

LEONI *insider*

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Dear LEONI Electrical Appliance customers,

Content:

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- Just in Time deliveries from LEONI Slovakia
- New products

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We are pleased to launch a newsletter addressing you - the Electrical Appliance industry. We decided to name it LEONI insider for Electrical Appliances: First, we want to share inside information about LEONI Electrical Appliance activities, second we also want to create a platform where Electrical Appliance Insiders can discuss the most relevant topics within our industry. Finally with this communication we also want to offer you - our most important partners - the option to become INSIDERS concerning our business, our set-up, our ideas and our offerings.

As you know, LEONI was quick off the mark in going global with its Electrical Appliance activities. In line with our worldwide presence, we will always highlight at least one Asian and one European topic. In our first edition we will focus on our advanced production capabilities for IDC assembly in China and enhanced logistical options available from our site in Slovakia.

Being INSIDERS to something is a mutual relationship, which means that we are open to your feedback and suggestions to shape this newsletter together.
Hope you enjoy reading!

Best regards

Christoph Wolf
Senior Vice President

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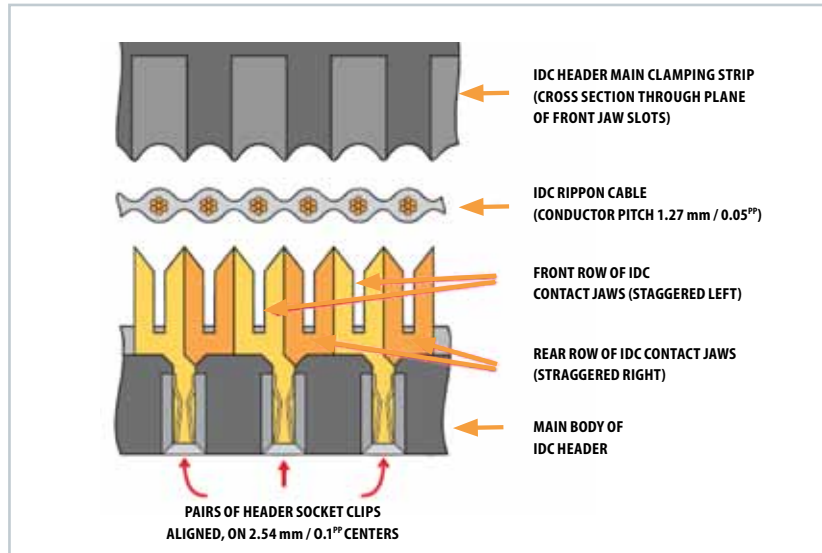
LEONI invests in fully automated IDC technology in China

In order to extend its position as a leading manufacturer of power cords and harnesses for the Electrical Appliance industry, LEONI is now the first international supplier to have equipped its harness production in China with a fully automatic IDC assembly line.

With growing complexity of electronics in appliances, the numbers of wires needed in harnesses tended to grow as well. Soldering all the wires to the connector pin plugs is time-consuming and represents a quality risk, so most manufacturers in Asia now opt for manual crimp technology. To improve product reliability, a growing number of appliance producers (OEM's) are starting to implement "Insulation Displacement Connection" technology, commonly known as IDC. As the name suggests, IDC technology is based on the idea of displacing or "pushing aside" some of the insulation around cable conductors. The insulated wire is pressed into the slot of a standardised connector. Due to the high pressure and the sharp edges of the slot, the insulation of the wire is displaced to the upper and lower part of the connector, the strands gets direct contact to the connector.

The main advantages of IDC are:

- Reduction of mating and plugging errors
- Quality improvement with significant ppm reductions
- Shorter processing time/higher output per hour
- Simplification in assembly of finished products



(Drawing IDC connector - schematic)

- Simplification of changes
- Reduction of wire diameter

Due to these advantages, IDC is becoming the standard technology used in the assembly of white goods such as washing machines, tumble dryers and dish washers.

The only equipment used up to now in Asia has been semi-automatic; whereby one worker positions the various wires manually into the first IDC connector, which is then "closed" by the machine, and then the second IDC connector. LEONI is the first interna-

tional supplier, to now have invested in fully automatic IDC production lines for its IDC workshop in Changzhou, China. This process limits human intervention to feeding the machines and packing the finished goods, thus ensuring an unmatched quality level.

In addition to these automatic IDC harness production lines, LEONI Changzhou can offer single-sided IDC assemblies from its existing semi-automatic line capacity. Our IDC production enhances the LEONI core competences in wire and cable extrusion.



In order to fulfil the stringent requirements set for the end product, the cable itself needs to be designed to the use for IDC:

- Strands: to ensure the stability of the connection, strand design (symmetric and centric) and lay length (depending on diameter and wire type) have to be defined individually typically 15 mm plus minus 10% for 0.38 mm²
- Coating: tin coating increases the conductivity between the strands
- Insulation: high adherence for better grip and materials with higher shore hardness to avoid the insulation material being stuck in the connector
- Centricity of the conductor is one of the most important requirements besides

hardness of PVC, lay length, litz wire density and exactness

The volume of actual orders proves that our customers appreciate LEONI's solution for IDC production in China. The first automatic line in Changzhou has been operational since mid 2009: a second line will be running as of December of this year to meet the growing demand.

In line with LEONI's goal to be the partner of choice of the world's leading appliance makers, we will continue to invest in the growth market of China.



Company profile LEONI Cable Changzhou:

LEONI Cable (Changzhou), the largest LEONI factory serving the Electrical Appliance business, has been producing cables and power cords as well as harnesses since 1998. The company supplies Chinese locations of European, American, Japanese and Korean customers as well as the most renowned Chinese brands and also successfully exports its products to South East Asia, the US and Europe.

The product range covers the value chain from extrusion of PVC and rubber cables via cord assembly to internal wiring with faston terminals and IDC connectors.

Since 2000, LEONI Cable (Changzhou) has been continuously improving the production level and has set up a semi-automated cable assembly system for the production of cord sets. Further development has now prepared for fully automated production.

Your contact person for all questions concerning IDC harnesses

China:

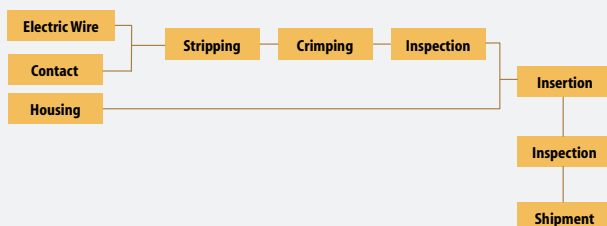
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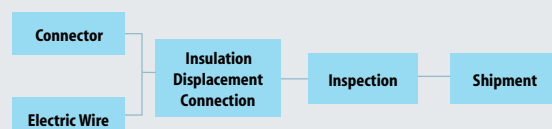
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Harness Production Comparison

Crimping harness production



Insulation Displacement harness production



Just-In-Time deliveries from LEONI Slovakia

Imagine: You stop all forecasting and planning, you react directly to orders from your customers, you pass directly them to your suppliers and within days you will receive all components needed to start production and ship to your customers in time! Sounds like the Dell business model? Can only happen in the automotive business? LEONI Slovakia has just started to introduce Just-In-Time deliveries for high volume customers in the Electrical Appliance industry.

The most important performance indicators for today's suppliers are flexibility, on-time delivery and rapid response to match fluctuating requirements.

If a supplier furthermore helps his customer to improve key figures like cash flow, capital employed etc., why not take this supplier up on his offer? LEONI Slovakia has set up a Just-In-Time (JIT) logistics plan with one of its main customers.

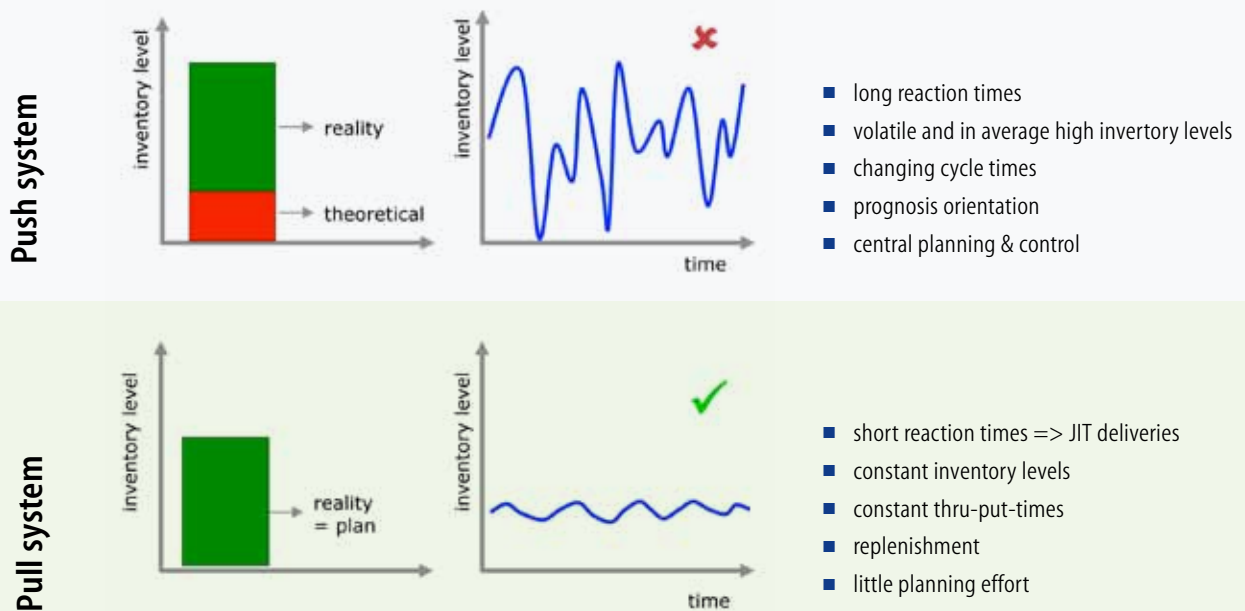
JIT requires a change of methods and thinking on both the supplier's and the customer's part, and touches many disciplines within the company from purchasing to controlling and through to production. Once the process is implemented, both sides will appreciate the advantages.

LEONI has now introduced this JIT philosophy in the Electrical Appliance world. LEONI Slovakia reorganised its production set-up

as a result of a thorough analysis. Based on a high degree of automation, top-selling products are now manufactured using line concepts that provide the basis for faster delivery cycles.

Recently, a first major customer decided to implement the JIT concept and to change his ordering/transport cycles. By the beginning of each month, the customer informs LEONI Slovakia about the forecasted quantities he plans to order within the following months. These forecasted quantities are the basis for the rough capacity planning of the production as well as for the estimate booking of raw-material quantities. At the same time the customer informs LEONI Slovakia about the level of buffer stock of each product

PULL system – advantages



(maximum quantity which can be ordered/ delivered within 4 working days), valid for current month. These quantities are the basis for the detailed capacity planning of production as well as for the raw-materials supply of production. The booking of the order leads to the preparing the goods for pick up within 2 working days and to the refilling of the buffer stock within a maximum period of 4 working days (in case of ordering the complete buffer stock at once).

Advantages for the customer:

- Short lead time (2 working days from the booking of the order to the preparing the goods for pick up)

- Low inventories, reduction of space needed for stock, low capital employed, excellent cash flow figures
- High flexibility in production
- Excellent delivery performance (not one piece missing, not 1 day in delay)

Advantages for LEONI:

- Optimal production lot sizes
- Stable production planning
- Low inventories & low capital employed

This new concept can be recommended for products with high delivery volumes and is available to every customer.



Modern highly automated production

If you are interested in further information, please contact

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Company profile LEONI Slovakia:

LEONI Slovakia is located in Trencianska Tepla - Dobra near Trencin. The company was founded in 1992 by LEONI, and started as supplementary workshop. Today it is served via the central sales department of LEONI Electrical Appliance Assemblies business unit, but has gradually been built up to being a fully-fledged company that provides all major functions including customer service and R&D. A high standard in technical product solutions is therefore on offer.

LEONI Slovakia's high logistic performance benefits from the production concept integrating the cable production and the power cord assembly under one roof. After complete restructuring of the production during the last 2 years, LEONI Slovakia today represents a modern, highly automated production facility that is able to provide JIT delivery with very short lead times.

New products



Brazil – plugs compliant with the latest standard

After being postponed several times, the introduction of a new standard in Brazil means that since 1 January 2010 producers and importers can only import appliances that conform to NBR 14136/02.

For some time now, LEONI has been offering the following plugs covering the entire range.

These connectors are approved up to either 10 A or 20 A, depending on the pin diameter.



206 (type 206, 2-pole up to 10A)



2016 (type 2016, 2-pole up to 20A)



375 (type 375, 2-pole with earthing-contact, up to 10A)



376 (type 376, 2-pole with earthing-contact, up to 20A)



Switzerland – launch of partially insulated pin plugs

In December 2009 the SEV released a new standard for partially insulated plugs. According to the new standard, from 1 January 2013 onwards the pin of every plug must be partially insulated.

LEONI is already in the process of adjusting its portfolio and will start supplying plugs that comply with the new standard from the 3rd quarter of 2010 onwards.



China – approval of heat-resistant power cords

In 2009, China's national standard for the first time authorised a heat-resistant cord called RVV-90. It's known as V2V2 in Europe. LEONI is the first company to have received approval from CCC for its bulk cable and is now offering its entire portfolio of cord sets with these heat-resistant cables. In China, the H03V2V2-F is known as 60227 IEC 56. An H05V2V2-F cable corresponds to 60227 IEC 57.



Japan – new requirements for electrical refrigerator and freezer plugs

New requirements for plugs in Japan for use with electric refrigerators and freezers.

In Japan, a stricter fire protection requirement will be introduced on 1 September 2010 for 2-pole plugs used with electrical refrigerators and freezers. In the past, there were one-off instances of flames jeting from or burning at the plug. In order to prevent this happening, the new requirement demands the use of a component with high glow wire resistance that isolates the two pins from each other. LEONI will be offering this improvement as standard from May 2010 onwards with new plug type 2150 and 2155.