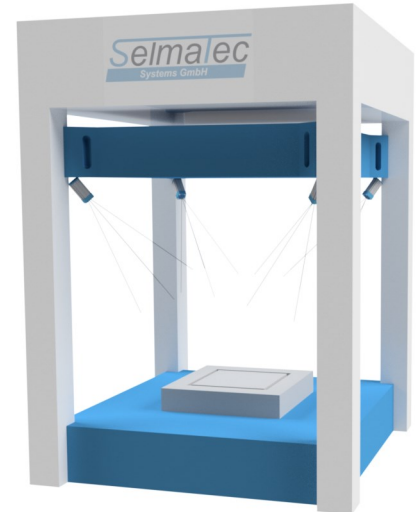


BENEFITS

- **Ensuring process stability** by active inspection of the drawing edges, chamfering edges, waviness and crack detection during cold forming of sheet metal
- **AI models detect and report problems early** to prevent impending rejects
- **High accuracy of the system** (deviations < 1 mm are detected)
- **Production overview thanks to archiving and reporting**
- **Auto report function**
- **Visualization on the intranet** via browser (integrated web server)
- **Interface connection** e.g. via OPC to customer controls
- **Forecast functions**
- **Cycle time neutral recordings**
- **In cycle protocols for connection to higher-level QA systems**
- ...



DESCRIPTION / EXAMPLE OF APPLICATION

Using the **DC-Inspector system** ensures process stability due to the active evaluation of the drawn edges, "First Touch Line", wrinkling and crack detection during the cold forming of sheet metal. The control parameters can be adjusted to suit the components and can be converted as required due to a suitable recipe management

Thanks to the incycle AI-models we developed the system can detect and report issues at an early stage to prevent rejects without any further information. If required an integrated configurable web server visualizes the data collection software on the intranet.

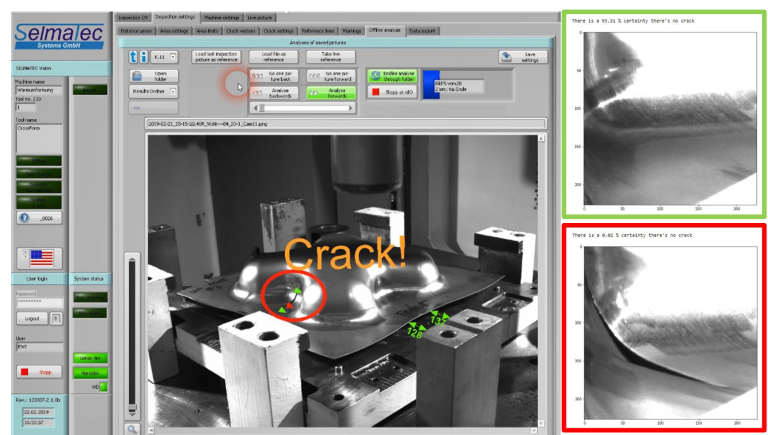
Due to the integrated recipe management the tool change requires no further intervention as the system automatically resorts to stored tool-specific test recipes.

For industry 4.0 applications different telegrams for communicating with higher level systems are available.

The open system layout allows the integration of further hard- and software features at any time.

MEASURING PARAMETERS

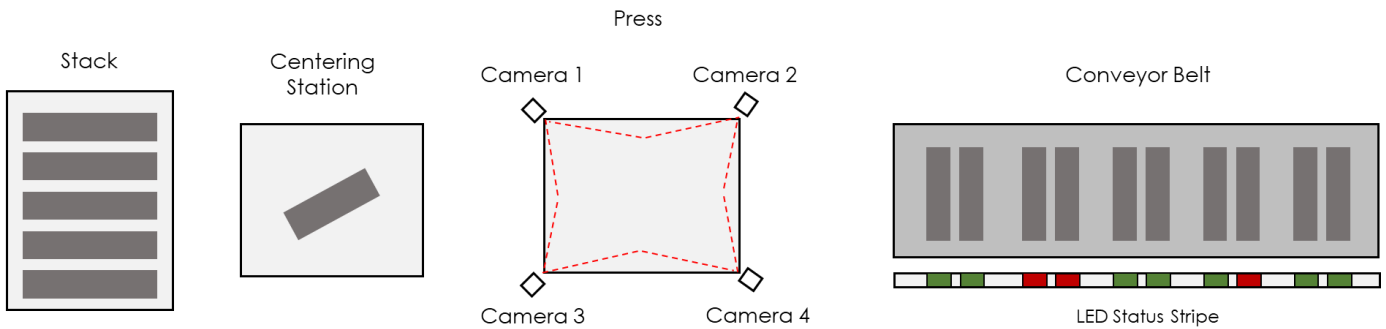
Sensors / Cameras	NIR-Camera, Vision-Camera
Data transmission	OPC (Standard) Profinet (Optional)
Interfaces	Profibus, Analog-Digital I/O...
Power Supply	230 VAC (Panel-PC, Interface) 24 VDC (Cameras)
Scope of delivery	Complete system solution incl. commissioning and training



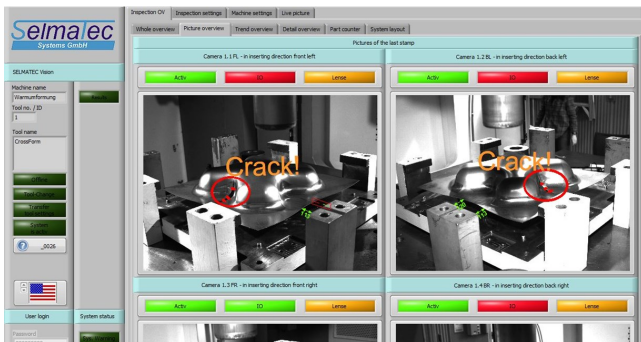
EXAMPLE LAYOUT

- There is a wide range of options (the system layout is customized according to the customer's needs)
- The number of cameras required to capture all relevant points depends on the universal conditions of the process
- The system is flexible and easily expandable and therefore well adaptable to individual needs

Example System Layout



SOFTWARE



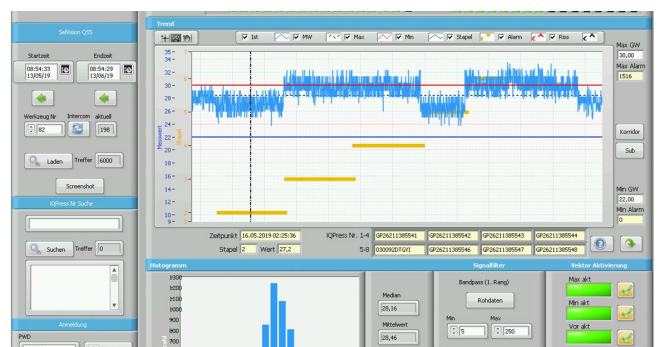
DC-Inspector
(Inline-monitoring)



DC-Config
(Parameter-Configuration)



Trend monitoring



Process data acquisition
(process data and test results are stored together)

AUTO JOB REPORT

- The **Auto Job Report** enables an **automatic production review** in order to always have an overview of the entire processes

Table of production data (Table der letzten 200 NIO's):

Zeitpunkt	Bauflnummer	Prasse 1	Prasse 2	Risik
15.04.2019 17:11:07	00377	05641K5DF	05641R5DF	Risik
15.04.2019 17:11:15	00378	05641K5DF	05641R5DF	Risik
15.04.2019 17:11:43	00380	05641K5DF	05641R5DF	Risik
15.04.2019 17:11:59	00389	05641K5DF	05641R5DF	Risik
15.04.2019 17:12:05	00390	05641K5DF	05641R5DF	Risik
15.04.2019 17:12:15	00393	05641K5DF	05641R5DF	Risik
15.04.2019 17:12:24	00395	05641K5DF	05641R5DF	Risik
15.04.2019 17:12:28	00396	05641K5DF	05641R5DF	Risik
15.04.2019 17:12:36	00397	05641K5DF	05641R5DF	Risik
15.04.2019 17:13:04	00404	05641K5DF	05641R5DF	Risik
15.04.2019 17:13:27	00410	05641K5DF	05641R5DF	Risik
15.04.2019 17:13:41	00411	05641K5DF	05641R5DF	Risik
15.04.2019 17:13:49	00413	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:09	00418	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:13	00419	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:33	00002	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:37	00003	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:41	00004	05641K5DF	05641R5DF	Risik
15.04.2019 17:14:45	00005	05641K5DF	05641R5DF	Risik
15.04.2019 17:15:18	00013	05641K5DF	05641R5DF	Risik
15.04.2019 17:15:22	00014	05641K5DF	05641R5DF	Risik
15.04.2019 17:16:02	00024	05641K5DF	05641R5DF	Risik
15.04.2019 17:16:19	00028	05641K5DF	05641R5DF	Risik
15.04.2019 17:16:27	00030	05641K5DF	05641R5DF	Risik
15.04.2019 17:16:47	00035	05641K5DF	05641R5DF	Risik
15.04.2019 17:17:23	00044	05641K5DF	05641R5DF	Risik
15.04.2019 17:17:26	00045	05641K5DF	05641R5DF	Risik
15.04.2019 17:17:40	00048	05641K5DF	05641R5DF	Risik

Produktionsrückblick

Zeitraum	Billets	Alu	Alu + Billets	Alu + Billets (%)	Alu + Billets (t)
19-01-08 04:25:51	2019-01-08 11:57:02	4490	2125	(47,946%)	6 (0,252%)
2019-01-15 18:28:34	2019-01-16 03:03:45	4491	1880	(41,862%)	78 (4,149%)
2019-01-21 21:53:44	2019-01-22 03:19:26	5041	962	(18,986%)	22 (2,311%)
2019-01-31 11:52:44	2019-01-31 17:05:25	4937	14	(0,284%)	9 (0,143%)
2019-02-05 15:32:06	2019-02-05 22:20:41	6301	31	(0,492%)	1 (3,226%)
2019-02-15 17:46:18	2019-02-15 22:14:09	3737	287	(7,680%)	0 (0,000%)
2019-02-28 11:52:21	2019-02-28 17:13:27	4914	198	(4,113%)	1 (0,505%)