and gold caps. For most cases, however, even here the use of simple capacitors (about 10000 to 50000 uF) is enough, and the cost of this solution is very low. But if a larger capacity or storage time is needed, ZIMO decoders can use gold caps in different variants (each 7 pieces in series, self-assembly or finished modules) and these can be connected directly. Typically these gold caps have a greater capacity and discharge by a factor of 10 over the large Elko capacitors, thus usually several seconds of current can be supplied.

. . . .

Elko 10000 µF Tantal Packet 5000 µF Goldcap 1F – 2.5 V Goldcap Module with 7 Goldcaps (7 x 1F in series, 0.14 F – 17.5 V)

Important notice for users MX9:

Improvement for MX9AZN boards



It is now possible to develop a (hardware) modification for the MX9 daughter boards for loco number, which sometimes helps to avoid false alarms from vehicle addresses, especially in applications (for example with Scale 1 Layouts) where high power consumption has occurred.

MX9AZN boards can be returned for conversion to ZIMO!

"American" Adapter Boards ADAPUS

Specifically for use in U.S. models (Athearn, Kato, etc.), the adapter board ADAPUS was created and this is the original decoder board, as found in many U.S. models, but in contrast to the standard board, all function outputs a ZIMO decoder are available (up to 10). Here are shown the available designs of the ADAPUS15 and ADAPUS50 versions with voltage regulator for low voltage functions of 1.5 V or 5 V.

In Photo: ADAPUS15 with 1,5 V low voltage output, 71 x 18 x 4 mm)

ADAPUS15 with ZIMO Sound-Decoder MX645P22 plugged in

Prices: ADAPUS: RRP 16,00 ADAPUS15 or ADAPUS50: RRP 26,00
ADAPUS + MX645P22: RRP 104,00 ADAPUS15 (or ADAPUS50) + MX645P22: RRP 114,00

NOTE: The adapter boards ADAPUS specifically designed for American locomotives;
however, for other (European) applications, the types ADAPLU and ADAMTC are available!

MXULF with driving control: the "smallest digital system"

MXULF, the decoder update and sound loading device is modified from the software version 1.0 (build 2) and can be used for driving locos.

The functionality includes driving at this stage

- Start operating a train by a long push on the R button (next to the scroll wheel), also ends the driving session in the same way.
- Identification of the address of vehicle on the track is from the found decoder in service mode.

  NOTE: Only one decoder may be located on the track: the MXULF is in this version like a "**One loco digital System**", only in later versions is the full ability of digital operation planned.
- Control **speed,** switch **direction**, trigger **emergency stop,** switch **functions F0 ... F28.**

Train operation is possible with MXULF (i.e. without display) or with MXULFA (version of MXULF with display). However, the presence of the display is highly recommended (i.e. MXULFA), particularly for switching functions!

Software version 1.0 includes, of course, the innovations of the previous versions with various addition such as automatic deletion of any update lock (CV # 144), and if necessary the re-programming of the lock after the update or sound uploading, as well as bug fixes.

The software development for the MXULF continues to implement outstanding features still planned, particularly

Select from several files on the USB stick when updating decoders and sound projects via the display of the file names on the screen of MXULFA,

Sound Upload (to add an existing project to the decoder),

Fast sound uploading on SUSI socket; especially suitable for loading the decoder outside the locomotive, e.g. series programming,

USB Client Interface for controlling the MXULF with a computer.

Quality initiative in the ZIMO Production Dept

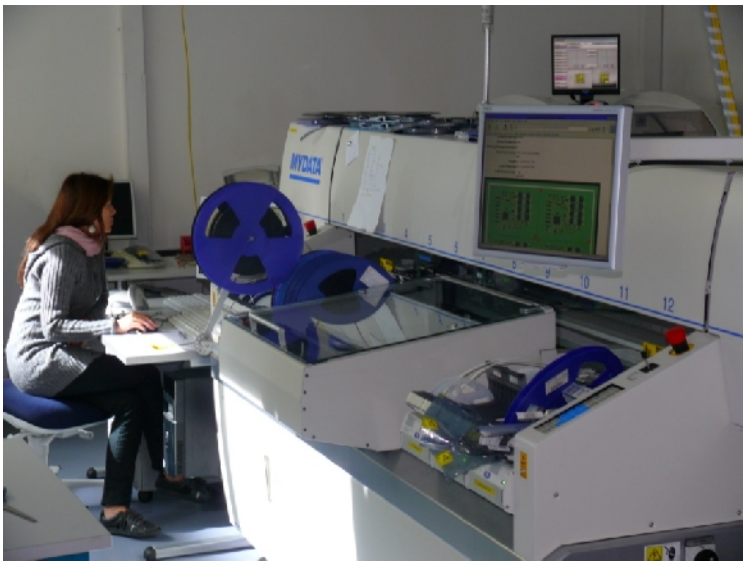
Known **ZIMO products** (both system and decoder products) are **produced in-house,** including the complete PCB assembly (SMD and finishing), programming, testing and commissioning. This gives us a high degree of flexibility and allows, among other things, to also offer types for which the demand varies widely, or where generally only relatively small quantities can be sold, but are still important for the completeness of the product spectrum ("a suitable ZIMO decoder for each vehicle, in every scale, with each interface ", etc.).

The **2009 newly built manufacturing facility** with more powerful (quite industry-compatible) assembly machine, screen printing, machine and reflow soldering oven is one of the foundations for the place in the last two years, growth of the company ZIMO ELEKTRONIK GmbH by a factor of 2, which was almost entirely due to the decoder sector, in particular the entry into the market of supplying other vehicle manufacturers. In late 2012 and 2013, a further boost to growth through the introduction of the new system products (MX10, Stationary Device Modules) can be expected.

The ever increasing miniaturization of the components used, especially in the decoder construction, as well as the ever increasing complexity of printed circuit boards (the new MX10 has more than 1000 components, including several with 100-208 solder points) has initiated a further major investment:

In **September 2012**, **a new "AOI"** was purchased (AOI = Automatic Optical Inspection) and put into operation. The apparatus from the firm Goepel (in Jena) comes from the latest generation of such systems, which is used in the electronics industry in sensitive areas (medical, automotive, etc.). So in the future is a much more precise control of the SMD printed circuit board, ensures the presence and correct orientation of the components and especially the durability of the solder joints. This in turn helps to make the production process more efficient (less work at the microscope, less troubleshooting and function testing, less waste), and will also increase the reliability of the delivered products.

AOI system (while reviewing and checking MXULF boards



Component placement machine, and in the background, stencil printer

ZIMO grows …

Due to the above-described (chapter "quality offensive ...") and company growth, the number of staff has increased significantly, both in production, as well as customer service and development (in total about 20). A complete list will be available soon at www.zimo.at, under Menu "About us" ->, "People", some of the new heads are shown below. Note: at the moment (September / October 2012), this site is not currently valid (because not updated).

Nada Ljuboja

Hung Huynh

Yasmin Haug

Julia Amesberger

Amin Mejri